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Appendix 3.2E
Incidental Take Permit

Incidental Take Permit Application- Potentia-Viridi Battery Energy Storage System Project

July 19, 2024

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California Endangered Species Act

Incidental Take Permit Application for California tiger salamander (*Ambystoma californiense*) Central California Distinct Population Segment, golden eagle (*Aquila chrysaetos*), San Joaquin kit fox (*Vulpes macrotis mutica*), and tricolored blackbird (*Agelaius tricolor*)

Potentia-Viridi Battery Energy Storage System Project

Alameda County, California

July 2024

Levy Alameda, LLC

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List of Abbreviated Terms

ºF	degrees Fahrenheit
AC	alternating current
Applicant	Levy Alameda, LLC
AMM	Avoidance and Minimization Measure
BESS	Battery Energy Storage System
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practices
BMS	battery management system
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
cy	cubic yards
DC	direct current
DPS	Distinct Population Segment
EACCS	East Alameda County Conservation Strategy
HVAC	heating, ventilation, and air conditioning
ITP	Incidental Take Permit
LFP	lithium iron phosphate
LGIA	Large Generator Interconnection Agreement
MPT	main power transformer
MV	Medium voltage
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NWI	National Wetlands Inventory
O&M	operations and maintenance
PCS	Power Conversion Systems
PG&E	Pacific Gas and Electric
POCO	Point of Change of Ownership
POI	point of interconnection
Project	Potentia-Viridi Battery Energy Storage System Project
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
UL	Underwriters Laboratories

USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Chapter 1. Introduction

This report serves as the formal application for an Incidental Take Permit (ITP) under Section 2081(b) of the California Endangered Species Act (CESA) for the Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This application was prepared pursuant to Sections 702 and 2081(b,c) of the California Fish and Game Code, and contains the information requested herein.

This permit application is being submitted for the Incidental Take of the California tiger salamander (*Ambystoma californiense*) Central California Distinct Population Segment (DPS), golden eagle (*Aquila chrysaetos*), San Joaquin kit fox (*Vulpes macrotis mutica*), and tricolored blackbird (*Agelaius tricolor*) for construction activities associated with the Project. For Project location, refer to Appendix A, Figure 1 and Figure 2.

Additional State and federal permit applications may be required for proposed stormwater outfall work associated with the Project. These additional permits may include a United States Army Corps of Engineers (USACE) 404 Nationwide Permit, a Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification and a California Department of Fish and Wildlife (CDFW) 1602 Streambed Alteration Agreement. The requirement for these permit applications will be determined based on proposed impacts to non-wetland waters of the United States and State.

1.1 Project Applicant

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1.4 Species for Which Incidental Take Coverage Is Requested

Levy Alameda, LLC is seeking authorization under Section 2081(b) of the California Fish and Game Code for incidental take of California tiger salamander, golden eagle, San Joaquin kit fox, and tricolored blackbird because of construction activities for the Project as described in this application. These species are listed as follows:

- California tiger salamander Central California DPS – State threatened
- Golden eagle – Fully protected

- San Joaquin kit fox – State threatened
- Tricolored blackbird – State endangered

1.5 Location of Project

The Project would be located in Alameda County, California within a portion of Assessor Parcel Number (APN) 99B-7890-002-04 located at 17257 Patterson Pass Road, southwest of Interstate 580 and Interstate 205 (Appendix A Figure 1 and Figure 2). Development of the BESS facility would occur on about 70 acres of APN 99B-7890-002-04, which is currently comprised of fallowed annual grasslands suitable for grazing. The gen-tie line would extend southeast from the Project substation, crossing Patterson Pass Rd, and then proceed east to the Point of Interconnection (POI) at the Tesla Substation. The Project's gen-tie line would be sited on APNs 99B-7890-2-4, 99B-7890-2-6, and 99B-7885-12. Land uses in the immediate vicinity of the Project include undeveloped rural agricultural lands, multiple high-voltage transmission lines and electrical substations, rural roads, and railroad lines. The nearest municipality to the Project site is the City of Tracy approximately 2.5 miles to the northeast. There are a few single-family residences near the Tesla Substation's southern and eastern boundaries. The nearest residence is about 1,500 feet southeast of the Project site and 560 feet south of the proposed gen-tie line; it is owned by the same landowner leasing the lands for the Project.

The Project location was selected due to it being large enough to support development of the Project, its close proximity to existing electrical infrastructure and the Tesla Substation, thereby minimizing length of the proposed gen-tie line to the POI, and because it is located immediately adjacent to existing roadways for construction and O&M access.

Chapter 2. Project Description

2.1 Purpose and Need

The Project objectives are:

- Construct and operate an economically viable, and commercially financeable, 400-megawatt (MW) battery energy storage facility in Alameda County with an interconnection at the Tesla Substation.

- Assist California electric utilities in meeting obligations under California's Renewable Portfolio Standard Program and Senate Bills 100 and 1020, which require renewable energy sources and zero-carbon resources to supply 60% of all retail sales of electricity to California end-use customers by December 31, 2030, 90% of all retail sales of electricity to California end-use customers by December 31, 2035, 95% of all retail sales of electricity to California end-use customers by December 31, 2040, and 100% of all retail sales of electricity to California end-use customers by December 31, 2045.

- Assist California utilities in meeting obligations under the California Public Utilities Commission's Mid-Term Reliability Procurement Requirements.

- Develop an electricity storage facility in close proximity to a utility grid-connected substation with existing capacity available for interconnection to minimize environmental impacts.

- Relieve grid congestion, and enhance electricity reliability, without requiring the construction of new regional transmission infrastructure or substantial network upgrades.

- Construct and operate a battery energy storage facility in Alameda County, resulting in economic benefits to the County, creating prevailing wage construction jobs, and facilitating local community benefits.

2.2 Project Description

2.2.1 Project Components

The Project would include construction, operations and maintenance (O&M), and eventual decommissioning of a 400 MW BESS with an energy storage capacity up to 3,200 MWh. Charging from or discharging to the electrical grid would be a 500kV gen-tie connecting the project substation to the point of interconnect (POI) within the existing PG&E Tesla Substation. The BESS Facility would include the following components:

- BESS Enclosures

- Power Conversion Systems (PCS)

- Medium voltage (MV) Collection System

- Project Substation, Control Building, and Telecommunications Facilities

- Access Roads

- Laydown Yards

- Stormwater Facilities and Outfall
- Site Security and Fencing, including fire detection system
- Operations and Maintenance Building

Project components are described in the following subsections. Figure 3, Project Design Features, shows the project layout. Table 1 summarizes the preliminary dimensions of major BESS facility components, and Table 2 summarizes the preliminary footprint/disturbance acreage associated with the BESS facility.

Table 1. Preliminary Dimensions of Major BESS Facility Components

Component	Quantity	Approximate Dimensions
BESS Enclosures	1,000*	20 ft x 8 ft x 10 ft (L x W x H)
PCS	140*	22 ft x 7 ft x 8 ft (L x W x H)
MV Collection system	--	Buried in trenches up to 5 ft x 10 ft (W x D)
Project Substation Area	1	500 ft x 450 ft; (5) 120 ft (H) (lightning masts)
Control Building	1	52 ft x 20 ft x 15 ft (L x W x H)
Wireless Communication Tower	1	18 ft x 18 ft x 199 ft (L x W x H)
Access Roads	--	20 ft (W) internal radii 25 ft minimum
Laydown Yards	4	Variable
Stormwater Detention Facilities	5	Variable
Stormwater Outfall	1	500 ft x 5 ft x 10 ft (L x W x D)
Security fencing	1	9 ft (H) 8 ft tall fence topped with 1 ft of barbed/razor wire
Operations and Maintenance Building	1	100 ft x 50 ft x 30 ft (L x W x H)

Notes: * The number of BESS enclosures and PCS units would depend on the manufacturer selected. The total number of BESS enclosures and PCS units may increase or decrease in the final design. It is also possible that the BESS units ultimately procured may incorporate the PCS units within the BESS enclosures.

Table 2. Preliminary Footprint of BESS Facility

Component	Permanent Disturbance
BESS Yards	13.3 acres
Project Substation	5.5 acres
Access Roads	6.6 acres
Laydown Yards	15.2 acres
Stormwater Detention Areas	9.3 acres
Stormwater Outfall	0.6 acres

Other*	7.2 acres
Total+	*57.7 acres*

Notes: * Other areas include maximum grading limits. The analyses assume that all areas used for the BESS facility are permanently disturbed and kept free of vegetation to comply with fire requirements. +The total permanent disturbance acreage is a conservative estimate, and final designs may require fewer acres. Underground components within the BESS facility would be located within the footprint of above ground disturbance areas.

2.2.1.1 BATTERY ENERGY STORAGE SYSTEM

The energy storage facility would utilize a modular and containerized BESS. There are several battery cell technologies commercially available, with one of the most common at present being lithium iron phosphate (LFP) cells (often colloquially referred to as 'lithium-ion'). LFP technology is considered one of the safest, most efficient, and commercially financeable energy storage technologies available on the market. The initial Project concept has been developed assuming an LFP technology. By the time the Project reaches the procurement stage, it is possible for other battery cell technology with proven safety and performance records to be suitable for the Project. Although the number and dimensions of the containers may change (as it does between LFP technology providers), the technology ultimately procured would result in potential environmental impacts substantially similar to, or less than, those analyzed based on this Project Description.

The BESS enclosures would be prefabricated off-site and arrive at the site ready to be installed and commissioned. Each modular BESS enclosure would include battery packs on racks, a battery management system (BMS), fire protection, and ancillary power electronics within a specialized steel-framed, non-occupiable container. The BESS enclosures would not exceed approximately 15 feet in height. The BESS enclosures may also have a heating, ventilation, and air conditioning (HVAC) system for optimal performance and safety. Power for the HVAC system, lighting, and other electrical systems would be provided through separate auxiliary power connection to the on-site project substation with connection lines installed above and/or below ground.

2.2.1.2 POWER CONVERSION SYSTEM

A PCS is a packaged and integrated system consisting of a bi-directional inverter, MV transformers, protection equipment, direct current (DC) and alternating current (AC) circuit breakers, harmonic filters, equipment terminals, and a connection cabling system. A PCS functions to both convert between DC/AC and change the voltage level from the MV collection voltage to the voltage output of the BESS enclosures.

The PCS would convert electric energy from AC to DC when the energy is transferred from the grid to the battery, and from DC to AC when the energy is transferred from the battery to the grid. Each PCS would also include transformers that convert the AC side output of the inverter between low and medium AC voltage to increase the overall efficiency of the BESS. Inverters within the PCS units would be unattended systems designed to operate in all conditions. The inverters would be monitored and controlled remotely, and there would be on-site disconnects for use in case of an emergency or a situation requiring unscheduled maintenance.

PCS units would be installed on concrete foundations and connected to multiple BESS enclosures with wiring and cables installed underground. All outside electrical equipment would be housed in the appropriate National Electrical Manufacturers Association (NEMA) rated enclosures.

2.2.1.3 MV COLLECTION SYSTEM

The MV collection system would include multiple components that connect the PCS units to the project substation including: underground conductor circuits, switchboards, switchgear, and panels at 34.5kV voltage. The conductors for the MV collection system would be installed underground during construction using trenching.

2.2.1.4 PROJECT SUBSTATION

The project substation would include three main power transformers (MPTs) – two active and a live spare. When the BESS facility is charging, power from the regional electric transmission grid would be stepped down from 500kV to 34.5kV and sent from the project substation through the MV collection system and PCS units into the battery packs within the BESS enclosures. When the BESS facility is discharging, power from the battery packs within the BESS enclosures would be sent to the PCS units, stepped up to 34.5kV, and transported to the project substation through the MV collection system before being stepped up to 500kV at the MPTs and delivered back to the regional electric transmission grid. A prefabricated control building would be installed within the project substation area and contain an energy management system, metering and telecommunication equipment for communication with PG&E/CAISO facilities and to support remote Project operations monitoring. The project substation area would also include five static masts for lightning protection and a wireless communication tower mounted with an antenna up to 15 feet in diameter for external telecommunications.

2.2.2 Access Roads

The Project's roadway system would include two new facility access roads and driveways, a perimeter road, and internal access roads. One of the new site access roads and driveways would be constructed from an existing private road near the northeastern portion of the site, and the other would be constructed from Patterson Pass Road near the southwestern portion of the site. A project substation access road would be constructed outside of the perimeter fence, connecting the northeast and southwest driveways, to facilitate substation access by third parties during operations. All new access roads, driveways, internal and perimeter roads would be bladed, compacted, and surfaced with aggregate. All internal roadways and private driveways would be constructed to meet access requirements for construction, O&M, and emergency response requirements.

2.2.3 Laydown Yards

The Project would include up to 4 laydown yards for equipment and material staging and storage during construction. These areas would also be used for worker parking during construction. The primary laydown yard would be located directly adjacent to the project substation area (see Figure 3). The primary laydown yard would be bladed, compacted, and surfaced with aggregate, while additional laydown yards would be cleared of vegetation and surfaced with aggregate or other soil stabilizing materials. Portions of additional laydown yards may also be graded, if necessary. Landscape fabric may also be installed under the surface of all laydown yards to prevent vegetation growth, if required to comply with fire prevention standards. The O&M building, and required number of parking spaces for O&M staff, would be constructed within the primary laydown following construction of the BESS facility components.

If the BESS technology ultimately procured prior to construction requires larger BESS yards to accommodate BESS enclosures with larger dimensions, a greater number of BESS enclosures, or greater spacing requirements to comply with regulations, portions of the additional laydown yards may be used to accommodate larger BESS yards than those currently proposed. The proposed Project's preliminary layout, earthwork volumes, and project component dimensions assumed for environmental analyses in subsequent chapters are conservatively large to allow for design flexibility and Project schedule preservation.

2.2.4 Stormwater Facilities

The proposed BESS facility site currently consists of annual grassland with rolling topography. Regulatory standards require that volumes and flow rates of stormwater discharge after construction not exceed pre-development conditions. Stormwater generated on-site would flow to stormwater detention basins located along the periphery of the BESS facility site (Figure 3). Stormwater treatment and storage sizing would be designed to hold the anticipated runoff from a 100-year, 24-hour storm event in compliance with applicable regulations. In the event stormwater basins reach capacity, stormwater would be discharged from the detention basins via storm drainpipes and sheet flow at rates no greater than pre-development conditions following natural drainage patterns.

A stormwater drainage outfall utilizing a new 15-inch corrugated metal pipe would be constructed from a detention basin located in the southwest portion of the site to the inlet of an existing culvert on the north side of Patterson Pass Road. Approximately 10 cubic yards of clean rip-rap would be placed as an energy dissipator at the outfall to discharge clean stormwater at or below current rates into the existing drainage on the south side of Patterson Pass Road.

2.2.5 Site Security

The BESS facility site would be enclosed with an 8-foot tall chain link fence topped with 1 foot of three-strand barbed wire or razor wire. The fence would be installed on the outside of the perimeter road. An additional fence with the same specifications would be installed around the project substation area. The fences would be required to prevent unauthorized access and to comply with human health and safety regulations. Gates would be installed at various access points along the fence lines and equipped with lock boxes to allow for authorized personnel (e.g., transmission service provider, O&M staff, emergency response) to access appropriate portions of the BESS facility site.

Lighting would only be in areas where it is required for safety, security, or operations. Low-elevation (less than 14 feet) controlled security lighting would be installed at the project substation and around the BESS yards, in accordance with applicable requirements and regulations. Permanent motion-sensitive, directional security lights would be installed to provide adequate illumination around the substation area and points of ingress/egress. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties, compliant with applicable codes and regulations. Security cameras would be placed on site and monitored 24/7.

2.2.6 Fire Protection System

Fire protection would include multiple fire detection systems on-site and within the individual BESS enclosures. An infrared camera system would be installed throughout the BESS facility to achieve 100% of electrical infrastructure and trigger an alarm in case of an onsite fire. Each BESS enclosure would have a fire rating in conformance with the California Fire Code 2022. In addition, each BESS enclosure would contain an onboard BMS that monitors the appropriate state of individual battery cells and relays information 24-7. In the event of an anomaly, the system is designed to shut down and mitigate the hazard.

The Project's fire protection design would comply with California Fire Code 2022, Section 1207 Electrical Energy Storage Systems, which adopts the National Fire Protection Association's Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). BESS enclosures would be Underwriters Laboratories (UL) listed, tested, and certified to the most rigorous international safety standards. UL independently tests equipment for compliance with the latest fire safety code requirements, and the methods were developed to minimize fire risk and safety concerns about battery storage equipment raised by fire departments and building officials in the United States.

Faults, mechanical damage, or manufacturing defects in lithium-ion batteries can cause thermal runaway, which can lead to fires or other hazards. Should a thermal runaway event occur, the BESS

enclosures are designed and constructed in such a way that fire would not propagate from one enclosure to a neighboring enclosure. The Project's BESS enclosures, as part of the testing and listing process, would be subjected to destructive testing including fire testing. The Project's BESS enclosures would include the following UL certifications:

- UL 1642 – Standard for Lithium Batteries (cell level certification).
- UL 1973 – Standard for Batteries for Use in Stationary Applications (module level certification).
- UL 9540 – Standard for Energy Storage Systems and Equipment (system level certification).
- UL 9540A – Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.
- IEC 62619 – Standard for Battery Safety in Stationary Applications.

The California Department of Forestry and Fire Protection (CAL FIRE) would review and comment on the facility fire protection plans.

2.2.7 Operations and Maintenance Building

Following construction of the BESS facility, an O&M building would be constructed within the primary laydown yard for the Project's anticipated three full-time operations staff. The O&M building would include parking, outside equipment and laydown areas, basic offices, meeting rooms, washroom facilities and climate-controlled storage for certain equipment and materials. A potable water storage tank would provide water for washroom and sanitary facilities, and sewage/wastewater would be collected in a separate tank. Potable water would be trucked to the water storage tank periodically during O&M, and sewage/wastewater would be pumped from the storage tank, transported offsite via truck, and disposed of at a sanitary dump station, as needed, during operations. The O&M building would be powered via a distribution line from the project substation.

2.2.8 Transmission and Interconnection Description, Design, and Operation

The Project would be interconnected to the regional electrical transmission grid via an approximately 2,884-foot long new single-circuit 500kV gen-tie line within a 200-foot wide corridor between the project substation and the PG&E Tesla Substation. The Applicant would construct and own the portion of the gen-tie line between the project substation and the Point of Change of Ownership (POCO) transmission structure, and PG&E would construct and own the remaining portion of the gen-tie from the POCO to the POI within the Tesla Substation. The Project's transmission and interconnection facilities would include the following components:

- 500kV Gen-Tie Line including Transmission Structures and Conductors
- Fiber Optic Telecommunications Utility Poles and Fiber Optic Lines
- Access Paths
- Temporary Work Areas
- Interconnection Facilities within Existing PG&E Tesla Substation Footprint (PG&E constructed and owned)

The proposed route location was selected to minimize the number of existing utility crossings, cross existing utilities at the optimum locations, minimize the total gen-tie line length and number of transmission structures required, minimize the number of turning structures required, and enter the

Telsa Substation as close as possible to the POI. The proposed transmission structures were sited to avoid potential impacts to environmental resources. Project components associated with transmission and interconnection facilities are described in the following subsections. Figure 3 shows the gen-tie route, scattered rural residences, and existing transmission lines within one mile of the proposed route. No parks, recreational areas, or scenic areas are located within one mile of the proposed gen-tie route. Table 3 summarizes the preliminary dimensions of major transmission components, and Table 4 summarizes the preliminary new ground disturbance area associated with construction of the transmission and interconnection facilities.

Table 3. Preliminary Dimensions of Major Transmission Components

Component	Quantity	Approximate Dimensions
500kV Gen-Tie Line	1	Applicant Owned: 1,557ft long
		PG&E Owned: 1,327ft long
Substation Bay Dead-End Transmission Structure	2	Applicant Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within project substation area footprint
		PG&E Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within Tesla Substation footprint.
Angled Dead-End Transmission Structure	3	Applicant Owned: 2 structures; Up to 199ft above ground level; three nine foot diameter foundations, installed up to 40ft deep, per structure
		PG&E Owned: 1 structure; Up to 199ft above ground level; three nine foot diameter foundations, installed up to 40ft deep.
H-Frame Tangent Transmission Structure	1	Applicant Owned: Up to 199ft above ground level; two six-foot diameter foundations, installed up to 30ft deep.
Conductors	6	Two 2,300 kcmil 61W AAC “Pigweed” per phase. 30ft minimum ground clearance.
Overhead Shield Wire	2	Two 3/8in extra high strength 7-strand steel
Fiber Optic Utility Poles	16	Up to 40ft above ground level; up to 20in diameter wood poles direct embedded up to 8ft deep.
Fiber Optic Cables	2	All dielectric self-supporting fiber optic cable. Two redundant and diverse routes. Installed above ground on utility poles by Applicant from Project Substation to POCO. Installed by PG&E underground in trenches up to 2ft wide and 4ft deep between POCO and Tesla Substation.
Transmission Structure Access Path	1	Applicant Owned: 20ft wide; up to 1,750ft long
		PG&E Owned: 20ft wide; up to 950ft long
Transmission Line Corridor	1	200ft wide

Table 4. Approximate New Ground Disturbance Area Associated with Transmission and Interconnection Facilities

Component	Permanent Disturbance	Temporary Disturbance
Applicant Portion		
Transmission Structure Pads	0.4 acres	-
Transmission Structure Access Path	0.7 acres	-
Fiber Optic Utility Poles	0.1 acres	-
Tension and Pulling Site	-	3.6 acres
Applicant Total	*~1.2 acres*	*~3.6 acres*
PG&E Portion		
Transmission Structure Pad	0.2 acres	-
Transmission Structure Access Path	0.5 acres	-
Tension and Pulling Site	-	3.1 acres
PG&E Total	*~0.7 acres*	*~3.1 acres*

2.2.9 500kV Gen-Tie Line

The 500kv gen-tie line would originate at the project substation within the BESS facility site and extend southeast, crossing Patterson Pass Rd overhead until reaching the POCO structure. After reaching the POCO structure the route would proceed east to an angled dead-end structure outside of the Tesla Substation fence line before extending north to a new substation dead-end structure at the POI bay within the Tesla Substation footprint. The 200-foot-wide transmission corridor would be within the BESS facility lease area on APN 99B-7890-2-4 and within an easement on APN 99B-7890-2-6 until reaching the parcel's eastern boundary about 255 feet east of the POCO structure. Both parcels comprising the BESS facility lease area and transmission corridor easement are private lands owned by the same landowner. After crossing the eastern boundary of APN 99B-7890-2-6, the remaining portion of the gen-tie would be on the same PG&E-owned parcel that includes the 500kV Tesla Substation and POI. Table 3 includes the approximate number and dimensions of the three different types of transmission structures that would be used. The gen-tie would be designed consistent with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006), where feasible.

2.2.10 Transmission Structure Access Path

A transmission structure access path would be located within portions of the transmission corridor outside of the BESS facility and Tesla Substation footprints and generally follow the centerline of the gen-tie. The portion of the transmission structure access path between Patterson Pass Road and the POCO structure would include a dry crossing of Patterson Run and require clean fill material (e.g., large cobbles, clean, native gravel, prefabricated mats) to be placed beneath the ordinary high water mark elevation for stabilization and erosion and sedimentation control.

2.2.11 Telecommunication Facilities

Telecommunications equipment would be installed between the control building at the project substation and the Tesla Substation to facilitate communication with PG&E/CAISO facilities. PG&E interconnection policies require two redundant fiber optic cables to be installed on diverse paths without a single point of failure (i.e., both fiber optic lines cannot be installed on a single set of structures). Between the control building within the project substation area and the POCO structure, the Applicant would install the two fiber optic lines above ground on separate utility structures within

the transmission corridor. One route would be installed near the northern boundary of the transmission corridor and the other would be installed near the southern boundary of the transmission corridor. The fiber optic utility poles would be accessed via overland travel from the transmission structure pads or the transmission structure access path. At the POCO structure, each of the fiber optic cables would be brought down to an underground pullbox. PG&E would install the fiber optic cables underground from the pull boxes to the PG&E control building at the Tesla Substation. A microwave antenna installed on a communications tower within the project substation area, an optical ground wire installed on the 500kV structures, or placed underground within the transmission structure access path, between the project substation and POCO may be used in lieu of a second set of utility poles, if feasible.

2.2.12 Interconnection Facilities within Existing PG&E Tesla Substation Footprint

To facilitate interconnection of the BESS facility to the electric transmission grid, PG&E would need to install a substation bay dead-end transmission structure and expand the POI's 500kV breaker-and-a-half bay with a new circuit breaker.

2.2.13 Transmission System Impact Studies

The Applicant filed an Interconnection Request with CAISO in the Cluster 13 Interconnection Request window. CAISO, in cooperation with PG&E, prepared the Phase I Interconnection Study (February 12, 2021), and Phase II Interconnection Study (November 22, 2021). The Applicant entered into a Large Generator Interconnection Agreement (LGIA) with CAISO and PG&E on October 31, 2022. No Affected Systems controlled by CAISO or PG&E were identified during the interconnection study process. Non-CAISO systems potentially affected by the Project and other Cluster 13 projects are Western Area Power Administration and Modesto Irrigation District. The Applicant is working with both system operators to identify specific impacts and will take all reasonable steps to address potential reliability system impacts prior to the initial synchronization of the Project.

2.2.14 Construction

The following sections detail the approximate construction schedule and workforce, construction activities, estimated water use, and materials handling proposed by the Project.

2.2.14.1 SCHEDULE AND WORKFORCE

The Project is anticipated to be built over an approximately 18-month period from the onset of site preparation activities through energization. Following energization, testing and commissioning would take place over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q1 2026 and testing and commissioning is anticipated to conclude no later than Q2 2028. It is anticipated that construction crews would work 8 to 10 hours per day, with work occurring Monday through Friday. Overtime, night work, and weekend work would be used only as necessary to meet the project schedule or complete time-sensitive or safety critical work. All work schedules would comply with applicable California labor laws, county regulations, and the Project Labor Agreement. Estimated durations of construction activities are presented in Table 5. However, the duration of particular construction activities may be affected by weather, unanticipated site conditions, the supply chain, and coordination between the different activities.

The expected average workforce for each construction activity is also included in Table 5.

Table 5. Estimated Construction Activity Duration and Average Workforce Expected

Construction Activity	Estimated Duration	Average Workforce Expected (Number of Employees)
Site Preparation	8 Weeks	25
Civil Work and Grading	24 Weeks	55
Foundations and Underground Equipment	16 Weeks	50
BESS Equipment Installation	20 Weeks	60
Project Substation Installation	32 Weeks	20
Gen-Tie Foundations and Structure Erection	8 Weeks	10
Gen-Tie Line Stringing and Pulling	2 Weeks	10
Testing and Commissioning	22 Weeks	10
PG&E Interconnection Facility Upgrades within Tesla Substation	26 Weeks	10

2.2.14.2 SEQUENCING

During construction activities, multiple crews would be working on the site with various equipment and vehicles. The total number of construction workers (consisting of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel) would range from approximately 5 to 200 workers, depending on the phase of construction. It is estimated that construction would require the vehicle trips and equipment listed in Table 6.

Table 6. BESS Project - Construction Equipment and Usage Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site Preparation	50	10	600	Graders	2	8
				Rubber Tired Loaders	2	8
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
Site Grading and Civil Work	110	76	30,240	Graders	4	8
				Rollers	4	8
				Rubber Tired Loaders	4	8
				Skid Steer Loaders	4	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Tractors/Loaders/ Backhoes	4	8
				Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	1	8
				Cement and Mortar Mixers	1	4
				Rock Crushers	4	8
Foundations and Underground Equipment Installation*	100	10	20	Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	2	8
				Cement and Mortar Mixers	2	8
				Bore/Drill Rig	3	8
				Tractors/Loaders/ Backhoes	6	8
				Excavators	2	8
				Rubber Tired Dozers	2	8
				Trenchers	4	8
				Skid Steer Loaders	2	8
BESS Installation*	160	20	2,636	Air Compressors	2	8
				Cranes	3	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
Project Substation Installation	40	20	0	Air Compressors	2	8
				Aerial Lifts	6	8
				Cranes	2	8
				Generator Sets	2	8
				Rough Terrain Forklifts	2	8
Gen-tie foundation and tower erection	28	2	0	Bore/Drill Rig	1	8
				Cranes	2	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Forklifts	2	8
				Boom Truck	1	8
				Flat Bed Truck	1	8
				Cement and Morter Mixer	1	8
				Bucket Lift Truck	1	8
Gen-tie stringing and pulling	24	2	0	Heavy-duty Truck (Puller)	1	8
				Heavy-duty Truck (Tensioner)	1	8
				Forklifts	2	8
				Generator Sets	2	8
				Tractors/Loaders/ Backhoes	2	8
				Boom Truck	1	8
				Trencher	1	8
PG&E Interconnection Facility Upgrades	40	20	0	Air Compressors	4	8
				Cranes	2	8
				Excavators	2	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
				Trencher	1	8
Testing and Commissioning	52	0	0	Rough Terrain Forklift	1	8
				Off-Highway Trucks	3	8
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8
				Cranes	2	8
				Rubber Tired Dozers	2	8
				Tractors/Loaders/ Backhoes	2	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours

Notes: * The project layout depicted in Figure 3 shows the "End of Life" configuration of the BESS, meaning it shows the equipment layout after all augmentation units are implemented. The numbers in this table conservatively assume that foundations and BESS equipment installation related to augmentation occurs during initial construction of the facility. Construction of foundations and BESS equipment installation for augmentation may occur during O&M periodically within the BESS facility footprint.

2.2.14.3 SITE PREPARATION

Environmental clearance surveys would be performed at the Project site prior to commencement of construction activities. The limits of construction disturbance areas delineated in the final approved engineering design packages would be surveyed and staked. Initial ground disturbing activities in preparation for construction would include installation of erosion and sediment control measures prior to start of major earthworks activities. Rough grading and grubbing/vegetation removal would be performed where required to accommodate site drainage and allow construction equipment to access the site. Detention basins and stormwater facilities would be created for hydrologic control. The construction contractor would be required to incorporate applicable best management practices (BMPs) including the guidelines provided in the California Stormwater Quality Association's Construction BMP Handbook (CASQA 2019), as well as a soil erosion and sedimentation control plan to reduce potential impacts related to construction of the proposed Project. Stabilized construction entrances and exits would be installed at driveways to reduce tracking of sediment onto adjacent public roadways.

Site preparation would be consistent with applicable BMPs and the Bay Area Air Quality Management District's Fugitive Dust Rules. Site preparation would involve the removal and proper disposal of existing debris that would unduly interfere with Project construction or the health and safety of on-site personnel. Dust-minimizing techniques would be employed, such as placement of wind control fencing, application of water, and application of dust suppressants. All applicable governmental requirements and BMPs would be incorporated into the construction activities for the Project site.

Vegetation on the site would be removed where necessary to ensure the BESS facility is free from combustible vegetation to allow for fire protection and defensible space. Where feasible, in compliance with fire protection requirements, vegetation root mass within appropriate portions of the BESS facility lease area on the outside of the perimeter and substation access roads would be left in place for soil stabilization. However, the environmental analyses in subsequent sections conservatively assume that all areas within the maximum anticipated grading limits of the BESS facility would be permanently disturbed.

2.2.14.4 SITE GRADING AND CIVIL WORK

Following site preparation activities, grading and civil work would commence. Construction activities during this phase would include excavation and grading of the Project site. Earthwork on the site is ultimately anticipated to result in nearly balanced cut and fill volumes, but the preliminary designs conservatively assume that grading would include up to approximately 588,018 cubic yards (cy) of cut and up to approximately 344,900 cy of fill, resulting in up to approximately 243,118 cy of export material. As appropriate, all, or a portion of, of the Project's excess material resulting from earthwork may be used beneficially used on-site for the construction of berms or other onsite needs. Where appropriate, excess material would be processed in one or more different types of rock crushing equipment depending on the requirements of the various potential beneficial uses onsite. Blasting may be required if large boulders are encountered during excavation and grading.

Conventional grading would be performed throughout the Project site but minimized to the maximum extent feasible to reduce unnecessary soil movement that may result in dust. Land-leveling equipment, such as a smooth steel drum roller, would be used to even the ground surface and compact the upper layer of soil to a value recommended by a geotechnical engineer for structural support. Following major civil work within the BESS facility site, site access roads and driveways, the perimeter and substation access roads, and interior roadways to access the laydown areas and BESS yards would be graded, compacted, and surfaced with gravel or aggregate. Class II road base would be imported to create necessary compaction under the equipment, as determined by geotechnical testing and Project specifications. Once the roadways have been constructed, the project perimeter fence and access gates would be constructed.

2.2.14.5 FOUNDATIONS AND UNDERGROUND EQUIPMENT INSTALLATION

Following completion of major site grading and civil work, equipment foundations and below grade equipment would be installed. A grounding grid and underground conduit would be installed below grade beneath the project substation area and BESS components. Typical ground grids consist of direct-buried copper conductors with copper-clad ground rods arranged in a grid pattern. After installation of the grounding grid, the area would be backfilled, compacted, and leveled followed by application of an aggregate rock base. A containment area within the MPT foundations would be sized to hold the full volume of oil within the MPTs. The MPT foundations within the substation area are anticipated to be concrete slab foundations poured into excavations up to 10 feet deep. Foundations for the control building, static masts, other aboveground substation equipment, O&M building, BESS enclosures, PCS units, DC/DC converters, and BESS auxiliary transformers and panels are anticipated to be pile foundations embedded up to 40 feet below ground level. Depending on soil conditions, the piles may be drilled or driven and set with a slurry. However, some of these project components may be installed on concrete slab foundations depending on the geotechnical conditions at the final locations.

Additional underground work would include trenching for the placement of underground electrical and communications lines, including the MV collection system, AC and DC cables, and fire alarm cable. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application.

2.2.14.6 BESS AND PROJECT SUBSTATION EQUIPMENT INSTALLATION

Where possible, major equipment would be delivered directly to its permanent location and offloaded directly into place with a crane or heavy equipment. Where staging or sequencing does not allow, equipment would be stored at one of the laydown areas near its permanent location and installed at a later date. Major aboveground equipment would be the MPTs and other project substation components, control building, BESS enclosures, PCS units, DC/DC converters, BESS auxiliary transformers and panels, and O&M building.

Electrical work would include installing cables, terminations, and splices. Electrical wiring would be installed underground, at-grade, and above ground, depending on the application and location. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application.

2.2.14.7 GEN-TIE STRUCTURE ERECTION

Environmental clearance surveys would be performed within the gen-tie corridor prior to commencement of construction activities. The gen-tie corridor boundaries, gen-tie centerline, telecommunications route centerlines, and transmission structure access path would be surveyed and flagged. Initial activities would include the installation of erosion and sediment control measures and materials to facilitate the dry crossing of Patterson Run, and preparation of the transmission structure and fiber optic utility pole work areas. The transmission structure access path may be bladed, compacted, and surfaced with gravel where necessary to facilitate transmission structure deliveries and construction equipment access. The surface of the access path would be at-grade to allow water to sheet flow across the gen-tie corridor, as it currently does. Access to the fiber optic

utility pole locations would be via overland travel from the transmission structure pads or access path. Overland travel and temporary construction activities associated with the gen-tie and telecommunications facilities may occur anywhere within the 200-foot-wide transmission corridor and 50 feet on either side of the transmission corridor boundary. Vegetation at the transmission and fiber optic utility pole work areas would be trimmed, mowed, or removed. At locations where gen-tie line structures and fiber optic utility poles would be installed, minor cuts may be required where the foundation would be installed.

Cast-in-place concrete foundations would be installed by placing reinforcing steel and a structure stub or anchor bolt cage into the foundation hole, positioning the stub, and encasing it in concrete. Each transmission structure foundation would be set on anchor bolts on top of the foundation with cranes. Fiber optic utility poles would be direct embedded in holes up to 8 feet deep. Holes would be excavated using a truck-mounted drill rig or standalone auger rig. Poles would be delivered on a flat-bed trailer and hoisted into place with a crane. The annular space between the poles and holes would be backfilled with concrete or soil. Excavated spoil material not used for backfilling would be spread around the structure work areas.

2.2.14.8 GEN-TIE STRINGING AND PULLING

Conductors would be strung between transmission structures with heavy duty trucks and a telescoping boom lift. Cables would be pulled through one segment of the transmission line at a time. To pull cables, truck-mounted cable-pulling equipment is placed alongside the first and last towers or poles in a segment. Power pulling equipment is used at the front end of the segment, while power braking or tensioning equipment is used at the back end. The conductors are then pulled through the segment and attached to the insulators. Equipment is then moved to the next segment; the front end pull site previously used becomes the back end pull site for the next segment. After conductors have been pulled into place in a section, the conductor tension is increased to achieve a ground clearance of at least 30 feet prior to moving to the next section.

Three tension and pulling sites are anticipated to facilitate construction of the gen-tie: one within the BESS facility footprint near the first angled dead-end structure, one at the POCO structure, and another at the PG&E-constructed angled dead-end structure near the Tesla Substation fence line.

2.2.14.9 PG&E-OWNED GEN-TIE SEGMENT AND INTERCONNECTION FACILITIES WITHIN TESLA SUBSTATION FOOTPRINT

PG&E would construct the segment of the gen-tie between the POCO and the POI within the Tesla Substation, and the fiber optic routes between the POCO and the PG&E control building within the Tesla Substation footprint. The Applicant would bring the fiber optic cables to underground pull boxes at the POCO structure, and PG&E would install the segment of the fiber optic cables between the POCO and control building in conduit placed in underground trenches. The trenches are anticipated to be up to three feet wide, and the trenches for the redundant routes would need to be at least 10 feet apart to meet PG&E's diverse path requirements. It is anticipated that PG&E would install the trenches within the access road to the angled dead-end structure outside the Tesla Substation fence line. However, PG&E may install the cables within existing roadways or other pre-disturbed areas along the perimeter of the substation fence depending on final design and routing.

PG&E would also construct the interconnection upgrades within the Tesla Substation footprint at the POI. These upgrades would include erection of a new substation bay dead-end transmission structure and expanding the POI's existing 500kV substation bay-and-a-half bay with a new circuit breaker. Other activities within the Tesla Substation footprint and/or property boundary may include relocation or modification of existing PG&E infrastructure. Additional potential disturbance acreage associated with PG&E's work to facilitate interconnection of the Project to the grid are not anticipated to exceed 5 additional acres of disturbance beyond the estimates in Table 4.

2.2.14.10 CONSTRUCTION WATER USE

During construction, an estimated 16,000,000 million gallons (~49.1 acre-feet) of untreated water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Dust-control water may be used during ingress and egress of on-site construction vehicle equipment traffic and during the construction of the Project. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers. Construction water is anticipated to be purchased from a local water purveyor and trucked to the site.

2.2.14.11 SOLID AND NON-HAZARDOUS WASTE

The Project would produce a small amount of solid waste from construction activities. This may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. This waste would be segregated, where practical, for recycling. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III (non-hazardous waste) landfill.

2.2.14.12 HAZARDOUS MATERIALS

The hazardous materials used for construction would be typical of most construction Projects of this type. Materials may include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliatives, herbicides, and welding materials/supplies. A hazardous materials business plan would be prepared prior to commencement of construction activities. The hazardous materials business plan would include a complete list of all materials used on site and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, material safety data sheets for all applicable materials present at the site would be made readily available to on-site personnel.

2.2.14.13 HAZARDOUS WASTE

Small quantities of hazardous waste would most likely be generated over the course of construction. This waste may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Workers would be trained to properly identify and handle all hazardous materials. Hazardous waste would be either recycled or disposed of at a permitted and licensed treatment, recycling, or disposal facility in accordance with law. All hazardous waste shipped off site would be transported by a licensed hazardous waste hauler.

2.2.15 Commissioning

As part of Project construction activities, and after installation, equipment will be tested and commissioned. Commissioning work will be completed by qualified personnel, and in accordance with various codes, standards and specifications including Institute of Electrical and Electronic Engineers, National Electrical Code (NFPA 70), International Electrical Testing Association, specific provisions of National Fire Protection Association, and the relevant manufacturers installation and commissioning manuals. Documentation necessary for commissioning will include (but is not limited to) complete sets of electrical plans, itemized equipment descriptions, control narratives, and other procedural requirement such as persons or entities to notify when equipment has become available for acceptance tests.

Commissioning will include testing of mechanical, electrical, fire protection, and other systems at substantial completion. Systems to be commissioned and tested include (but are not limited to) BESS enclosures, PCS units, auxiliar service transformers, MV collection system, DC cables, Supervisory Control and Data Acquisition (SCADA) systems, power backup systems, and fire

protection system. Performance testing will also be completed to ensure charge and discharge performance of the systems as designed and in accordance with the utility requirements. Full details of the commissioning activities will be made available in a commissioning plan, prepared by the BESS supplier and construction contractor and reviewed by the Engineer of Record, as part of the construction documentation package.

2.2.16 Operations and Maintenance

Once constructed, the Project would operate 7 days per week, 365 days per year. The facility would be remotely monitored by the original equipment manufacturer or an affiliated company. Project operations would be monitored remotely through the SCADA system and by the Project's anticipated three full-time operations staff members.

Onsite maintenance would be required, which would include replacement of inverter power modules, filters, and miscellaneous electrical repairs on an as-needed basis. During operation of the project substation, O&M staff would visit the substation periodically for switching and other operation activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity, and standard preventative maintenance. Typically, one major maintenance inspection would take place annually.

Batteries within utility-scale BESS facilities degrade with use over time, leading to a loss of capacity. To maintain the Project's capacity in compliance with interconnection requirements and commercial contracts, periodic augmentation by installing new batteries and related equipment within the Project site would occur to maintain the capacity over an approximate 35-year life. Augmentation would include constructing new foundations, installing BESS equipment on the foundations, and completing electrical work within the existing Project footprint. The preliminary site layout depicted on Figure 3 shows an "end of life" configuration, meaning it shows the equipment layout after all augmentation units are implemented. The construction sequencing and equipment usage assumptions in Tables 3 and 4 above, and environmental analyses in subsequent Chapters, conservatively assume that all initial BESS equipment and augmentation BESS equipment are constructed at the same time.

2.2.16.1 Solid and Nonhazardous Waste

The Project will produce a small amount of waste associated with maintenance activities, which could include broken and rusted metal, defective or malfunctioning electrical materials, empty containers, and other miscellaneous solid waste, including typical refuse generated by workers. Most of these materials would be collected and delivered back to the manufacturer or to recyclers. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

2.2.16.2 Hazardous Materials

Limited amounts of hazardous materials would be stored or used on the site during operations, including diesel fuel, gasoline, and motor oil for vehicles; mineral oil to be sealed within the transformers; and lead-acid-based batteries for emergency backup. Appropriate spill containment and cleanup kits would be maintained during operation of the Project. A spill prevention control and countermeasures plan would be developed for site operations.

2.2.16.3 Hazardous Waste

Fuels and lubricants used in operations would be subject to the spill prevention control and countermeasures plan to be prepared for the proposed Project. Solid waste, if generated during operations, would be subject to the material disposal and solid waste management plan to be prepared for the proposed Project.

2.2.16.4 DECOMMISSIONING

In general, the BESS would be recycled at the expiration of the Project's life (estimated to be 35 years). Most parts of the proposed system are recyclable. Batteries include lithium-ion, which degrades but can be recycled or repurposed. Steel, wood, and concrete from the decommissioned facilities would be recycled. Metal and scrap equipment and parts that do not have free-flowing oil may be sent for salvage. Materials three feet or more below the ground surface would be left in place.

Fuel, hydraulic fluids, and oils would be transferred directly to a tanker truck from the respective tanks and vessels. Storage tanks and vessels would be rinsed and transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as smaller container lubricants, paints, thinners, solvents, cleaners, batteries, and sealants, would be kept in a locked utility structure with integral secondary containment that meets Certified Unified Program Agencies and Resource Conservation and Recovery Act requirements for hazardous waste storage until removal for proper disposal and recycling. It is anticipated that all oils and batteries would be recycled at an appropriate facility. Site personnel involved in handling these materials would be trained to properly handle them. Containers used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Additional procedures would be specified in a Hazardous Materials Business Plan closure plan submitted to the Certified Unified Program Agencies. Transportation of the removed hazardous materials would comply with regulations for transporting hazardous materials, including those set by the Department of Transportation, the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, California Highway Patrol, and California State Fire Marshal.

2.3 Existing Environmental Conditions

The Project site is relatively flat, with an approximate elevation of 383 to 523 feet at mean sea level. According to the US Department of Agriculture (USDA) Natural Resources Conservation Service, three soil types are present: Linne clay loam, 3% to 15% slopes (65.65 acres); Linne clay loam, 15% to 30% slopes, MLRA 15 (2.80 acres); and Rincon clay loam, 0% to 3% slopes (19.75 acres) (USDA 2024). The Linne series consists of moderately deep, well drained soils that formed in material from soft shale and sandstone. The Rincon series consists of deep, well drained soils that formed in alluvium from sedimentary rock. None of the three soil types mapped on site are included on the USDA list of hydric soils (USDA 2023) commonly associated with wetlands or other waters.

The Project site occurs within the North Diablo Range of the Alameda Creek Watershed (USGS 2023). According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), there are several freshwater ponds, freshwater wetlands, and riverine aquatic features in the vicinity of the Project (USFWS 2023a; Appendix B). The NWI is based on coarse aerial mapping and does not involve ground-truthing. The national hydrography dataset shows Patterson Run and one other drainage crossing the Project site from south to north. Patterson Run is an ephemeral stream system that runs parallel to Patterson Road adjacent to the Project site, flows in a northerly direction, and eventually terminates approximately 2.3 miles northeast of the Project site in agricultural land just north of the Delta Mendota Canal. Patterson Run is classified in the NWI as a freshwater emergent wetland (USFWS 2023a). The second drainage is classified by the NWI as freshwater emergent wetland (USFWS 2023a), however, there is no physical evidence of this drainage within the Project site either on aerial imagery or when surveyed on the ground.

2.3.1 Climate

The Project site is within a Mediterranean climate where annual temperatures range from 38.3 degrees Fahrenheit (°F) to 92.6°F (WRCC 2023). According to the Tracy Pumping Plant (049001) Weather Station Gauge, yearly precipitation averages 12.03 inches, with the highest average rainfall recorded in January (2.54 inches) (WRCC 2023). The past winter season has had higher than average rainfall.

2.3.2 Potential Jurisdictional Features

A preliminary wetland assessment was conducted during the reconnaissance survey on August 2, 2023, to generally identify and coarsely map aquatic resources that may require further protocol jurisdictional delineations. Dudek then conducted a complete aquatic resources delineation concurrent with the reconnaissance-level biological field survey on January 18, 2024, to identify and map the extent of aquatic resources within the entire Project site that are potentially subject to regulation under federal Clean Water Act Sections 401 and 404, CFGC Section 1602, or under the Porter-Cologne Act.

There is one seasonal channel (EPH-01; 0.37 acre, 846.07 linear feet), Patterson Run, within the Project site where the BESS facility site connects to the gen-tie alignment, paralleling Patterson Pass Road (Figure 4). This seasonal channel flows southwest to northeast. The channel had moderate flow during the March 2023 and January 2024 surveys and was dry during the May and August 2023 surveys.

2.3.3 Vegetation

Vegetation communities are based on descriptions provided in Manual of California Vegetation. One vegetation community occurs in the Project site, Wild oats and annual brome grassland (*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance) (CNPS 2023a). This community, often referred to as California annual grassland, is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). The herbaceous layer is less than 1.2 meters in height and cover is open to continuous (CNPS 2023). Annual grassland covers the entire Project site outside of the aquatic features (88.24 acres).

Protocol-level rare plant surveys were conducted on May 16, 2023, August 2, 2023, January 18, 2024, April 15, 2024, May 3, 2024, and May 24, 2024, to identify special-status rare plant species within the updated Project site boundaries. Dudek qualified biologists surveyed the entire Project site on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated project boundaries and gen-tie alignment. Rare plants surveys were conducted in accordance with the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the CNPS Botanical Survey Guidelines (CNPS 2001). Three individuals of big tarplant (*Blepharizonia plumosa*) were observed during protocol-level botanical surveys conducted on August 2, 2023.

Big tarplant is an annual herb that endemic to California, with limited distribution throughout the state. This species has a California Rare Plant Rank rank of 1B.1 (rare, threatened or endangered in California and elsewhere), and is a covered species under the East Alameda County Conservation Strategy (EACCS). This species prefers habitats in valley grassland vegetation communities, as well as in foothill woodlands and chaparral (Calflora 2023). Threats to this species include urbanization, disking, residential development, and encroachment by non-native plant species (CNPS 2023b). All three individuals are located near the southwest corner of the PG&E substation in an area of sparse grassland that shows evidence of drainage patterns from the surrounding hills, including cracked soils, reduced grass cover and increased scrub species cover, and increased bare ground.

2.4 Conservation Measures Incorporated into the Project

The Project has been designed to minimize its footprint and thereby minimize disturbance of habitat. In addition, the Project will adhere to applicable Avoidance and Minimization Measures (AMMs) directly from the EACCS and the Programmatic Biological Opinion for the EACCS (USFWS 2012). These approaches to address the potential impacts of Project activities are described in Chapter 5.

Chapter 3. Project Impacts to Special-Status Species

This effects analysis evaluates the potential direct and indirect effects of Project activities on California tiger salamander, golden eagle, San Joaquin kit fox, and tricolored blackbird and their habitats compared to current baseline conditions. Direct effects are the immediate effects of the construction activities on these species or their habitats. Indirect effects occur later in time and may occur outside of the construction area but are reasonably certain to occur.

3.1 California Tiger Salamander

3.1.1 Distribution, Biology, and Habitat Requirements

The Central California DPS of California tiger salamander is federally listed as threatened. This species is a large, stocky, terrestrial salamander with a broad, rounded snout. Total body length of adults range from 6 to 9.5 inches and coloration consists of randomly occurring white or yellow spots on an all-black body (USFWS 2017). Larvae coloration is variable, with a majority being pale and sometimes having dark grey spots.

The California tiger salamander Central California DPS is restricted to disjunct populations that form a ring along the foothills of the Central Valley and Inner Coast Range from San Luis Obispo, Kern, and Tulare Counties in the south, to Sacramento and Yolo Counties in the north. The recovery priority number for the California tiger salamander Central California DPS is 9C, which indicates that the DPS faces a moderate degree of threat, has a high potential for recovery, and is in conflict with development projects, such as conversion to agriculture or urban development.

This species is found in annual grassland, valley-foothill hardwood, and valley-foothill riparian habitats and breeds in vernal pools, ephemeral pools, stock ponds, and (infrequently) along streams and human-made water bodies if predatory fishes are absent. This species has an obligate biphasic life cycle where it utilizes both aquatic habitats as larvae and terrestrial habitats as adults. Although larvae develop in the ponds and wetlands where they hatch, once an individual undergoes metamorphosis, it will leave its natal pond and enters a burrow or other upland refugia, and then spend most its life underground, generally only returning to aquatic habitats to breed. Adult California tiger salamander engage in mass migrations during a few rainy nights per year, typically from November through April, although migrating adults have been observed as early as October and as late as May. During these rain events, adults will travel overland to breeding ponds at night to mate before returning to their underground burrows. Males typically arrive before the females and generally remain in the ponds longer than females (USFWS 2017). This species has been documented to cover distances from 492 feet to 1.3 miles, traveling from breeding ponds to upland terrestrial habitat (Orloff 2011). On average, it is estimated that California tiger salamander migrate an average of 1,844 feet and could potentially migrate up to 1.5 miles each breeding season (Searcy and Shaffer 2011).

3.1.2 Occurrence of the California Tiger Salamander Central California Tiger Salamander in the Project Area

There are 209 California Natural Diversity Database (CNDDB) occurrences for California tiger salamander within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is approximately 1.6 miles southwest of the Project site from 2012 (Occ. No. 1003), but there are numerous other records within 5 miles of the Project site (CDFW 2024). The Project site also occurs within the EACCS Conservation Zone 10 or designated as “California tiger salamander North” and is a high priority for the EACCS for protecting a substantial portion of potential breeding ponds within this area (ICF 2010).

The habitat on the Project site is suitable upland refuge and dispersal habitat for this species, consisting of grassland with small mammal burrows. Two nearby stock ponds provide suitable aquatic breeding habitat approximately 0.3 miles from the Project site (Appendix B). No California tiger salamanders were observed during the field surveys, but this species is extremely difficult to detect without focused surveys in accordance with USFWS and CDFW-sanctioned protocols (USFWS 2003).

3.1.3 Potential for Take of the Central California Tiger Salamander

The Project could result in direct or indirect impacts on California tiger salamander. Direct impacts include mortality or injury from ground-disturbing activities, construction equipment, grading, or other construction activities; and permanent loss of potential upland and dispersal habitat within the construction footprint. These species are known to use burrows for refuge, which may be crushed by the weight of construction equipment, building supplies, or grading on the surface, even if the burrow is of sufficient depth to avoid direct excavation. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities. Indirect impacts include disturbance due to increased human activity and impacts to water quality from construction activities.

3.2 Golden Eagle

3.2.1 Distribution, Biology, and Habitat Requirements

Golden eagle is federally protected by the Bald and Golden Eagle Protection Act (BGEPA) and is a California fully protected species that is covered under the EACCS. This species nests and winters in hilly, open, or semi-open areas including shrublands, grasslands, pastures, riparian areas, mountain canyons, and open desert, constructing nests in large trees and cliffs in open areas.

3.2.2 Occurrence of the Golden Eagle in the Project Area

There are 14 CNDDB occurrences for golden eagle within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is approximately 4.9 miles south of the Project site from 2014, a record of a nest in a tower (Occ. No. 323; CDFW 2024). The Project site also occurs within the EACCS Conservation Zone 10 or designated as “Altamont Hills” and is a priority for the EACCS for protecting large areas of open grassland (ICF 2010).

The abundant grassland foraging habitat on the Project site is of moderate quality, with low-quality nesting habitat provided by transmission towers surrounding the site. No eagles were observed during the field surveys.

3.2.3 Potential for Take of the Golden Eagle

Construction activities, including grading and grubbing, near suitable nesting habitat (e.g., individual towers or trees) within the Project site or within 0.5 miles of the Project site could disturb an active nest. If trees or towers within 0.5 miles of the Project become occupied by nesting golden eagles prior to construction, then activities could alter nesting behaviors of adults such that eggs and young can be left alone for long periods of time, or even abandoned, resulting in harm or mortality to juveniles, nestlings, or fertile eggs. The Project does not anticipate potential take of golden eagle as no potential nesting habitat will be impacts and the Project site only provides marginal foraging habitat.

3.3 San Joaquin Kit Fox

3.3.1 Distribution, Biology, and Habitat Requirements

San Joaquin kit fox is federally listed as endangered. This species is a small, tan fox with a bushy black-tipped tail. They are the smallest foxes in North America, with an average body length of 20 inches and a weight of about 5 pounds. It has a narrow nose and a small, slim body. The foot pad of

kit foxes are small by comparison with other canids. The fox is specially adapted for its desert habitat because it's large, close-set ears help dissipate heat, keeping it cool in the hot desert (USFWS 2024).

Currently, they occur in some areas of suitable habitat within the San Joaquin Valley and in the surrounding foothills of the Coast Range, Sierra Nevada, and Tehachapi Mountains from Kern County north to Contra Costa, Alameda, and San Joaquin Counties. Historically, San Joaquin kit fox were believed to inhabit the area from Contra Costa and Jan Joaquin Counties in the north to Kern County in the south (USFWS 1998).

This species occurs in a variety of habitats, including grasslands; scrublands; vernal pool areas; alkali meadows and playas; and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands. They prefer habitats with loose textured soils that are suitable for digging, but they occur on virtually every soil type. Dens are generally located in open areas with grass and/or scattered brush, and seldom occur in areas with thick brush. They feed primarily on small mammals, including California ground squirrels, rabbits, mice, kangaroo rats, and have been known to prey on ground-nesting birds, reptiles, and insects (USFWS 1998).

3.3.2 Occurrence of the San Joaquin Kit Fox in the Project Area

There are 44 CNDDB occurrences for San Joaquin kit fox within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is approximately 0.3 miles southwest of the Project site, a historical record from 1984 (Occ. No. 6); multiple other historical records are within 5 miles of the Project site, all prior to 1992 (CDFW 2024). The Project site also falls within the EACCS Conservation Zone 10 for San Joaquin kit fox or "San Joaquin kit fox East." EACCS indicates this area likely supports connectivity through the Altamont Hills for SJKF but connectivity across I-580 has been compromised by infrastructure development (ICF 2010).

The habitat on the Project site is moderate-quality annual grassland for San Joaquin kit fox. Focused burrow surveys were conducted on May 16 and August 2, 2023, and January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated Project site boundaries, including for San Joaquin kit fox. Several large burrow tailings were observed on the eastern side of the Project site along Patterson Pass Road, evidence of highly suitable soils for burrowing. No San Joaquin kit foxes were observed during the field surveys.

3.3.3 Potential for Take of the San Joaquin Kit Fox

The Project site occurs within the range of the species and may directly and indirectly impact potential dispersal and migration habitat for San Joaquin kit fox. The Project will have temporary and permanent impacts to potential dispersal and migration habitat; however, these impacts are considered minimal as the Project site is within the northern limits of their dispersal or migration boundary. There are no permanent or temporary impacts to potential breeding or denning habitat within the Project site. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

3.4 Tricolored Blackbird

3.4.1 Distribution, Biology, and Habitat Requirements

Tricolored blackbird (nesting colony) is state threatened and a California Species of Special Concern that is covered under the EACCS. This species was observed during the field survey on January 18, 2024, foraging in the grassland within the gen-tie buffer area. Tricolored blackbird nests colonially near freshwater, often in emergent wetlands of cattail or tule, but will also nest in dense, thorny vegetation such as Himalayan blackberry (*Rubus armenicus*) or thistles (*Cirsium* spp., *Silybum* spp., etc.). They forage in grasslands, woodlands, and in agricultural areas.

3.4.2 Occurrence of the Tricolored Blackbird in the Project Area

There are 21 CNDDB occurrences for tricolored blackbird within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is 1.8 miles east of the Project site, a historical record from 1998 (Occ. No. 418), and several other occurrences are recorded within 5 miles of the Project site as recently as 2015 (CDFW 2024). The Project site also occurs within the EACCS Conservation Zone 10 or designated as “Altamont Hills” and is a priority for the EACCS for protecting large areas of open grassland (ICF 2010).

Although this species was observed foraging on the Project site, it is unlikely to form a nesting colony as there is no suitable nesting habitat present. Low-quality wetland habitat is present at a stock pond approximately 0.5 miles west of the BESS area, but this is likely too small to sustain a nesting colony.

3.4.3 Potential for Take of the Tricolored Blackbird

Construction activities, including grading and grubbing, would not cause direct impacts to tricolored blackbird but would cause permanent loss of potential foraging habitat within the construction footprint.

Chapter 4. Project Impact on Continued Existence of the California Tiger Salamander

4.1 Jeopardy Analysis for California Tiger Salamander

The *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (USFWS 2017) and the *5-Year Review, California Tiger Salamander, Central California Distinct Population Segment (Ambystoma californiense)* (USFWS 2023b) states that virtually nothing is known concerning the historical abundance of the Central California tiger salamander. The available data suggest that most extant populations consist of relatively small numbers of breeding adults, in the range of a few to a few dozen pairs, and that populations that number above 100 breeding individuals are rare. California tiger salamanders also exhibit high year-to-year variation in survey counts. Studies show high variability in numbers of breeding adults observed, as well as numbers of larvae produced in a given year; and large annual variation in breeding activity by Central California tiger salamanders has been reported in Alameda County. Also, in some cases, the CNDDB lists California tiger salamander as "presumed extant," but that information may now be incorrect because the California tiger salamander and/or their breeding habitat at that location may have been extirpated by development.

The USFWS determined that there was a 20.7% loss of known Central California tiger salamander occurrences as of 2002 because of habitat loss and degradation (USFWS 2017).

4.1.1 Potential Project Impacts

Project activities will result in 59.6 acres of permanent impacts and 6.7 acres of temporary impacts to California tiger salamander upland and dispersal habitat associated with the grassland vegetation community. There is no suitable aquatic habitat present within the Project site. Therefore, the Project will not jeopardize the continued existence of the species.

4.1.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to California tiger salamander are minimized. Potential Project effects to this species would be direct temporary and permanent effects associated with dispersal and upland habitat only. Because the Project does not have any temporary or permanent effects to breeding habitat for this species, along with the implementation of AMMs, the Project is not expected to have a measurable effect on the local and regional population of these species and is therefore not cumulatively considerable.

4.2 Jeopardy Analysis for Golden Eagle

The EACCS states that the primary existing threats to golden eagle survival throughout its range include loss or alteration of both foraging and nesting habitat (ICF 2010). Specifically for California, the loss of annual grasslands to agriculture and urbanization, along with human disturbance to nesting sites and mortality due to contact with infrastructure (wind turbines, power facilities, etc.), have all led to the decline of golden eagle populations. This species is common in some portions of its range and although local threats or decline are not a major threat to the continued existence for the species, local populations could be affected by high mortality rates.

4.2.1 Potential Project Impacts

Project activities will result in 59.6 acres of permanent impacts and 6.7 acres of temporary impacts to golden eagle foraging habitat associated with the grassland vegetation community. There is no suitable nesting habitat present within the Project site. Therefore, the Project will not jeopardize the continued existence of the species.

4.2.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to golden eagle are minimized. Because the Project impacts to this species' habitat are not anticipated to have a significant impact on the species or jeopardize its continued existence, it is not expected to have a measurable effect on the local and regional population of this species and is therefore not cumulatively considerable.

4.3 Jeopardy Analysis for San Joaquin Kit Fox

The *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and the *5-Year Review, San Joaquin kit fox (Vulpes macrotis mutica)* (USFWS 2020) states that San Joaquin kit foxes can exhibit significant population size variability. Most of the populations in natural habitats fluctuate regularly depending on environmental conditions, including extremes of rainfall that have effects on prey species.

San Joaquin kit fox populations have decreased due to natural habitat conversion to agriculture and urban development, creating fragmented habitat throughout its range. This species requires habitat corridors of appropriate size so this species can maintain its genetic and ecological diversity and distribution of resilient populations across its range.

4.3.1 Potential Project Impacts

Project activities will result in 59.6 acres of permanent impacts and 6.7 acres of temporary impacts to San Joaquin kit fox dispersal and migration habitat associated with the grassland vegetation community. There is no suitable breeding or denning habitat present within the Project site. Therefore, the Project will not jeopardize the continued existence of the species.

4.3.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to San Joaquin kit fox are minimized. Because the Project impacts to this species' habitat are not anticipated to have a significant impact on the species or jeopardize its continued existence, it is not expected to have a measurable effect on the local and regional population of this species and is therefore not cumulatively considerable.

4.4 Jeopardy Analysis for Tricolored Blackbird

The *Species Status Assessment for the Tricolored Blackbird (Agelaius tricolor)* (USFWS 2019) states that populations of this species are not easy to define or distinguish as they migrate around California and neighboring states during the non-breeding season. During the breeding season, individuals have been known to nest with one colony along the California coast one year, then nest with another colony in the Central Valley the next. Studies have shown individuals changing nesting colonies within the same season, such as moving from San Joaquin Valley up to Sacramento Valley.

The Species Status Assessment estimates that by the 1990's, 96% of wetlands within the Central Valley were lost due to destruction and conversion of native breeding and foraging habitat.

4.4.1 Potential Project Impacts

Project activities will result in 59.6 acres of permanent impacts and 6.7 acres of temporary impacts to tricolored blackbird foraging habitat associated with the grassland vegetation community. There is no suitable nesting habitat present within the Project site. Therefore, the Project will not jeopardize the continued existence of the species.

4.4.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to tricolored blackbird are minimized. Because the Project impacts to this species' habitat are not anticipated to have a significant impact on the species or jeopardize its continued existence, it is not expected to have a measurable effect on the local and regional population of this species and is therefore not cumulatively considerable.

4.5 Conclusions

The Project will permanently impact 59.6 acres of annual grassland and temporarily impact 6.7 acres of annual grassland, which provides some level of suitable habitat for California tiger salamander, golden eagle, San Joaquin kit fox, and tricolored blackbird. To reduce or eliminate the risk of take to these species, the Applicant will implement AMMs in Chapter 5 below. By following the proposed AMMs, the Project will not jeopardize the continued existence of these species.

Chapter 5. Minimization and Mitigation Measures

The Project applicant has worked closely with biologists, in consultation with resource agencies, through the design process to minimize impacts on California tiger salamander, golden eagle, San Joaquin kit fox, and tricolored blackbird. The Project site is within the EACCS; therefore, avoidance, minimization, and mitigation measures described below for each species are directly from the EACCS and the Programmatic Biological Opinion for the EACCS (USFWS 2012). The general avoidance and minimization measures listed below are also directly from the EACCS and the Programmatic Biological Opinion; however, many of these measures are not applicable for the proposed Project.

5.1 General Avoidance and Minimization Measures

GEN - 01 Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and Avoidance and Minimization Measures (AMMs) that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

GEN - 02 Environmental tailboard trainings will take place on an as needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects to these species during construction activities. Directors, Managers, Superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

GEN - 03 Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these requirements, AMMs.

GEN - 04 The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

GEN - 05 Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

GEN - 06 Off-road vehicle travel will be minimized.

GEN - 07 Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land cover types, or during off road travel.

GEN - 08 Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

GEN - 09 Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

GEN - 10 To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed free straw.

GEN - 11 Pipes, culverts, and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

GEN - 12 Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic monofilament netting (erosion control matting) or similar material containing netting shall not be used at the Project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

GEN - 13 Stockpiling of material will occur such that direct effects to covered species are avoided. Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

GEN - 14 Grading will be restricted to the minimum area necessary.

GEN - 15 Prior to ground disturbing activities in sensitive habitats, Project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

GEN - 16 Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1-inch of rain or more).

GEN - 17 Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist.

5.2 California Tiger Salamander Avoidance and Minimization Measures

In addition to the general measures listed above, the following species AMMs will be implemented during construction:

AMPH-2. Habitat: Riparian habitat and grasslands within 2-miles of aquatic habitat

- A qualified biologist will conduct preconstruction surveys prior to activities define a time for the surveys (before groundbreaking). If individuals are found, work will not begin until they are moved out of the construction zone to a USFWS/CDFW approved relocation site.

- A Service-approved biologist should be present for initial ground disturbing activities.

- If the work site is within the typical dispersal distance (contact USFWS/CDFW for latest research on this distance for species of interest) of potential breeding habitat, barrier fencing will be constructed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work.

- No monofilament plastic will be used for erosion control.

- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.

- A qualified biologist possessing a valid Endangered Species Act Section 10(a)(1)(A) permit or Service approved under an active biological opinion, will be contracted to trap and to move amphibians to nearby suitable habitat if amphibians are found inside fenced area.

- Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1” or greater, to May 1.

5.2.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of upland and dispersal habitat for California tiger salamander. To compensate for direct impacts on upland habitat for this species, the Applicant will purchase the appropriate mitigation credits from a CDFW-approved mitigation bank or another site to be approved by the CDFW. Currently, the Applicant anticipates purchasing mitigation credits from Vieira Ranch Conservation Bank, located within the same Conservation Zone as the Project site (Conservation Zone 10). The EACCS standardized mitigation ratios for California tiger salamander are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets in Appendix E of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for California tiger salamander than the Project site, including suitable breeding habitat (see Appendix C for the Mitigation Score Sheets). As stated in the Programmatic Biological Opinion for the EACCS, the impact site score is divided by the mitigation site score and then multiplied by the standard mitigation ratio to determine the adjusted ratio:

(Impact Score ÷ Mitigation Score) x Standard Mitigation Ratio = Adjusted Mitigation Ratio

Therefore, Permanent impacts will be mitigated at a minimum of 1.9:1 for California tiger salamander (See Table 7 in Section 5.7). Final mitigation ratios will be based on consultation with CDFW.

5.3 Golden Eagle Avoidance and Minimization Measures

In addition to the general measures listed above, the following species AMMs will be implemented during construction:

BIRD-1. Habitat: Cliff and large trees surrounded by open grassland.

- If an active nest is identified near a proposed work area, work will be conducted outside of the nesting season (February 1 to September 1).

- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will at a minimum be 250-feet radius from the nest.

- If an effective no-activity zone cannot be established in either case, an experienced golden eagle biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the eagles, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the eagles.

5.3.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of foraging habitat for this species. To compensate for direct impacts on foraging habitat for golden eagle, the Applicant will purchase the appropriate mitigation credits from a CDFW-approved mitigation bank (anticipated to be Vieira Ranch Conservation Bank). The EACCS standardized mitigation ratios for golden eagle are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets in Appendix E of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for golden eagle than the Project site (see Appendix C for the Mitigation Score Sheets). Using the same mitigation formula stated in Section 5.2.1,

permanent impacts will be mitigated at a minimum of 2.48:1 for golden eagle. Final mitigation ratios will be based on consultation with CDFW.

5.4 San Joaquin Kit Fox Avoidance and Minimization Measures

In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

MAMM-1. Habitat: Grassland, generally with ground squirrel burrows.

- If potential dens are present, their disturbance and destruction will be avoided.

- If potential dens are located within the proposed work area and cannot be avoided during construction, qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the USFWS and CDFW. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 2011).

- Exclusion zones will be implemented following USFWS procedures (U.S. Fish and Wildlife Service 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current standards or will be as follows: Potential Den 50 feet; Known Den 100 feet; Natal or Pupping Den—to be determined on a case by case basis in coordination with USFWS and CDFW.

- Pipes will be capped, and trenches will contain exit ramps to avoid direct mortality while construction areas is active.

5.4.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of dispersal and migration habitat for this species. To compensate for direct impacts on dispersal and migration habitat for San Joaquin kit fox, the Applicant will purchase the appropriate mitigation credits from a CDFW-approved mitigation bank (anticipated to be Vieira Ranch Conservation Bank). The EACCS standardized mitigation ratios for San Joaquin kit fox are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets in Appendix E of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for San Joaquin kit fox than the Project site (see Appendix D for the Mitigation Score Sheets). Using the same mitigation formula stated in Section 7.1.1.2, permanent impacts will be mitigated at a minimum of 2.5:1 for San Joaquin kit fox. Final mitigation ratios will be based on consultation with CDFW.

5.5 Tricolored Blackbird Avoidance and Minimization Measures

Due to the Project only providing potentially suitable foraging habitat for tricolored blackbird, the general avoidance and minimization measures listed above are sufficient.

5.5.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of foraging habitat for this species. To compensate for direct impacts on foraging habitat for tricolored blackbird, the Applicant will purchase the appropriate mitigation credits from a CDFW-approved mitigation bank (anticipated to be Vieira Ranch Conservation Bank). The EACCS standardized mitigation ratios for tricolored blackbird are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets in Appendix E of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for tricolored blackbird than the Project site (see

Appendix C for the Mitigation Score Sheets). Using the same mitigation formula stated in Section 5.2.1, permanent impacts will be mitigated at a minimum of 1.43:1 for tricolored blackbird. Final mitigation ratios will be based on consultation with CDFW.

5.6 Funding

To compensate for direct impacts on habitat for California tiger salamander, golden eagle, San Joaquin kit fox, and tricolored blackbird, the Applicant will purchase the appropriate mitigation credits from a CDFW-approved mitigation bank or another site to be approved by the CDFW. Currently, the Applicant anticipates purchasing mitigation credits from Vieira Ranch Conservation Bank, located within the same Conservation Zone as the Project site (Conservation Zone 10). The Applicant intends to purchase mitigation credits outright prior to construction; therefore, the Applicant does not plan to provide alternate financial assurances to cover the cost of mitigation. Table 7 provides the proposed mitigation ratios and acreages for each species. Final mitigation ratios shown in Table 7 would be determined through information consultation with CDFW.

Table 7. Proposed EACCC Compensatory Mitigation for Listed Species

Species	Permanent Impacts		
	Impact (acres)	Ratio	Mitigation (acres)
California tiger salamander	59.6	1.9:1	113.24
Golden eagle	59.6	2.48:1	147.8
San Joaquin kit fox	59.6	2.5:1	149
Tricolored blackbird	59.6	1.43:1	85.2

Chapter 6. Certification

I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.

Signature

Date

Patrick Leitch, Chief Operating Officer
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APPENDIX A – Figures

● Project Location

0 1.5 3 Miles
(At original document size of 8.5x11)
1:250,000

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Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: California State Parks, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, NASA, NGA, USGS, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, USGS

Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-06-12
IR by SE on 2024-06-12

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 1

Title
Project Location

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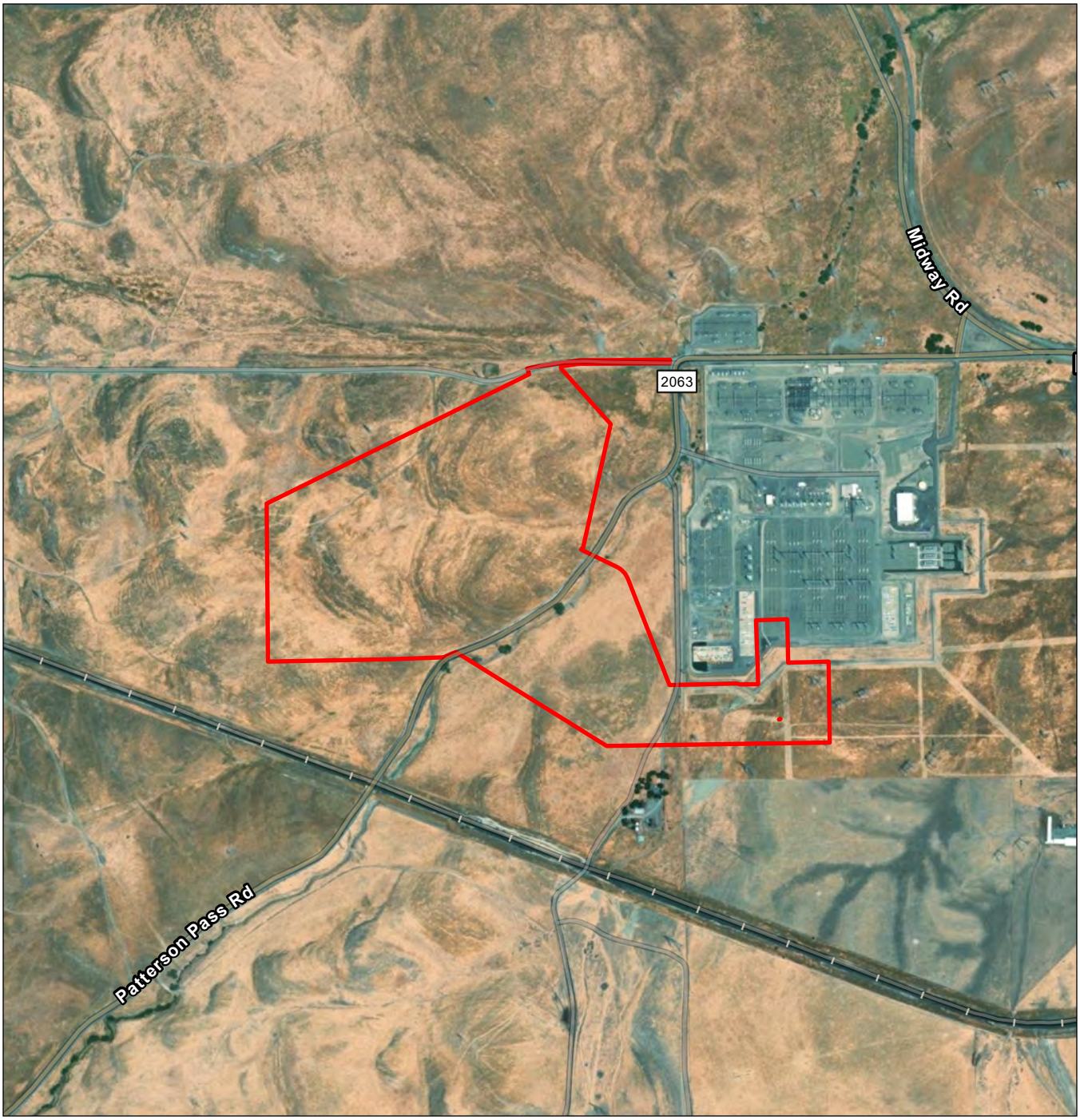

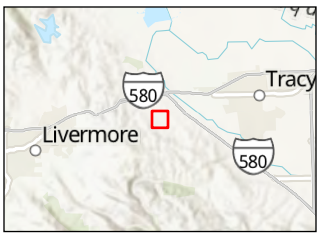

Project Site

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2. Data Sources: Esri, CGIAR, USGS, Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar, San Joaquin County GIS/ Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-07-03
IR by SE on 2024-07-03

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 2

Title
Action Area

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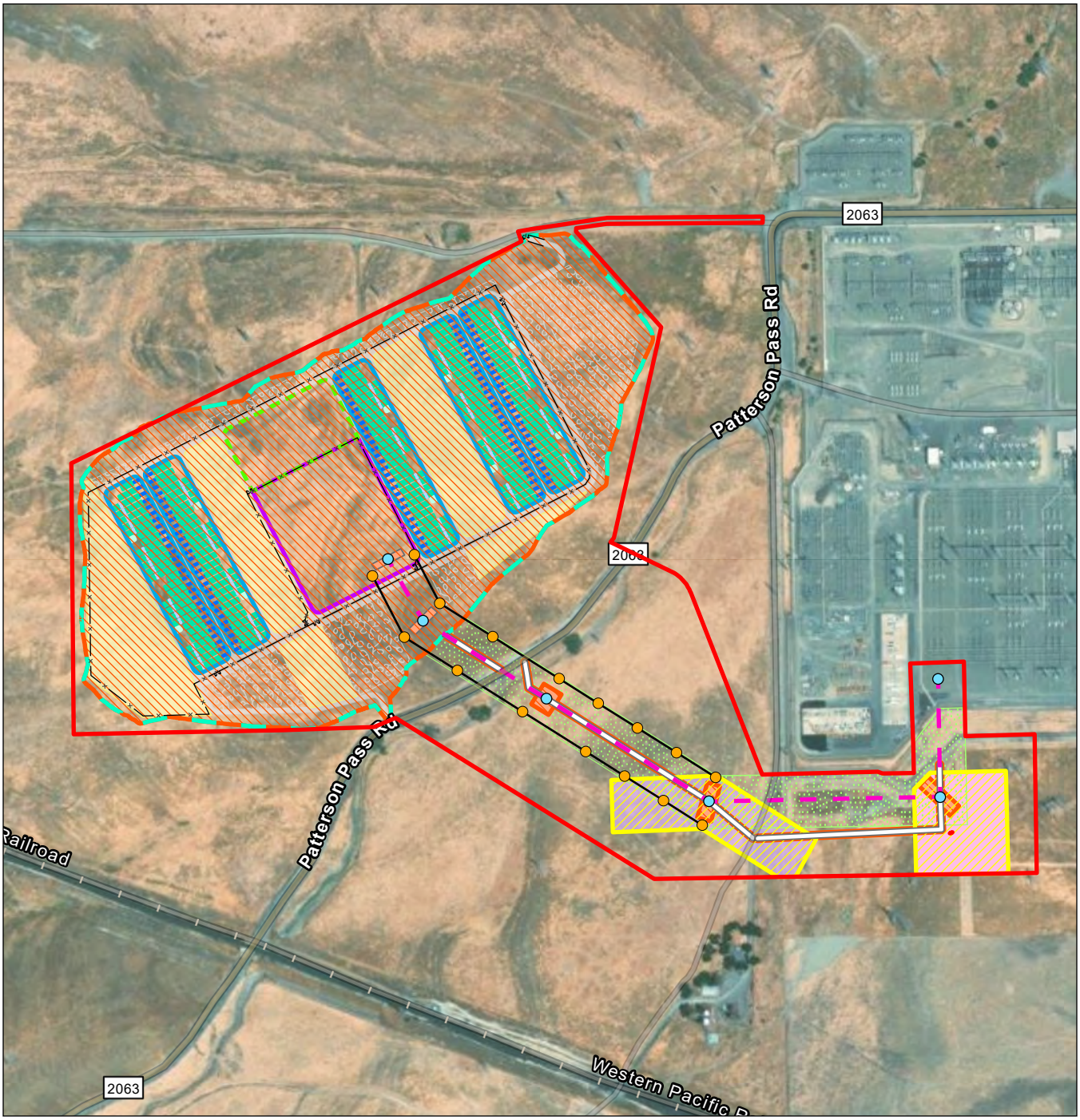

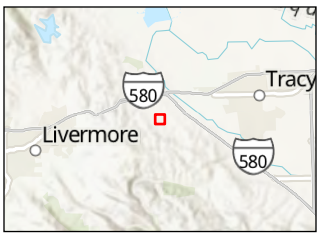

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2. Data Sources: Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, CGIAR, USGS, Maxar, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS,

- Action Area
- Telecomm Pole
- HV Structure
- Telecomm Line
- Gen-Tie
- Gen-Tie Corridor
- PG&E Temporary Work Area
- Tension Pulling Area
- Transmission Access Path
- Laydown Yard
- BESS Yards
- BESS Enclosures
- DC/DC Converters
- PCS Units
- Auxilary Transformers and Panels
- Primary Laydown Yard
- Project Substation Area
- Fence Line
- Stormwater Areas
- Roads
- Grading Limits
- Temporary Distrubance
- Permanent Disturbance

0 250 500 Feet
(At original document size of 8.5x11)
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Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-06-12
IR by SE on 2024-06-12

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 3

Title
Project Design Features

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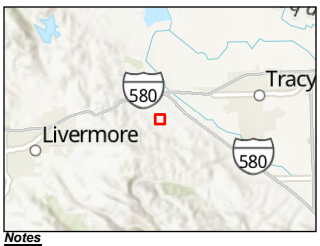

Project Site

Delineated Feature

EPH-01

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(At original document size of 8.5x11)

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Notes

1. Coordinate System: NAD 1983 UTM Zone 10N

2. Data Sources: Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, CGIAR, USGS, Maxar, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS,

Project Location
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Alameda County, CA

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IR by SE on 2024-06-12

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 4

Title
Potential Waters of the United States within the Project Site

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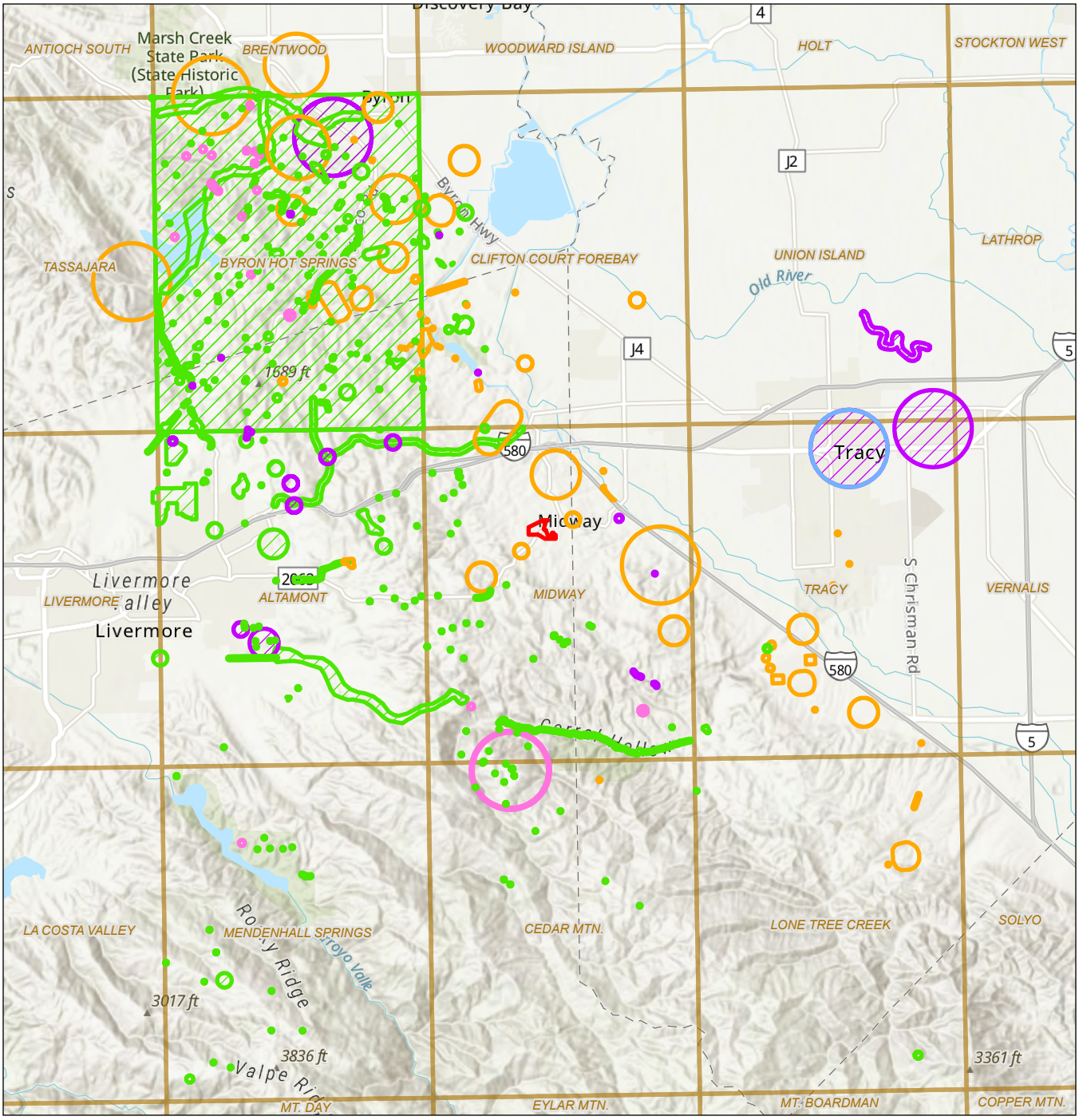

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Project Site

USGS 7.5' Quadrangle

CNDDB Occurrences

- California tiger salamander - central California DPS *(Ambystoma californiense pop. 1)*
- San Joaquin kit fox *(Vulpes macrotis mutica)*
- Crotch's bumble bee *(Bombus cortchii)*
- golden eagle *(Aquila chrysaetos)*
- tricolored blackbird *(Agelaius tricolor)*

0 1.5 3 Miles

(At original document size of 8.5x11)
1:250,000

N

Stantec

Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-07-03
IR by SE on 2024-07-03

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 5

Title
California Natural Diversity Database (CNDDB) Occurrences

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APPENDIX B – Biological Resources Technical Report

FINAL

Biological Technical Report

Potentia-Viridi Battery Energy Storage System Project

JULY 2024

Prepared for:

LEVY ALAMEDA LLC
c/o Capstone Infrastructure Corporation
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Toronto, Ontario M5V 3H1, Canada
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Oakland, California 94612

Printed on 30% post-consumer recycled material.

Table of Contents

SECTION **PAGE NO.**

TABLES

APPENDICES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AMM	avoidance and minimization measure
BA	biological assessment
BESS	Battery Energy Storage System
BGEPA	Bald and Golden Eagle Protection Act
BO	biological opinion
BTR	Biological Technical Report
CDFW	California Department of Fish and Wildlife
CEHC	California Essential Habitat Connectivity
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRLF	California red-legged frog
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CZ	Conservation Zone
DCH	Designated Critical Habitat
DPS	distinct population segment
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
ECOS	Environmental Conservation Online System
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Environmentally sensitive area
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
HCP	habitat conservation plan
IPaC	Information for Planning and Consultation
ITP	Incidental Take Permit
JD	Jurisdictional Determination
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MMRP	Mitigation Monitoring and Reporting Program
NOAA	National Oceanic and Atmospheric Administration
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	ordinary high water mark
PBO	Programmatic Biological Opinion

Acronym/Abbreviation	Definition
PCE	primary constituent elements
PFMC	Pacific Fishery Management Council
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SP	Standard Permit
SSC	Species of Special Concern
SWANCC	Solid Waste Agency of Northern Cook County
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

Executive Summary

This Biological Technical Report (BTR) was prepared for Levy Alameda LLC for the proposed Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This BTR describes the existing conditions, regulatory setting, existing biological resources within the Project Study Area (PSA), and preliminary assessment of Project impacts.

The PSA is in eastern Alameda County, California. The PSA consists of the BESS facility and a generation tie (gen-tie) alignment to the southeast connecting the facility to the adjacent Pacific Gas & Electric (PG&E) Tesla Substation. The PSA is currently undeveloped. The PG&E Tesla substation is directly east; along the western Project boundary there are transmission lines running northeast to southwest; Patterson Pass Road follows the eastern boundary; there is a railroad line to the south and a gravel access road to the north. The gen-tie alignment connecting the BESS facility to the PG&E substation crosses Patterson Run (a seasonal stream channel).. The lands comprising the PSA have been used for cattle grazing in the past, however, the only lands within the PSA currently being grazed are those along the gen-tie alignment between Patterson Pass Road and the western boundary of the PG&E Tesla Substation property. The nearest city is Tracy, approximately 2.5 miles to the east.

Federal, state, and local regulations or policies applicable to the Project include the following:

- Federal
  - Clean Water Act, Sections 404 and 401
  - Federal Endangered Species Act (FESA)
  - Migratory Bird Treaty Act (MBTA)
  - Bald and Golden Eagle Protection Act (BGEPA)
- State
  - Porter-Cologne Water Quality Control Act
  - California Endangered Species Act (CESA)
  - California Fish and Game Code (FGC)
  - California Environmental Quality Act (CEQA)
- Local
  - East Alameda County Conservation Strategy (EACCS)
  - Alameda County General Plan
- Alameda County Code of Ordinances

As part of the BTR, Dudek biologists conducted an updated desktop literature review and database search to identify potentially present special-status biological resources within the PSA and to supplement the Biological Constraints Analysis (Dudek 2023a) and update the September 2023 Biological Technical Report (Dudek 2023b). Dudek qualified biologists also conducted a series of biological field surveys in 2023 and 2024 to evaluate the PSA for special-status species and habitat. Surveys were conducted on March 31, May 16, and August 2 of 2023, January 18, April 12, May 24, and June 17, 2024. These surveys included reconnaissance-level biological field surveys, focused rare plant surveys, burrow mapping, protocol-level burrowing owl surveys, bumble bee habitat mapping, a California red-legged frog habitat assessment, California tiger salamander habitat assessment, and an aquatic resources delineation. The purpose of these surveys was to identify and characterize resources within the

PSA, with particular focus on the potential for occurrence of special-status plant and wildlife species and other sensitive resources.

There was only one vegetation community mapped on the PSA: wild oats and annual brome grassland. This vegetation community is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). This habitat type covered the full extent of the PSA.

A formal aquatic resource delineation was conducted on January 18, 2024. No aquatic resources were present on the BESS facility portion of the PSA; however, the gen-tie alignment will cross over a seasonal stream (EPH-01, Patterson Run). Patterson Run is a potential Water of the United States, and the Project proponent intends to apply to the United States Army Corps of Engineers (USACE) for a Nationwide Permit under Section 404 of the Clean Water Act to cover minor construction-related impacts to Patterson Run.

A total of 18 special-status and rare plants identified from the literature review were determined to have potential to occur within the PSA. Three individuals of big tarplant (*Blepharizonia plumosa*) were observed within PSA at the southwest corner of the PG&E substation. No other special-status plants were observed during the surveys.

A total of 20 special-status wildlife species identified from the literature review were determined to have potential to occur within the PSA. 10 had moderate or high potential to occur within the PSA: Crotch's bumble bee (*Bombus crotchii*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*). Tricolored blackbirds were observed foraging during the field survey on January 18, 2024. No other special-status wildlife species were observed during the surveys. Suitable breeding habitat was identified for California tiger salamander and California red-legged frog within dispersal distance of the PSA, and Designated Critical Habitat for California red-legged frog overlaps with the PSA. Nesting birds are also expected to utilize habitat present within the PSA.

The Project and associated PSA fall within the boundaries of the EACCS, specifically within Conservation Zone (CZ) 10. The EACCS provides a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county. The EACCS defines standardized mitigation ratios for each of the focal species to offset project impacts, based upon an evaluation of habitat quality within the PSA. Mitigation ratios for each covered species within the EACCS that have been identified during field surveys, or that have been assumed to be present, are then adjusted from the base 3:1 ratio based on habitat quality and species-specific calculators included in Appendix E of the EACCS. Total mitigation acreages for each species determined to be present through field surveys, or assumed to be present, may vary depending on the location(s) of compensatory mitigation land selected, habitat quality of mitigation land relative to habitat quality impacted by the project, and the total acres of habitat impacted by the Project. Final compensatory mitigation acreage would be based on habitat impact acreages calculated from final engineering designs approved for construction of the Project and the adjusted mitigation ratios for species requiring compensatory mitigation.

The Project will obtain applicable permits and other approvals from the California Energy Commission (CEC), USACE, United States Fish and Wildlife Service (USFWS), and Central Valley Regional Water Quality Control Board (CVRWQCB) and will minimize and mitigate impacts on natural resources to comply with the regulatory standards of these agencies. These are the same regulatory standards applied by USFWS and the other environmental

agencies in their review and approval of the EACCS. The Project will incorporate avoidance and minimization measures (AMMs) in compliance with EACCS guidelines. Development of the Project would not conflict with implementation of the EACCS. Further, the Project would provide compensatory mitigation for impacts to aquatic resources and EACCS covered species, determined, or assumed to be present within the PSA, through the acquisition of credits from existing mitigation banks or through establishing conservation easements on suitable lands.

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1 Introduction

Dudek is pleased to present Levy Alameda LLC with this Biological Technical Report (BTR) for the proposed Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This BTR describes the existing conditions, regulatory setting, and existing biological resources within the Project Study Area (PSA) and provides a preliminary analysis of Project impacts. As part of the BTR, Dudek biologists conducted an updated desktop literature review and database search specific to biological resources to supplement the Biological Constraints Analysis (Dudek 2023a) and update the September 2023 Biological Technical Report (Dudek 2023b). Dudek also performed additional biological field surveys during the 2023 and 2024 field seasons to supplement the prior reconnaissance-level biological field survey, including focused surveys for rare plants and burrows, focused habitat assessments for Crotch's bumble bee, and protocol-level surveys for burrowing owl. In addition, a focused habitat assessment for California red-legged frog was conducted for suitable and accessible aquatic features within 1 mile of the PSA, and a formal aquatic resources delineation was conducted to identify and map aquatic resources within the PSA. The purpose of these surveys was to identify and characterize resources within the PSA, with particular focus on the potential for occurrence of special-status plant and wildlife species and other sensitive resources. The *Project site* refers to the area that would be physically affected by construction activities associated with the Project (including temporary disturbance) and the Project layout. The PSA encompasses to the Project site as described above, but also includes a buffer around the generation tie (gen-tie) alignment, buffered areas around the Project site to capture resources within the limits of potential impact or required to be surveyed by species-specific survey protocols, and ponds located to the west of the Project site.

This BTR includes (1) a description of existing conditions on the site, (2) regulatory overview, (3) methods for biological studies, and (4) a description of any sensitive habitats or resources observed on the site. Details pertaining to the PSA are provided below:

- **County:** Alameda
- **Public Land Survey System:** Section 31; Township 2S; Range 4E
- **U.S. Geological Survey (USGS) 7.5-Minute Quadrangle**: Midway
- **Latitude, Longitude (decimal degrees):** 37.710926°, -121.575397° (centroid)
- **APN:** 99b-7890-2-4 (BESS facility, 67.58 acres); 99B-7890-2-6, 99B-7885-12 (gen-tie alignment, 20.44 acres including buffer)
- **Elevation Range (feet):** 383 to 523 feet above mean sea level (amsl)
- **PSA:** 88.51 acres

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2 Project Setting

2.1 Project Description

The Potentia-Viridi BESS Project proposes the development of an up to 3,200 MWh of battery energy storage system and associated infrastructure across approximately 88 acres (approximately 67-acre BESS facility lease area + approximately 20 acre gen-tie corridor) (Appendix A: Figure 1, Project Location). The BESS facility would interconnect to the electrical grid via a new 500 kV gen-tie constructed from the project substation to the Point of Interconnection (POI) at the existing PG&E Tesla Substation. Construction and commission of the Project is expected to occur over approximately 24 months.

2.2 Regional Land Use Setting

The PSA is currently undeveloped, and the regional land use has remained largely unchanged since the 1980s based on aerial imagery (Google Earth Pro 2023). Relative to the proposed BESS facility lease area, the PG&E Tesla substation is about 0.25 miles east; high voltage transmission lines parallel the BESS facility lease area along the northwestern, northern, northeastern, and eastern boundaries; Patterson Pass Road roughly parallels the eastern boundary; the Western Pacific Railroad is about 0.1 miles southeast; and there is an existing gravel access road adjacent to the northern boundary. The gen-tie alignment connecting the BESS facility to the PG&E substation crosses Patterson Pass Road, Patterson Run (a seasonal stream channel), and generally proceeds southeast to the Point of Change of Ownership transmission structure, before turning east across the PG&E Tesla Substation property and then north into the substation boundary and POI. The BESS facility site and surrounding land have been used for cattle grazing in the past. However, the BESS facility lease area and PG&E Tesla Substation property have not been grazed recently, whereas the property crossed by the gen-tie between the BESS facility lease area and PG&E Tesla Substation Property is currently used as cattle pasture. The nearest city is Tracy, approximately 2.5 miles to the east.

2.3 Climate and Rainfall

The PSA is within a Mediterranean climate where annual temperatures range from 38.3°F to 92.6°F (WRCC 2023). According to the Tracy Pumping Plant (049001) Weather Station Gauge, yearly precipitation averages 12.03 inches, with the highest average rainfall recorded in January (2.54 inches) (WRCC 2023). The past winter season had higher than average rainfall.

2.4 Soil and Terrain

The PSA is relatively flat, with an approximate elevation of 383 to 523 feet amsl. According to the US Department of Agriculture (USDA) Natural Resources Conservation Service, three soil types are present: Linne clay loam, 3% to 15% slopes (65.65 acres); Linne clay loam, 15% to 30% slopes, MLRA 15 (2.80 acres); and Rincon clay loam, 0% to 3% slopes (19.75 acres)(USDA 2024). The Linne series consists of moderately deep, well drained soils that formed in material from soft shale and sandstone. The Rincon series consists of deep, well drained soils that formed in alluvium from sedimentary rock. None of the three soil types mapped on site are included on the USDA list of hydric soils (USDA 2023a) commonly associated with wetlands or other waters.

2.5 Hydrology and Watershed

The PSA occurs within the North Diablo Range of the Alameda Creek Watershed (USGS 2023). According to the USFWS National Wetlands Inventory (NWI), there are several freshwater ponds, freshwater wetlands, and riverine aquatic features in the vicinity of the Project (USFWS 2023a; Appendix A: Figure 2, Biological Setting). The NWI is based on coarse aerial mapping and does not involve ground-truthing. The national hydrography dataset shows Patterson Run and one other drainage crossing the PSA from south to north. Patterson Run is a seasonal stream system that runs parallel to Patterson Pass Road, adjacent to the PSA. Patterson Run is classified in the NWI as a freshwater emergent wetland (USFWS 2023a). The second drainage is classified by the NWI as freshwater emergent wetland (USFWS 223a), however, there is no physical evidence of this drainage within the PSA either on aerial imagery or when surveyed on the ground.

3 Regulatory Setting

3.1 Federal

3.1.1 Clean Water Act, Section 404

Pursuant to Section 404 of the Clean Water Act, the USACE regulates the discharge of dredged and/or fill material into "Waters of the U.S." Activities in wetlands or waters for which a USACE permit may be required include, but are not limited, the placement of fill material due to development, land clearing involving relocation of soil, road construction, erosion control, mining, stockpiling excavation spoils, and utility line or pipeline construction. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid an impact) can include, to an extent, certain drainage channel maintenance activities involving the use of hand tools only or by positioning construction equipment outside of USACE jurisdiction and excavating without stockpiling in jurisdictional areas. Any person or public agency proposing to discharge dredged or fill material into Waters of the U.S., including jurisdictional wetlands, must obtain a Section 404 permit from USACE.

3.1.2 Clean Water Act, Section 401

Section 401 of the CWA provides states and authorized tribes with an important tool to help protect the water quality of federally regulated waters within their borders (i.e., waters of the state), in collaboration with federal agencies. EPA's regulations at 40 CFR 121 address CWA Section 401 certification. Under Section 401 of the CWA, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into water of the United States unless a CWA Section 401 water quality certification is issued, or certification is waived. States and authorized tribes where the discharge would originate are responsible for issuing water quality certifications. In cases where a state or tribe does not have authority, EPA is responsible for issuing certification. In making decisions to grant, grant with conditions, or deny certification requests, certifying authorities consider whether the federally licensed or permitted activity will comply with applicable water quality standards, effluent limitations, new source performance standards, toxic pollutants restrictions, and other appropriate water quality requirements of state or tribal law. A federal agency may not issue a license or permit for an activity that may result in a discharge into waters of the United States without a water quality certification or waiver (EPA 2023a). On June 9, 2022, proposed rule changes to CWA Section 401 were published (87 FR 35318 et seq.) and were finalized in November of 2023 (EPA 2023b). The changes include pre-filing meetings and statutory timeframes.

Implementation in California

The California State Water Resources Control Board (SWRCB) has authority over waters of the state, including wetlands, through Section 401 of the CWA, the Porter–Cologne Water Quality Control Act (Porter–Cologne Act), California Code of Regulations Section 3831(k), and the California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by SWRCB to the nine regional boards. The Central Valley Regional Water Quality Control Board has

authority for Section 401 compliance in the Project region. A request for Water Quality Certification is submitted to the RWQCB while an application is filed with USACE (EPA 2023a).

3.1.3 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended (16 USC 1531 et seq.), serves as the enacting legislation to list, conserve, and protect threatened and endangered species, and the ecosystems on which they depend, from extinction. In addition, for those wildlife species listed as federally endangered, FESA provides for the ability to designate critical habitat, defined as that habitat considered "essential to the conservation of the species" and that "may require special management considerations or protection."

Under FESA Section 7, if a project that would potentially result in adverse impacts to threatened or endangered species includes any action that is authorized, funded, or carried out by a federal agency, that agency must consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any such action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat (DCH) for that species. FESA Section 9(a)(1)(B) prohibits the taking, possession, sale, or transport of any endangered fish or wildlife species. "Take" is defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532[19]). With respect to any endangered species of plant, Sections 9(a)(2)(A) and 9(a)(2)(B) prohibit the possession, sale, and import or export, of any such species, and prohibits any action that would "remove and reduce to possession any such species from areas under federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law." Pursuant to FESA Section 10(a)(1)(B), USFWS may issue a permit for the take of threatened or endangered species if such taking is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (USFWS 2023b).

Designated Critical Habitat

The FESA also enables USFWS to designate critical habitat, which is defined specific geographic areas, whether occupied by listed species or not, that contain "physical or biological features essential to the conservation of the species" and that "may require special management considerations or protection" (50 CFR 424.12). Designated critical habitat units, published in the Federal Register by USFWS, are often large and may contain areas that do not provide habitat for the species: only areas within the critical habitat units that support the species' *primary constituent elements* (PCEs) are subject to ESA consultation and analysis of critical habitat effects. PCE was a term introduced in the critical habitat designation regulations to describe aspects of ''physical or biological features.'' On May 12, 2014, the Services proposed to revise these regulations to remove the use of the term ''primary constituent elements'' and replace it with the statutory term ''physical or biological features'' (79 FR 27066). However, the shift in terminology does not change the approach used in conducting a ''destruction or adverse modification'' analysis, which is the same regardless of whether the original designation identified PCE, physical or biological features, or both (81 FR 7220, 2/11/16).

3.1.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50, Section 10.13 of the CFR. The MBTA is an international treaty for the conservation and

management of bird species that migrate through more than one country and is enforced in the United States by USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50, Section 20 of the CFR. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors) (USFWS 2023c).

3.1.5 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668 et seq.) provides for the protection of both bald and golden eagles. Specifically, BGEPA prohibits take of eagles, which is defined as any action that would "pursue, destroy, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" bald and golden eagles, including parts, nests, or eggs. The term "disturb" is further defined by regulation as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, injury to an eagle, a decrease in productivity, or nest abandonment" (50 CFR 22.3). Under BGEPA, it is also illegal to "sell, purchase, barter, trade, import, or export, or offer for sale, purchase, barter, or trade, at any time or in any manner, any bald eagle or any golden eagle, or the parts, nests, or eggs" of these birds. Pursuant to 50 CFR 22.26, and as of the latest amendment to BGEPA in December 2016, a permit may be obtained that authorizes take of bald eagles and golden eagles where the take is "compatible with the preservation of the bald eagle and the golden eagle; is necessary to protect an interest in a particular locality; is associated with, but not the purpose of, the activity; and cannot practicably be avoided" (USFWS 2023d).

3.2 State

3.2.1 Porter-Cologne Water Quality Control Act

As detailed above in Section 3.1.2, Clean Water Act, Section 401, the Porter–Cologne Act, CFGC Sections 1601-1607, delegates responsibility to SWRCB for water rights and water quality protection and directs the nine statewide RWQCBs to develop and enforce water quality standards within their jurisdiction. The Porter–Cologne Act requires any entity discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state to file a "report of waste discharge" with the appropriate RWQCB. The appropriate RWQCB then must issue a permit, referred to as a Waste Discharge Requirement. Waste Discharge Requirements implement water quality control plans and take into consideration the beneficial uses to be protected, the water quality objectives required for that purpose, other waste discharges, and the need to prevent nuisances (SWRCB 2023).

SWRCB defines a water of the state as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050[e]). As of April 2019, SWRCB has defined "wetland" to include the following (SWRCB 2023):

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the state,
3. Artificial wetlands that meet any of the following criteria:
    a) Approved by an agency as compensatory mitigation for impacts to other Waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b) Specifically identified in a Water Quality Control Plan as a wetland or other water of the state;

c) Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or

d) Greater than or equal to one acre in size unless the artificial wetland was constructed and is currently used and maintained, primarily for one or more of the following purposes: industrial or municipal wastewater treatment or disposal; settling of sediment; detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial permitting program; treatment of surface waters; agricultural crop irrigation or stock watering; fire suppression; industrial processing or cooling water; active surface mining – even if the site is managed for interim wetlands functions and values; log storage; treatment, storage, or distribution of recycled water; maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or fields flooded for rice growing.

All waters of the United States are waters of the state. Wetlands, such as isolated seasonal wetlands, that are not generally considered waters of the United States are considered waters of the state if, "under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation" (SWRCB 2023).

3.2.2 California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Wildlife (CDFW) has the responsibility of maintaining a list of threatened and endangered species. CESA prohibits the take of state-listed threatened or endangered animals and plants unless otherwise permitted pursuant to CESA. "Take" under CESA is defined as any of the following: "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (CFGC Section 86). Species determined by the state to be candidates for listing as threatened or endangered are treated as if listed as threatened or endangered and are, therefore, protected from take. Pursuant to CESA, a state agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species, or candidate species, could be potentially impacted by that project (CDFW 2023a).

3.2.3 California Fish and Game Code

Divisions of the California Fish and Game Code (CFGC) establish the basis of fish, wildlife, and native plant protections and management in the state.

3.2.3.1 California Fish and Game Code, Section 1940

Section 1940 of the CFGC requires CDFW to develop and maintain a vegetation mapping standard for the state. More than half of the vegetation communities in the state have been mapped through the Vegetation Classification and Mapping Program

Natural vegetation communities are evaluated by CDFW and are assigned global (G), and state (S) ranks based on rarity of and threats to these vegetation communities in California. Sensitive natural communities are defined by CDFW as vegetation alliances with state ranks of S1–S3 (S1: critically imperiled, S2: imperiled, S3: vulnerable), as

identified in the 2010 List of Vegetation Alliances and Associations and subsequent updates. Natural communities with ranks of S1–S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible.

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities are considered to include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB) and communities listed in the California Natural Community List with a rarity rank of S1- S3 (CDFW 2023c).

3.2.3.2 Lake and Streambed Alteration Program

Under Sections 1600–1616 of the CFGC, CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." In practice, CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider (CDFW 2023b).

3.2.3.3 Native Plant Protection Act

The Native Plant Protection Act was enacted in 1977 and is administered by CDFW, per CFGC Section 1900 et seq. The Native Plant Protection Act prohibits take of endangered, threatened, or rare plant species native to California, apart from special criteria identified in the CFGC. A "native plant" means a plant growing in a wild uncultivated state that is normally found native to the plant life of the state. A "rare" species can be defined as species that are broadly distributed but never abundant where found, narrowly distributed, or clumped yet abundant where found, and/or narrowly distributed or clumped and not abundant where found. If potential impacts are identified for a project activity, then consultation with CDFW, permitting, and/or other mitigation may be required (CLI 2023).

3.2.3.4 Nesting Migratory Birds and Raptors

Section 3503 of the CFGC states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 protects all birds of prey (raptors) and their eggs and nests. Section 3511 states that fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA.

3.2.3.5 Non-game Mammals

CFGC Section 4150 states a mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a non-game mammal. A non-game mammal may not be taken or possessed under this code. All bat species occurring naturally in California are considered non-game mammals and are therefore prohibited from take as stated in CFGC Section 4150.

3.2.3.6 Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the CFGC outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances, such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. On July 10, 2023, Senate Bill 147 (SB147) was signed into law and amends the Fish and Game Code to allow a 10-year permitting mechanism for a defined set of projects within the renewable energy, transportation, and water infrastructure sectors. Furthermore, it is the responsibility of CDFW to maintain viable populations of all native species. Toward that end, CDFW has designated certain vertebrate species as Species of Special Concern, because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

3.2.4 California Environmental Quality Act

CEQA, PRC Section 21000 et seq., requires public agencies undertaking discretionary actions to approve a project to first determine whether a project may have a significant effect on the environment, and then to prepare an environmental impact report if there is substantial evidence that the project may have a significant effect on the environment. Where an environmental impact report has been prepared, CEQA further requires public agencies to adopt findings with respect to each significant effect that "changes or alterations have been required in, or incorporated, into the project which mitigate or avoid the significant effects on the environment; that those changes are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency; or that specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report" (PRC Section 21081[a]).

The California Natural Resources Agency has adopted regulations (i.e., guidelines) to implement CEQA. Pursuant to CEQA Guidelines Section 15380, protection is provided for federal and/or state-listed species, as well as species not listed federally or by the state that may be considered rare, threatened, or endangered. Species that meet these criteria can include candidate species, species proposed for listing, and Species of Special Concern (SSC). Plants listed in the California Native Plant Society (CNPS) Rare Plant Program are considered to meet CEQA's Section 15380 criteria as well. Section 15380 also addresses a potential situation in which a public agency is to review a project that may have a significant effect on, for example a candidate species, which has not yet been listed by USFWS or CDFW. Therefore, CEQA enables an agency to protect a species from significant project impacts until the respective government agencies have had an opportunity to list the species as protected, if warranted. Impacts to these species would therefore be considered significant, requiring mitigation (CDFW 2023c).

3.2.5 California Energy Commission – Assembly Bill 205

Assembly Bill (AB) 205 is an emergency regulation expanding the CEC's siting authority for renewable energy projects constructed on or before June 30, 2029. AB 205 was signed into law on June 30, 2022 and allows renewable and energy storage projects to apply for direct state permits through the CEC. CEC certification opt-in statute (specifically 25545.1(b)(1)) says "the issuance of a certificate by the commission for a site and related facility pursuant to this chapter shall be in lieu of any permit, certificate, or similar document required by any state, local, or regional agency [except California Coastal Commission, San Francisco Bay Conservation and Development

Commission, and State/Regional Water Quality Control Board] … for the use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency….”

The application for certification process is in lieu of CDFW 2081 ITP or CFGC Section 1600 et seq. LSAA. However, applications for both of these permits will be submitted to the CEC for informational purposes. The CEC Certification will include conditions and mitigation that would otherwise be requirements in these CDFW permits.

3.3 County of Alameda

3.3.1 East Alameda County Conservation Strategy

The County of Alameda (County), along with other local land use jurisdictions and resource agencies, developed the East Alameda County Conservation Strategy (EACCS) to provide a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county (ICF 2010). The EACCS is not a formal Habitat Conservation Plan (HCP) in that it does not require local agencies to conserve species and habitat prior to approving projects that impact listed species and/or their habitat, nor does it have a corresponding programmatic incidental take permit from USFWS. Instead, it is intended to streamline state and local permitting by providing guidance on avoidance, minimization, and mitigation for project-level impacts on selected focal special-status species and sensitive habitats. USFWS and CDFW participated in the development of the Conservation Strategy with the intent that it would become the blueprint for all mitigation and conservation in the region. Both agencies still refer to the EACCS when reviewing project-level impacts on focal species and their habitat.

The EACCS includes standardized mitigation ratios for each of the focal species that can be used by local jurisdictions and resource agencies as guidance to determine appropriate mitigation to offset project impacts on focal species habitat. These are based on an evaluation of the habitat quality on a PSA scored using Focal Species-Impact/Mitigation Score Sheets[1] for each of the focal species assumed present or potentially present. Mitigation ratios are then calculated based on application of the same scoring sheet to the proposed mitigation site. Project-specific mitigation ratios may vary depending on the quality and location of the habitat being lost and the quality and location of proposed mitigation.

The EACCS includes avoidance and minimization measures (AMMs) for all focal species covered by the EACCS. These include general AMMs applicable to all focal species, as well as species- or taxon-specific AMMs. The standardized mitigation ratios discussed above are only valid if a project application is in compliance with all applicable AMMs. The general AMMs and project applicable specific AMMs are detailed below.

General

GEN - 01 Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and Avoidance and Minimization Measures (AMMs) that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

GEN - 02 Environmental tailboard trainings will take place on an as - needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects to these species during construction activities.

[1] Available at http://www.eastalco-conservation.org/documents/eaccs_appe_oct2010.pdf.

Directors, Managers, Superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

GEN - 03 Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these requirements, AMMs.

GEN - 04 The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

GEN - 05 Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

GEN - 06 Off - road vehicle travel will be minimized.

GEN - 07 Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land - cover types, or during off - road travel.

GEN - 08 Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

GEN - 09 Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

GEN - 10 To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed - free straw.

GEN - 11 Pipes, culverts, and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

GEN - 12 Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic mono - filament netting (erosion control matting) or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

GEN - 13 Stockpiling of material will occur such that direct effects to covered species are avoided. Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

GEN - 14 Grading will be restricted to the minimum area necessary.

GEN - 15 Prior to ground disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

GEN - 16 Significant earth moving - activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1 - inch of rain or more).

GEN - 17 Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist.

Amphibians: California tiger salamander, CRLF

AMPH-1. *Habitat: Streams, wetlands, ponds, vernal pools.*

- If aquatic habitat is present, a qualified biologist will stake and flag an exclusion zone prior to activities. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). The exclusion zone will encompass the maximum practicable distance from the work site and at least 500 feet from the aquatic feature wet or dry.

AMPH-2. *Habitat: Riparian habitat and grasslands within 2-miles of aquatic habitat.*

- A qualified biologist will conduct preconstruction surveys prior to activities define a time for the surveys (before groundbreaking). If individuals are found, work will not begin until they are moved out of the construction zone to a USFWS/CDFG approved relocation site.
- A Service - approved biologist should be present for initial ground disturbing activities.
- If the work site is within the typical dispersal distance (contact USFWS/CDFG for latest research on this distance for species of interest) of potential breeding habitat, barrier fencing will be constructed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work.
- No monofilament plastic will be used for erosion control.
- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.
- A qualified biologist possessing a valid ESA Section 10(a)(1)(A) permit or Service approved under an active biological opinion, will be contracted to trap and to move amphibians to nearby suitable habitat if amphibians are found inside fenced area.
- Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1" or greater, to May 1.

Golden Eagle

BIRD-1. *Habitat: Cliff and large trees surrounded by open grassland.*

- If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (February 1 to September 1).
- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no - activity zone will be established by a qualified biologist. The no - activity zone will be large enough to avoid nest abandonment and will at a minimum be 250 - feet radius from the nest.
- If an effective no - activity zone cannot be established in either case, an experienced golden eagle biologist will develop a site - specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the eagles, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the eagles.

Burrowing Owl

BIRD-2. *Habitat: Grasslands or ruderal areas with burrows.*

- If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (March 15 to September 1).
- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no - activity zone will be established by a qualified biologist. The no - activity zone will be large enough to avoid nest abandonment and will at a minimum be 250 - feet radius from the nest.
- If burrowing owls are present at the site during the non - breeding period, a qualified biologist will establish a no - activity zone of at least 150 feet.
- If an effective no - activity zone cannot be established in either case, an experienced burrowing owl biologist will develop a site - specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

Tricolored Blackbird

BIRD-3. *Habitat: Wetlands, ponds with emergent vegetation.*

- If an active nest colony is identified near a proposed work area work will be conducted outside of the nesting season (March 15 to September 1).

Mammals: San Joaquin Kit Fox, American Badger

MAMM-1. *Habitat: Grassland, generally with ground squirrel burrows.*

- If potential dens are present, their disturbance and destruction will be avoided.
- If potential dens are located within the proposed work area and cannot be avoided during construction, qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the USFWS and CDFG. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 2011).
- Exclusion zones will be implemented following USFWS procedures (U.S. Fish and Wildlife Service 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case - by - case basis in coordination with USFWS and CDFG.
- Pipes will be capped, and trenches will contain exit ramps to avoid direct mortality while construction areas is active.

3.3.2 Alameda County General Plan

The County maintains a General Plan, which provides guidelines for development within the County. The PSA is located within the East County Area Plan (ECAP) (Alameda County 1994). General Plan policies that are relevant to the Project are outlined below.

Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands to establish a continuous open space system in East County and to provide for long term protection of biological resources.

Policy 125: The County shall encourage preservation of areas known to support special status species.

Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

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4 Methods

4.1 Key Definitions

Special-Status Species

For the purposes of this analysis, special plant species are defined as plants that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies. These species fall into one or more of the following categories:

- Listed by the federal government under the FESA of 1973 or the State of California under the CESA of 1970 as endangered, threatened, or rare.
- A candidate for federal or state listing as endangered or threatened.
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation.
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa strongly associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats).

Taxa considered to be "rare, threatened, or endangered in California" as defined by CDFW are assigned a California Rare Plant Rank (CRPR). The CDFW system includes six rarity and endangerment ranks for categorizing plant species of concern, as follows:

- **CRPR 1A:** Plants presumed to be extinct in California.
- **CRPR 1B:** Plants that are rare, threatened, or endangered in California and elsewhere.
- **CRPR 2A:** Plants presumed to be extinct in California, but more common elsewhere.
- **CRPR 2B:** Plants that are rare, threatened, or endangered in California, but more common elsewhere.
- **CRPR 3:** Plants about which more information is needed (a review list).
- **CRPR 4:** Plants of limited distribution (a watch list).

Plants ranked as CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of CEQA Guidelines Section 15380. CDFW recommends that potential impacts to CRPR 1 and 2 species be evaluated in CEQA review documents. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to CEQA Guidelines Section 15380, but these species may be evaluated on a case-by-case basis (CDFW 2018).

Special-status wildlife species include species that meet any of the following criteria (some species may meet several criteria):

- Listed, proposed for listing, or candidates for listing as threatened or endangered under FESA.
- Listed or candidates for listing as threatened or endangered under CESA.

- Designated as Species of Special Concern by the CDFW.
- Designated as a fully protected species by the California Fish and Game Code.
- Meet the definition of rare, threatened, or endangered as described in the CEQA Guidelines, Section 15380.

Sensitive Natural Communities

Natural vegetation communities are evaluated by CDFW and are assigned global (G), and state (S) ranks based on rarity of and threats to these vegetation communities in California. Sensitive natural communities are defined by CDFW as vegetation alliances with state ranks of S1–S3 (S1: critically imperiled, S2: imperiled, S3: vulnerable), as identified in the 2010 List of Vegetation Alliances and Associations and subsequent updates. Natural communities with ranks of S1–S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible.

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities are considered to include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB) and communities listed in the California Natural Community List with a rarity rank of S1- S3 (CDFW 2023d).

4.2 Database and Literature Review

Dudek conducted an initial database and literature review as part of the Biological Constraints Analysis drafted in April 2023 (Dudek 2023a). An updated database and literature review was conducted as part of the Biological Technical Report drafted in September 2023 (Dudek 2023b). To reflect recent changes in the Project site boundaries and new gen-tie alignment, updated database and literature reviews for the revised PSA were conducted in January 2024. Special-status biological resources present or potentially present within the PSA were identified through an extensive updated literature search using the following sources: USFWS Information for Planning and Consultation (IPaC) online tool (USFWS 2024), CDFW California Natural Diversity Database (CNDDB) (CDFW 2024), and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants (CNPS 2024). The Soil Survey Geographic Database for California (USDA 2024) was also reviewed to identify soil associations potentially supporting special-status plants (e.g., alkaline soils). Native plant community classifications used in this report follow a Manual of California Vegetation Online (CNPS 2023a) and California Natural Community List (CDFW 2023d). The search area for the IPaC query was based on the site boundary. The CNDDB and CNPS databases were queried for the nine U.S. Geological Survey (USGS) 7.5-minute quadrangles containing and immediately surrounding the site (Byron Hot Springs, Clifton Court Forebay, Union Island, Altamont, Midway, Tracy, Mendenhall Springs, Cedar Mountain, Lone Tree Creek). Database search results are presented in Appendix B, Database Search Results. Following the updated database review, Dudek biologists determined the potential for special-status plant and wildlife species to occur on site. Determinations were based on a review of habitat types, soils, and elevation preferences, as well as the known geographic range and nearest occurrence records of each species.

4.3 Field Surveys

Dudek qualified biologists conducted biological field surveys in 2023 and 2024 to evaluate the PSA for special-status species and habitat. These included reconnaissance surveys and focused surveys for rare plants, burrows, Crotch's bumble bee (*Bombus crotchii*) habitat, protocol-level burrowing owl surveys, and California tiger salamander (CTS) and California red-legged frog (*Rana draytonii*; CRLF) habitat assessments. Additionally, a formal aquatic resource delineation was conducted concurrently with the reconnaissance and focused surveys in 2024. The field surveys are summarized in Table 1 and discussed further below.

Table 1. Field Survey Summary

Date	Survey Type(s)	Biologists	Time	Survey Conditions
03/31/2023	Reconnaissance (original Project site boundary only, excludes gen-tie)	Emily Scricca Erin Fisher-Colton	9:30 a.m.–11:30 a.m.	58°F–61°F, 75%–90% cloud cover, 1–4 mph wind
05/16/2023	▪ Protocol-Level Botanical ▪ Focused Burrow Surveys ▪ Focused Crotch's Bumble Bee Habitat Assessment	Kelsey Higney Lorna Haworth	8:41 a.m.–11:15 a.m.	80°F–85°F, 0% cloud cover, 0–6 mph wind
08/02/2023	▪ Reconnaissance (gen-tie alignment only) ▪ Protocol-Level Botanical ▪ Focused Burrow Surveys ▪ Focused Crotch's Bumble Bee Habitat Assessment ▪ Protocol-level California Red-Legged Frog (CRLF) Habitat Assessment	Kelsey Higney Erin Fisher-Colton	9:23 a.m.–4:54 p.m.	71°F–80°F, 0% cloud cover, 5–20 mph wind
01/18/2024	▪ Reconnaissance (adjusted gen-tie alignment only) ▪ Protocol-Level Botanical (adjusted gen-tie alignment only) ▪ Focused Burrow Surveys (adjusted gen-tie alignment only) ▪ Focused Crotch's Bumble Bee Habitat Assessment (adjusted gen-tie alignment only) ▪ Aquatic Resources Delineation	Mikaela Bissell Erin Fisher-Colton	9:16 a.m.-2:30 p.m.	50°F–58°F, 80%-100% cloud cover, 1-4 mph wind
04/12/2024	▪ Protocol-level Burrowing Owl Survey – Pass 1 ▪ Follow-up burrow assessment for San Joaquin Kit Fox and American Badger ▪ Protocol-level rare plant survey	Mikaela Bissell Tara Johnson-Kelly	8:30 a.m. – 2:00 p.m.	55°F–60°F, 0%-10% cloud cover, 10-14 mph wind
05/03/2024	▪ Protocol-level Burrowing Owl survey – Pass 2	Kelsey Higney Tara Johnson-Kelly	7:00 a.m. – 12:00 p.m.	56°F–71°F, 0% cloud cover, 10-15 mph wind

Table 1. Field Survey Summary

Date	Survey Type(s)	Biologists	Time	Survey Conditions
05/24/2024	▪ Protocol-level Burrowing Owls Survey – Pass 3	Tara Johnson-Kelly Paul Keating	7:00 a.m. – 12:00 p.m.	57°F–64°F, 0%-10% cloud cover, 10 mph wind
06/17/2024	▪ Protocol-level Burrowing Owl Survey – Pass 4 ▪ Protocol-level rare plant survey	Paul Keating	3:00 p.m. – 7:00 p.m.	82°F–78°F, 0% cloud cover, 15-20 mph wind

All plant species encountered during the field surveys were identified to lowest possible taxonomic rank and recorded. Latin and common names for plant species with a California Rare Plant Rank (CRPR) follow the CNPS Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2024). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2023), and common names follow the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA 2023b). Wildlife species detected during field surveys by sight, calls, tracks, scat, or another sign were recorded. Binoculars (8-times magnification) were used to identify observed wildlife. A list of observed plant and wildlife species is presented in Appendix C, Plant and Wildlife Species Compendium, and representative site photographs are presented in Appendix D, Photo Record.

4.3.1 Reconnaissance Surveys

A reconnaissance-level field survey was conducted on March 31, 2023, to identify vegetation communities and assess the original BESS Project site boundary and vicinity for suitable habitat for special-status plant and wildlife species. This survey was conducted on foot and by vehicle to provide complete visual coverage of the original Project site. No protocol-level surveys were conducted at this time.

A follow-up reconnaissance-level field survey was conducted for the updated PSA which included the BESS Project site and buffered gen-tie alignment of the Project area on August 2, 2023, in conjunction with the surveys for rare plants, burrows, and Crotch's bumble bee habitat. This survey was conducted on foot to identify vegetation communities in the updated PSA boundaries. During the August reconnaissance survey, a reconnaissance-level wetland assessment was done for the site. The focus was to determine if there were any potential jurisdictional waters on the site that would require further protocol jurisdictional delineations.

A second follow-up reconnaissance-level field survey was conducted for the adjusted buffered gen-tie alignment on January 18, 2024. This survey was conducted on foot to identify vegetation communities along the adjusted gen-tie alignment and included surveys for rare plants, burrows, and Crotch's bumble bee habitat within the adjusted buffered gen-tie alignment.

4.3.2 Protocol-Level Botanical Surveys

Protocol-level rare plant surveys were conducted on May 16, 2023, August 2, 2023, and January 18, April 12, and June 17, 2024, to identify special-status rare plant species within the updated PSA boundaries. Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Rare plants surveys were conducted in

accordance with the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the CNPS Botanical Survey Guidelines (CNPS 2001). Rare plants occurrences were mapped using ArcGIS Field Maps (Esri).

4.3.3 Focused Burrow Surveys

Focused burrow surveys were conducted on May 16, 2023, August 2, 2023, and January 18, 2024, to identify a variety of animal burrows within the updated PSA boundaries. Additional surveys to assess burrow suitability for San Joaquin kit fox and American badger were conducted on April 12, 2024. The subsequent assessment for San Joaquin kit fox and American badger followed recommendations outlined in the *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999). Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Burrows of all sizes were mapped using ArcGIS Field Maps (Esri).

4.3.4 Protocol-level Burrowing Owl Surveys

Surveys for western burrowing owl were conducted by Dudek qualified biologists on April 12, May 3, May 24, and June 17, 2024. Surveys followed recommended protocol outlined in Appendix D of the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Surveys utilized data collected during the focused burrow surveys (Section 4.3.3) to walk transect no more than 20 meters apart within the PSA. Biologists documented any sight or sign of western burrowing owl during the survey.

4.3.5 Focused Crotch's Bumble Bee Habitat Assessment

Focused Crotch's bumble bee habitat assessments were conducted on May 16, 2023, August 2, 2023, and January 18, 2024, to identify foraging and nesting habitat for Crotch's bumble bees within the updated PSA boundaries. Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Bumble bee habitat was identified following CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (CDFW 2023e), which includes plant species that provide floral (nectar) resources and nesting substrates such as bare ground, rodent burrows, thatched grass, or rock piles. Potential bumble bee floral resources and nesting substrates were mapped using ArcGIS Field Maps (Esri).

4.3.6 Protocol-Level California Red-Legged Frog Habitat Assessment

A protocol-level habitat assessment for CRLF was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Not all aquatic habitats within 1 mile were able to be surveyed due to access restrictions. Habitat assessments were conducted in accordance with the USFWS *Revised Guidance on Site Assessments and Field surveys for the California Red-legged Frog* (USFWS 2005). Aquatic features were coarsely mapped along top of bank using ArcGIS Field Maps (Esri).

4.3.7 Protocol-Level California Tiger Salamander Habitat Assessment

Concurrently with the CRLF habitat assessment (4.3.6), a protocol-level habitat assessment for California tiger salamander was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Not all aquatic habitats within 1.24 miles were able to be surveyed due to access restrictions. Habitat assessments were conducted in accordance with the USFWS *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003). Aquatic features were coarsely mapped along top of bank using ArcGIS Field Maps (Esri).

4.3.8 Aquatic Resources Delineation

A preliminary wetland assessment was conducted during the reconnaissance survey on August 2, 2023, to generally identify and coarsely map aquatic resources that may require further protocol jurisdictional delineations. Dudek then conducted a complete aquatic resources delineation concurrent with the reconnaissance-level biological field survey on January 18, 2024, to identify and map the extent of aquatic resources within the entire PSA that are potentially subject to regulation under federal CWA Sections 401 and 404, CFGC Section 1602, or under the Porter-Cologne Act. The results of the aquatic resources delineation have been incorporated into this report. Representative photographs were collected for each of the aquatic resources (Appendix D).

5 Results

5.1 Vegetation Communities

Only one vegetation community was mapped in the PSA: wild oats and annual brome grassland (*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance; CNPS 2023a; Figure 2). This community, often referred to as California annual grassland, is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). The herbaceous layer is less than 1.2 meters in height and cover is open to continuous (CNPS 2023a). Annual grassland covers the entire PSA outside of the aquatic features (88.24 acres).

5.2 Aquatic Resources

A formal aquatic delineation was conducted on January 18, 2024. There is one seasonal channel (EPH-01; 0.37 acre, 846.07 linear feet), Patterson Run, within the PSA where the along the gen-tie alignment, which parallels Patterson Pass Road (Figure 3). This seasonal channel flows southwest to northeast. The channel had moderate flow during the March 2023 and February 2024 surveys and was dry during the May and August 2023 surveys. One swale-like area was surveyed along the gen-tie alignment at the southwest corner of the PG&E substation. This feature exhibited cracked clay and sandy wash type soils during the August 2023 survey, with patchy grassland habitat along the margins and herbaceous plants such as dove weed (*Croton setiger*), curly dock (*Rumex crispus*), and big tarplant (*Blepharizonia plumosa*). However, the survey determined that this feature did not contain hydric soils, vegetation, or hydrology and, thus, is not a jurisdictional aquatic resource.

5.3 Observed Plant and Wildlife Species

A total of 42 plant species, consisting of 19 (45%) native species and 23 (55%) non-native species, were observed within or in the immediate vicinity of the PSA during the rare plant surveys and reconnaissance-level biological field surveys (Appendix C). A total of 20 native and 1 non-native wildlife species were recorded within or in the immediate vicinity of the PSA during the biological field surveys (Appendix C). Big tarplant was observed during the rare plant survey on August 2, 2023 (Refer to Section 5.4.1 for further information). No other special-status plant species were observed during the 2023 or 2024 surveys, and the surveys were coincident with the timing when many special-status plant species are detectable. A detailed account of special-status wildlife on site is provided in Section 5.4.2 below. Tricolored blackbird was observed foraging within the PSA during the January 18, 2024 site survey. No other special-status wildlife species or their sign were observed during the biological field surveys.

5.4 Special-Status Species

5.4.1 Special-Status Plants

Based on the updated literature review and database searches, a total of 42 special-status plants have been recorded within 5 miles of the PSA and/or within the 9 quadrangles in the vicinity of the PSA (Appendix A: Figure 4, Special-Status Species Occurrences; Appendix E, Special-Status Species' Potential to Occur within the PSA) (CDFW

2024; CNPS 2024). Of these species, 24 were removed from further consideration due to lack of suitable habitat within or adjacent to the PSA, no known occurrences within 5 miles of the PSA, and/or because the PSA is outside of the species' known geographic or elevation range. An additional 7 species were determined to have a low potential to occur based on the lack of suitable microhabitat (e.g., mesic areas, serpentine soils) and recent occurrences in the site vicinity, including heartscale (*Atriplex cordulata* var. *cordulata*), lesser saltscale (*Atriplex minuscula*), big-scale balsamroot (*Balsamorhiza macrolepis*), Mt. Diablo fairy-lantern (*Calochortus pulchellus*), palmate-bracted bird's-beak (*Chloropyron palmatum*), California alkali grass (*Puccinellia simplex*), and saline clover (*Trifolium hydrophilum*). None of these species are further addressed in this report.

Eleven special-status plants have a moderate or high potential to occur or were directly observed: big tarplant (*Blepharizonia plumosa*), brittlescale (*Atriplex depressa*), Lemmon's jewelflower (*Caulanthus lemmonii*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), San Joaquin spearscale (*Extriplex joaquinana*), showy golden madia (*Madia radiata*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*) (Table 2 and Appendix C. All the special-status plant species are found in valley and foothill grassland, often with alkaline and/or clay soils.

Table 2. Special-Status Plant Species with Moderate or High Potential to Occur

Species Name	Common Name	Status (Federal/State/CRPR/EACCS)[1]	Potential to Occur[2]
Blepharizonia plumosa	big tarplant	None/None/1B.1/C	Known

Notes: Additional information on determining potential to occur is in Appendix E, Special-Status Species Potential to Occur within the Project study area.

1 **Status:**
None= Not listed/no conservation status.
CRPR =California Rare Plant Rank. Plants ranked as CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of CEQA Guidelines Section 15380.
California Rare Plant Rank (CRPR) Status
1B: plants rare, threatened, or endangered in California and elsewhere.
Threat Rank
0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
C= 'Covered' under the East Alameda County Conservation Strategy (EACCS)

2 **Potential to Occur:**
Known to Occur= Known occurrences recorded within the PSA.

Protocol-Level Botanical Survey Results

Protocol-level botanical surveys were conducted in May and August 2023, and in April and June 2024. The surveys coincided with the period when all special-status species would be evident and identifiable.

Three individuals of big tarplant were observed during protocol-level botanical surveys conducted on August 2, 2023 (Figure 5).

Big tarplant is an annual herb that endemic to California, with limited distribution throughout the state. This species has a CRPR rank of 1B.1 (rare, threatened or endangered in California and elsewhere), and is a covered species under the EACCS. This species prefers habitats in valley grassland vegetation communities, as well as in foothill woodlands and chaparral (Calflora 2023). Threats to this species include urbanization, disking, residential development, and encroachment by non-native plant species (CNPS 2023b).

Only one plant was flowering, therefore allowing a qualified Dudek botanist (Laura Burris) to definitively key the plant to species based on descriptions, measurements, and photos taken in the field. All three individuals are located near the southwest corner of the PG&E substation in an area of sparse grassland that shows evidence of drainage patterns from the surrounding hills, including cracked soils, reduced grass cover and increased scrub species cover, and increased bare ground.

5.4.2 Special-Status Wildlife

Based on the updated literature review and database searches, a total of 41 special-status wildlife species have been recorded within 5 miles of the Project site and/or within the 9 quadrangles in the vicinity of the PSA (Figure 4; Appendix E) (CDFW 2024; USFWS 2024). Of these species, 21 were removed from further consideration due to lack of suitable habitat within or adjacent to the PSA, no known occurrences within 5 miles of the PSA, and/or because the PSA is outside of the species' known geographic or elevation range. An additional 10 species were determined to have a low potential to occur based on the lack of suitable microhabitat (e.g., vernal pools, aquatic habitat, host plants), including western spadefoot (*Spea hammondii*), California glossy snake (*Arizona elegans occidentalis*), western pond turtle (*Emys marmorata*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), Blainville's horned lizard (*Phrynosoma blainvillii*), grasshopper sparrow (*Ammodramus savannarum*), short-eared owl (*Asio flammeus*), Swainson's hawk (*Buteo swainsoni*), loggerhead shrike (*Lanius ludovicianus*), and pallid bat (*Antrozous pallidus*). None of these species are further addressed in this report.

Ten special-status wildlife species were determined to have a moderate or high potential to occur within the PSA: Crotch's bumble bee (*Bombus crotchii*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*). These special-status wildlife species are known to occur in open grassland habitats and are discussed in further detail below.

5.4.2.1 Crotch's Bumble Bee (*Bombus crotchii*)

Crotch's bumble bee is a state candidate for listing as endangered under CESA and is not covered under the EACCS. The species has low potential to occur within the PSA. The CBB occurs almost exclusively in California, currently primarily in the Central Valley, but has been described as having historically occupied grasslands and shrublands in southern to central California. Bumble bees are known to be generalist pollinators but have preferences based on flower color including purple, blue, and yellow. Specifically, this species is found in grasslands with food plant genera that include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum,* among others (USFS 2012). The queen flight season for this species is February to March, and the colony active period (highest detection probability) is April to August (CDFW 2023e). Additionally, suitable habitat may contain any of the following: 1) areas of grasslands and upland scrub that contain requisite habitat elements, such as small mammal burrows and forage plants; 2) potential nest habitat (late February through late October) containing underground abandoned small mammal burrows, perennial bunch grasses and/or thatched annual grasses, brush piles, old bird nests, dead trees or hollow logs; 3) overwintering sites (November through early February) utilized by mated queens in self-excavated hibernacula potentially in soft, disturbed soil, sandy, well-drained, or loose soils, under leaf litter or other debris with ground cover requisites such as barren areas, tree litter, bare-patches within short grass in areas lacking dense vegetation. There are no CNDDB records within 5 miles of the PSA (CDFW 2024).

Crotch's Bumble Bee Focused Habitat Assessment Survey Results

Focused Crotch's bumble bee habitat assessments were conducted on May 16 and August 2, 2023, and January 18, 2024. Scattered floral resources were observed including lupines (*Lupinus* spp.), Mexican whorled milkweed (*Asclepias fascicularis*), and exserted Indian paintbrush (*Castilleja exserta*), along with potential nesting substrates such as bare cracked soil, small rocky areas, and small rodent burrows. No bumble bee species were seen during the field surveys.

5.4.2.2 California Tiger Salamander (*Ambystoma californiense*)

The central California distinct population segment (DPS) of California tiger salamander is a federally and state threatened species and is covered under the EACCS. This species has moderate potential to occur within the PSA. This species is found in annual grassland, valley-foothill hardwood, and valley-foothill riparian habitats and breeds in vernal pools, ephemeral pools, stock ponds, and (infrequently) along streams and human-made water bodies if predatory fishes are absent. The nearest documented occurrence is approximately 1.6 miles southwest of the PSA from 2012 (Occ. No. 1003), but there are numerous other records within 5 miles of the PSA (CDFW 2024). The habitat on the PSA is suitable upland refuge and dispersal habitat for this species, consisting of grassland with small mammal burrows. Two nearby stock ponds provide suitable aquatic breeding habitat approximately 0.3 miles from the PSA (Figure 6). No California tiger salamanders were observed during the field surveys, but this species is extremely difficult to detect without focused surveys in accordance with USFWS and CDFW-sanctioned protocols (USFWS and CDFG 2003).

A protocol-level habitat assessment for California tiger salamander was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Three aquatic features were assessed for habitat suitability for CTS: Patterson Run, a seasonal stream paralleling Patterson Pass Road, and two stock ponds approximately 0.3 miles northwest (Pond 1) and west (Pond 2) of the PSA (Figure 6). Of these aquatic features, Ponds 1 and 2 were determined to provide high-quality breeding habitat for California tiger salamander. Patterson Run lacked large pools suitable for breeding. No CTS were observed during the field surveys or habitat assessment. Grasslands surrounding the aquatic features, including within the PSA, contain suitable upland refuge and overland migration habitat.

5.4.2.3 California Red-Legged Frog (*Rana draytonii*)

California red-legged frog (CRLF) is a federally threatened species and a California Species of Special Concern and is covered under the EACCS. The PSA is also located within critical habitat for California red-legged frog (refer to Section 5.6.1; 75FR12816 12959). The species has a moderate potential to occur within the PSA. This species is found in lowland streams, wetlands, riparian woodlands, and livestock ponds with dense, shrubby, or emergent vegetation and deep, still, or slow-moving water. They will use adjacent upland habitats for refuge during dry seasons. The nearest documented occurrences are approximately 1.5 miles east, south, and west of the PSA (Occ. Nos. 822 from 2001, 1079 from 2008, 1759 from 2012, and 44 from 1993); there are numerous other records within 5 miles of the PSA (CDFW 2024). The habitat on the PSA is suitable upland refuge and dispersal habitat for this species, consisting of abundant grassland with small mammal burrows.

A protocol-level habitat assessment for CRLF was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Three aquatic features were assessed for habitat suitability for CRLF: Patterson Run, a seasonal stream

paralleling Patterson Pass Road, and two stock ponds approximately 0.3 miles northwest (Pond 1) and west (Pond 2) of the PSA (Figure 6; Appendix F, CRLF Habitat Assessment Datasheets). Of these aquatic features, only Pond 2 was determined to provide high-quality breeding habitat for CRLF, consisting of a large, deep stock pond with perennial water and a large quantity of emergent vegetation (bulrush [*Schoenoplectus* sp.] along with alkali bulrush [*Bolboschoenus maritimus*]) and surrounded by grazed grassland. Patterson Run lacked large pools suitable for breeding, and Pond 1 lacked suitable emergent or marginal vegetation. No CRLF were observed during the field surveys or habitat assessment.

5.4.2.4 Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird (nesting colony) is state threatened and a California Species of Special Concern that is covered under the EACCS and is known to forage within the PSA. This species was observed during the field survey on January 18, 2024, foraging in the grassland within the gen-tie buffer area. Tricolored blackbird nests colonially near freshwater, often in emergent wetlands of cattail or tule, but will also nest in dense, thorny vegetation such as Himalayan blackberry (*Rubus armenicus*) or thistles (*Cirsium* spp., *Silybum* spp., etc.). They forage in grasslands, woodlands, and in agricultural areas. The nearest documented occurrence is 1.8 miles east of the PSA, a historical record from 1998 (Occ. No. 418), and several other occurrences are recorded within 5 miles of the PSA as recently as 2015 (CDFW 2024). Although this species was observed foraging on the PSA, it is unlikely to form a nesting colony as there is no suitable nesting habitat present. Low-quality wetland habitat is present at a stock pond approximately 0.5 miles west of the BESS area, but this is likely too small to sustain a nesting colony.

5.4.2.5 Golden Eagle (*Aquila chrysaetos*)

Golden eagle is federally protected by the Bald and Golden Eagle Protection Act and is a California fully protected species that is covered under the EACCS with moderate potential to occur within the PSA. This species nests and winters in hilly, open, or semi-open areas including shrublands, grasslands, pastures, riparian areas, mountain canyons, and open desert, constructing nests in large trees and cliffs in open areas. The nearest documented occurrence is approximately 4.9 miles south of the PSA from 2014, a record of a nest in a tower (Occ. No. 323; CDFW 2024). The grassland foraging habitat on the PSA is of moderate quality, with low-quality nesting habitat provided by transmission towers surrounding the site. No eagles were observed during the field surveys.

5.4.2.6 Burrowing Owl (*Athene cunicularia*)

Burrowing owl is a California Species of Special Concern that is covered under the EACCS with moderate potential to occur on the PSA. This species nests and forages in grassland, open scrub, and agricultural lands that contain ground squirrel burrows or burrow surrogates (e.g., concrete debris piles, culverts, riprap) for nesting and shelter. There are three documented occurrences adjacent or overlapping with the PSA, from 1982, 2002, and 2006 (Occ. Nos. 48, 468, and 1229). Multiple other documented occurrences are within 5 miles of the PSA, most recently from 2015 (CDFW 2024).

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, and January 18, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for burrowing owl. There is abundant grassland habitat within the PSA, but it is currently of moderate suitability for burrowing owls because it lacks extensive ground squirrel burrows and the vegetation is generally tall and dense (burrowing owls prefer areas with short, sparse

vegetation). Burrows present on the site were generally small and not suitable for burrowing owls. Higher-quality habitat with low, grazed vegetation and ground squirrel colonies were observed throughout the surrounding landscape. No burrowing owls were observed during the field surveys.

Protocol-level Burrowing Owl Survey Results

Protocol-level burrowing owl surveys were conducted on April 12, May 3, May 24, and June 17, 2024. Results of the focused burrow survey were used to identify areas of potential breeding habitat (burrows). No burrowing owls or their sign were observed during the field surveys. This species is not present within the PSA.

5.4.2.7 Northern Harrier (*Circus hudsonius*)

Northern harrier is a California Species of Special Concern that is not covered under the EACCS with a moderate potential to occur within the PSA. This species nests in open wetlands (such as wet meadows, old fields, and marshes) and in dry grassland and grain fields, and forages in open habitats including grassland, scrub, rangelands, and emergent wetlands. The nearest documented occurrence is approximately 2.2 miles northeast of the PSA from 2001 (Occ. No. 49; CDFW 2024). There is moderate-quality grassland habitat on the PSA of sufficient height and density for nesting. No northern harriers were observed during the field surveys.

5.4.2.8 White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is a California fully protected species that is not covered under the EACCS with a low potential to occur within the PSA. This species nests in woodland, riparian, and individual trees near open land, and forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savannah, and disturbed lands. The nearest documented occurrence is approximately 3.7 miles south of the PSA, a historical record from 1996 (Occ. No. 152; CDFW 2024). There is moderate-quality grassland habitat present within the PSA, with a few scattered cottonwood trees (*Populus* sp.) suitable for nesting. No white-tailed kites were observed during the field surveys.

5.4.2.9 American Badger (*Taxidea taxus*)

American badger is a California Species of Special Concern and is covered under the EACCS, with moderate potential to forage within the PSA. This species occurs on dry, open, treeless areas such as grasslands, coastal scrub, agriculture, and pastures, especially with friable soils for burrowing. The nearest documented occurrences are approximately 0.2 miles north (Occ. No. 520 from 2014) and south (Occ. No. 250, unknown date prior to 2004) of the PSA, with multiple other records within 5 miles of the PSA, the most recent from 2015 (CDFW 2024). Although there is abundant moderate-quality grassland for foraging, no suitable den habitat was documented within the PSA during the focused burrow surveys, as described below.

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for American badger. Several large burrow tailings were observed on the eastern side of the PSA along Patterson Pass Road, evidence of highly suitable soils for burrowing and hunting. Burrows were also investigated for sign of American badger

occupancy, including prey remains, scat, tracks, and claw/scratch marks. The burrows were not greater than 4 inches in diameter and are associated with active ground squirrel colonies and are not suitable denning structures for American badgers. No American badgers or their sign were observed during the field surveys.

5.4.2.10 San Joaquin Kit Fox (*Vulpes macrotis mutica*)

San Joaquin kit fox is a federally endangered and state threatened species and is covered under the EACCS, with low potential to occur on the PSA. This species occurs on grassland and scrublands, oak woodland, alkali sink scrubland, vernal pools, and alkali meadows. The PSA is in the northern range of this species, in the S1 (Alameda, Contra Costa, and San Joaquin Counties) San Joaquin kit fox satellite population recovery area (USFWS 2010), where there have been no confirmed observations since 2002 (USFWS 2020). Extensive surveys using scent dogs between 2001 and 2003 did not detect any San Joaquin kit foxes in surveyed portions of Alameda County (Smith et al. 2006).

The nearest documented occurrence is approximately 0.3 miles southwest of the PSA, a historical record from 1984 (Occ. No. 6); multiple other historical records are within 5 miles of the PSA, all prior to 1992 (CDFW 2024). Although there is abundant moderate-quality grassland present on the site, none of the burrows onsite are suitable for this species (see burrow survey results, below), and it is highly unlikely this species utilizes the PSA for denning habitat.

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for San Joaquin kit fox. Several large burrow tailings were observed on the eastern side of the PSA along Patterson Pass Road, evidence of highly suitable soils for burrowing. Burrows were also investigated for sign of San Joaquin kit fox occupancy, including prey remains, scat, tracks, and claw/scratch marks. The burrows onsite were not greater than 4 inches in diameter and are associated with active ground squirrel colonies and are not suitable denning structures for San Joaquin kit fox. No San Joaquin kit fox or their sign were observed during the field surveys.

5.5 Nesting Birds

The PSA provides habitat for nesting birds protected by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC). Red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), and American kestrel (*Falco sparverius*), and other bird species were observed foraging on site and the vicinity. While no nests were observed during the surveys, there are suitable trees along Patterson Pass Road, transmission towers for large raptors and ravens, and grassland for ground-nesting species such as western meadowlark (*Sturnella neglecta*).

5.6 Other Sensitive Resources

5.6.1 Designated Critical Habitat

Designated Critical Habitat (DCH) is designated by USFWS when a species is federally listed and represents areas of the species' range (or potential range) that contain essential features for the species' conservation (USFWS

2017). There is DCH for multiple species within 5 miles of the PSA; however, only DCH for CRLF overlaps with the Study Area (Appendix A: Figure 5, Critical Habitat and Essential Fish Habitat).

California Red-Legged Frog

There is DCH for CRLF overlapping the PSA and extending to the north and southwest (USFWS 2023e), in areas of undeveloped or rural agricultural lands. Critical habitat for CRLF consists of four primary constituent elements (PCEs), which support different components of the species' life history, as last updated by USFWS in 2010 (75 FR 12816-12959):

1. **Aquatic Breeding Habitat**: Standing bodies of fresh water including natural and manmade (e.g., stock) ponds, slow-moving streams, pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in most years.
2. **Aquatic Non-Breeding Habitat:** Freshwater aquatic habitats that may not hold water long enough for the species to complete its aquatic life cycle, but which provide for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult CRLF. These may include breeding habitat as described above, as well as plunge pools within intermittent creeks, seeps, quiet water refugia within streams, and flowing springs.
3. **Upland Habitat**: Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to 1 mi (1.6 km), depending on surrounding landscape and dispersal barriers. Upland habitat may include grassland, woodland, forest, wetland, or riparian areas that provide shelter, forage, and predator avoidance with structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), small mammal burrows, or moist leaf litter.
4. **Dispersal Habitat:** Accessible upland or riparian habitat within and between occupied locations within a minimum of 1 mi (1.6 km) of each other and that support movement between such sites. Dispersal habitat includes various natural or moderately altered habitats (such as agricultural fields) that do not contain dispersal barriers. Dispersal habitat does not include moderate- to high-density urban or industrial developments, nor does it include large (>50 ac) lakes or reservoirs.

PCEs 3 and 4 (upland and dispersal habitat) are present on the PSA, and PCEs 1 and 2 (aquatic breeding and non-breeding habitat) are present within dispersal distance (1 mile) of the PSA.

5.6.2 Essential Fish Habitat

Essential Fish Habitat (EFH) on the west coast is managed by the National Oceanic and Atmospheric Administration (NOAA) and the Pacific Fishery Management Council (PFMC) under the Magnuson-Stevens Act of 1976 to protect habitat for federally managed fish species across life stages (NOAA 2021). EFH is broadly mapped as the geographic area wherein a fish species may occur at any time in its life and is designated at the watershed level of the USGS 4th field hydrologic unit to account for variability in freshwater habitats over time (PFMC 2014, 2022). Thus, mapped EFH may encompass terrestrial habitats that do not currently provide appropriate conditions for target fish species but are within the same watershed as the species' known distribution and may become suitable habitat as environmental conditions change (e.g., droughts, floods, etc.).

The PSA overlaps with designated freshwater EFH for Pacific coast salmon. Specifically, the Pacific Salmon Fishery Management Plan (PFMC 2014, 2022) identifies freshwater EFH for Chinook salmon (*Oncorhynchus tshawytscha*) in the San Joaquin Delta hydrologic unit (HUC-8 18040003), which includes the PSA within the Old River watershed. Freshwater EFH for Chinook salmon consists of four major activities: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; and (4) adult migration corridors and adult holding habitat (PFMC 2014, 2022). Chinook salmon EFH includes all freshwater habitat currently or historically occupied in Washington, Oregon, Idaho, and California (PFMC 2014, 2022). There are currently no aquatic habitats with flowing water suitable for salmonids within the PSA.

5.6.3 Sensitive Natural Communities

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB; CDFW 2024) and communities listed in the California Natural Community List (CDFW 2023d) with a rarity rank of S1, S2, or S3 (S1: critically imperiled; S2: imperiled; S3: vulnerable). Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible. There are no sensitive natural communities within the PSA.

5.6.4 Wildlife Corridors and Habitat Linkages

Wildlife movement corridors have been recognized by federal and state agencies as important habitats worthy of conservation. Wildlife corridors provide migration channels seasonally (i.e., between winter and summer habitats), and provide non-migrant wildlife the opportunity to move within their home range for food, cover, reproduction, and refuge. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. Habitat linkages provide a potential route for gene flow and long-term dispersal of plants and animals and may also serve as primary habitat for smaller animals, such as reptiles and amphibians. Habitat linkages may be continuous habitat or discrete habitat islands that function as steppingstones for dispersal.

The PSA does not overlap with any California Essential Habitat Connectivity Areas (CDFW 2014). but is considered part of the large contiguous Natural Landscape Block that extends from Alameda County south through the Diablo Range and Southern Coastal Ranges, terminating north of the Transverse Ranges (CDFW 2017). Given that the existing vegetation is surrounded on three sides by similar annual grassland habitat and is close to the existing PG&E substation, the PSA likely provides movement habitat for local wildlife but is not recognized as an important regional wildlife corridor by any state agency or jurisdiction and is of limited linkage value on a landscape scale. Furthermore, although local wildlife may utilize the PSA as movement habitat, regional connectivity is highly limited by Patterson Pass Road, an unnamed gravel road directly to the north of the PSA, Interstates (I) 580 and I-5 to the north and east, respectively, and the railroad south of the PSA. Thus, the project would not impose significant barrier to wildlife movement.

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6 Summary of Findings

6.1 Biological Impact Overview

The Project could have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. Incorporation of mitigation measures ensures that these impacts will be less than significant.

A total of 1 special-status plant species and 5 special-status wildlife species are known to occur within the PSA, were observed or detected during field surveys, or have a moderate to high potential to occur on the PSA and could therefore be impacted by eventual Project implementation. Big tarplant was observed on the site Tricolored blackbird was observed foraging on the site and five other special-status wildlife species have a moderate or high potential to occur on the PSA, including California tiger salamander, California red-legged frog, golden eagle, northern harrier, and white-tailed kite. Special-status plant and wildlife resources may be subject to agency jurisdiction pursuant to regulations under FESA, CESA, California FGC, CEQA guidelines, the Alameda County General Plan, and the EACCS. Species-specific AMMs will be provided for all special-status species to reduce potential impacts to less than significant under CEQA.

The Project would not have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

No CDFW sensitive natural communities were identified within the PSA, and no impacts are anticipated.

Designated Critical Habitat for California red-legged frog overlaps with the PSA. Removal of upland refuge and dispersal habitat associated with construction of the BESS site will be mitigated through purchase of appropriate credits at an agency-approved mitigation bank.

The PSA overlaps with designated freshwater EFH for Pacific coast salmon. Specifically, the Pacific Salmon Fishery Management Plan (PFMC 2014, 2022) identifies freshwater EFH for Chinook salmon (*Oncorhynchus tshawytscha*) in the San Joaquin Delta hydrologic unit (HUC-8 18040003), which includes the PSA within the Old River watershed. There are currently no aquatic habitats with flowing water suitable for salmonids within the PSA and no impacts are anticipated.

The Project could 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. Incorporation of mitigation measures ensures that these impacts will be less than significant.

A USACE-level jurisdictional delineation of aquatic resources was conducted in January 2024. There are no aquatic resources present on the BESS facility portion of the PSA. The gen-tie alignment crosses one seasonal channel (EPH-01, Patterson Run), which parallels Patterson Pass Road and flows southwest to northeast on a seasonal basis. AMMs, including obtaining a CWA Section 404 Nationwide Permit from the USACE and CWA Section 401 Water Quality Certification from the CVRWQCB, are recommended to reduce potential impacts to less than significant under CEQA.

The Project would not 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.

Undeveloped grasslands on the PSA may provide nursery and dispersal habitat for wildlife species. According to the California Essential Habitat Connectivity Project, the PSA does not overlap with any California Essential Habitat Connectivity Areas (CDFW 2014) but is considered part of a Natural Landscape Block (CDFW 2017). Given that the existing vegetation is surrounded on three sides by similar open, undeveloped annual grassland habitat and is close to the existing PG&E substation, the PSA likely provides habitat value but is of limited linkage value in the landscape. The PSA plan and recommended avoidance and minimization measures to protect special-status species ensure this impact is less than significant.

The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

There are no tree preservation policies or ordinances in Alameda County. The Alameda County General Plan and Code of Ordinances have policies for protecting riparian, wetland, and watercourse habitats. The PSA plan and recommended avoidance and minimization measures to protect aquatic resources ensure this impact is less than significant.

The Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Incorporation of mitigation measures ensures that the Project will not conflict with the EACCS.

The EACCS provides a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county. The PSA is in Conservation Zone (CZ) 10 of the EACCS. This CZ emphasizes conservation priorities that may conflict with the Project implementation, such as protection of all big tarplant occurrences, protection of critical habitat for California red-legged frog (including annual grasslands near ponds), and protection and restoration of Patterson Run. The impacts to the EACCS CZ-10 from Project development are a very small percentage of the inventory of those lands in CZ-10.

The Project will obtain applicable permits and other approvals from USFWS, USACE, CDFW, and RWQCB, and will minimize and mitigate impacts on natural resources to comply with the regulatory standards of these agencies. These are the same regulatory standards applied by USFWS and the other environmental agencies in their review and approval of the EACCS. The Project will adhere to AMMs that comply or exceed EACCS guidelines, so development of this PSA will not conflict with implementation of the EACCS, and Project effects on EACCS Covered Species, if present, would be avoided and minimized. Further, the Project will provide compensatory mitigation for impacts to aquatic resources and specific EACCS covered species through the acquisition of credits from existing mitigation banks and other compensatory mitigation.

The EACCS defines standardized mitigation ratios for each of the focal species to be utilized by local jurisdictions and resource agencies to determine the level of mitigation necessary to offset project impacts. These are based upon an evaluation of the habitat quality on the PSA scored using species-specific “habitat units.” Mitigation ratios are then calculated based on the acreage of habitat affected, the location of the site, and the species-specific mitigation ratio table (Appendix G). Total mitigation acreages may vary depending on the location of selected mitigation areas the total habitat acreage affected by the Project.

6.2 Regulations and Permitting Overview

Federal: USACE, USFWS

- Under FESA, USFWS regulates species listed as threatened or endangered, including DCH. Since the Project "may affect" several federally listed species and their habitat, formal consultation with USFWS should be initiated to identify the appropriate FESA permitting pathway.
  - Section 7 consultation would occur if a federal CWA Section 404 were required (see next bullet). Section 7 of the FESA requires all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat critical to such species' survival. To ensure that its actions do not result in jeopardy to listed species or in the adverse modification of critical habitat, each federal agency must consult with USFWS and/or NMFS regarding actions that may affect listed species, including issuance of CWA Section 404 permits by USACE. Consultation begins when the federal agency submits a written request for initiation to USFWS or NMFS, along with the agency's biological assessment (BA) of its proposed action, and when USFWS or NMFS accepts that biological assessment as complete. If USFWS or NMFS concludes that the action is not likely to adversely affect a listed species, the action may be conducted without further review under FESA. Otherwise, USFWS or NMFS must prepare a written biological opinion (BO) describing how the agency's action will affect the listed species and its critical habitat.
  - Section 10 consultation would occur if there were no federal land, funding, or authorization (e.g., CWA permit issuance) required. Private landowners, corporations, state agencies, local agencies, and other nonfederal entities must obtain a Section 10(a)(1)(B) incidental take permit for take of federally listed fish and wildlife species "that is incidental to, but not the purpose of, otherwise lawful activities." Section 10(a)(1)(B) incidental take permits are issued upon completion of an approved habitat conservation plan (HCP).
- USFWS regulates the take of golden eagle under BGEPA. If a golden eagle nest became established on or within 0.5 miles of the PSA and there was reasonable likelihood that the Project would result in take (including disturbance resulting in nest abandonment), the applicant would need to obtain an eagle incidental take permit.
- Federal waters of the United States are regulated through Section 404 of the CWA and fall under the authority of USACE. For impacts to waters of the United States, permitting would be achieved through a technical study and a USACE verified Aquatic Resources Delineation, and either through a Nationwide Permit (NWP) (i.e., for impacts less than or equal to 0.5 acres, 300 linear feet), or through a Standard Permit (SP) such as an individual permit.

State: CDFW, CEQA, RWQCB

- Under the CESA, CDFW regulates species listed as threatened or endangered. Note that unlike the FESA, CESA does not include indirect impacts (e.g., habitat degradation, harassment, harm) in its definition of "take." In addition, compliance with the CFGC Section 1900 as it relates to the NPPA, Section 3503 regulating "take" of nesting migratory birds and raptors as designated by the MBTA, and Section 4150 regulating the "take" of non-game mammals, including bat species, apply to state-listed and other species. Additionally, CFGC Section 1940 requires sensitive habitat and sensitive natural communities that have

the potential to impacted by a project, to be addressed through the CEQA process (see below). If the Project potentially impacts a listed special-status species and/or suitable habitat of that species that may potentially occur and/or are known to occur in the PSA, then CESA permitting may be achieved through a technical study and the preparation this BRA, CFGC Section 2081 Incidental Take Permit (ITP), and/or through CFGC Section 1602 Lake and Streambed Alteration Agreement (LSAA).

- Pursuant to CEQA Guidelines Section 15380, protection is provided for federal and/or state-listed species, as well as species not listed federally or by the state that may be considered rare, threatened, or endangered. Under the CEQA guidelines, protection is also provided to aquatic resources and surface waters. Species that meet these criteria can include "candidate species," species "proposed for listing," and "SSC." Plants listed in the CNPS Rare Plant Program are considered to meet CEQA's Section 15380 criteria as well. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible. CEQA must be completed prior to the issuance of any federal or state permits.
- SWRCB has authority over waters of the state, including wetlands, through Section 401 of the CWA, as well as the Porter–Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. In California CWA Section 404 and Porter–Cologne Act compliance are achieved through an Aquatic Resources Delineation (preferably USACE verified), and Section 404 permitting with the RWQCB and obtaining WQC and/or a WDR for impacts to waters of the state. Note that aquatic resources may meet criteria for both waters of the United States and waters of the state.

Local: Alameda County

- The EACCS provides a framework for natural resource conservation and helps streamline the environmental permitting process within the eastern portion of Alameda County. The EACCS defines standardized mitigation ratios for each of the focal species to be utilized by local jurisdictions and resource agencies to determine the level of mitigation necessary to offset project impacts. These are based upon an evaluation of the habitat quality on the PSA scored using species-specific "habitat units." Mitigation ratios are then calculated based on the acreage of habitat affected, the location of the site, and the species-specific mitigation ratio table. The EACCS also provides approved mitigation measures for focal species covered under the plan, along with general biological AMMs applicable to all projects. Although not an HCP per se, the EACCS was developed with the intention of streamlining the FESA regulatory process and could therefore facilitate the formal consultation process with USFWS described above, especially if Section 10 is identified as the only permitting mechanism.
- The General Plan includes limited policies to help preserve and restore biological resources and aquatic resources throughout Alameda County. The PSA is not overlaid with any special designations according to the General Plan and is designated "Large Parcel Agriculture," so most of the policies related to preservation and restoration of habitat do not directly apply. The limited policies that do apply focus on protection and mitigation of watercourses and riparian areas. General Plan compliance as it relates to these resources is expected to be achieved through the CEQA process.

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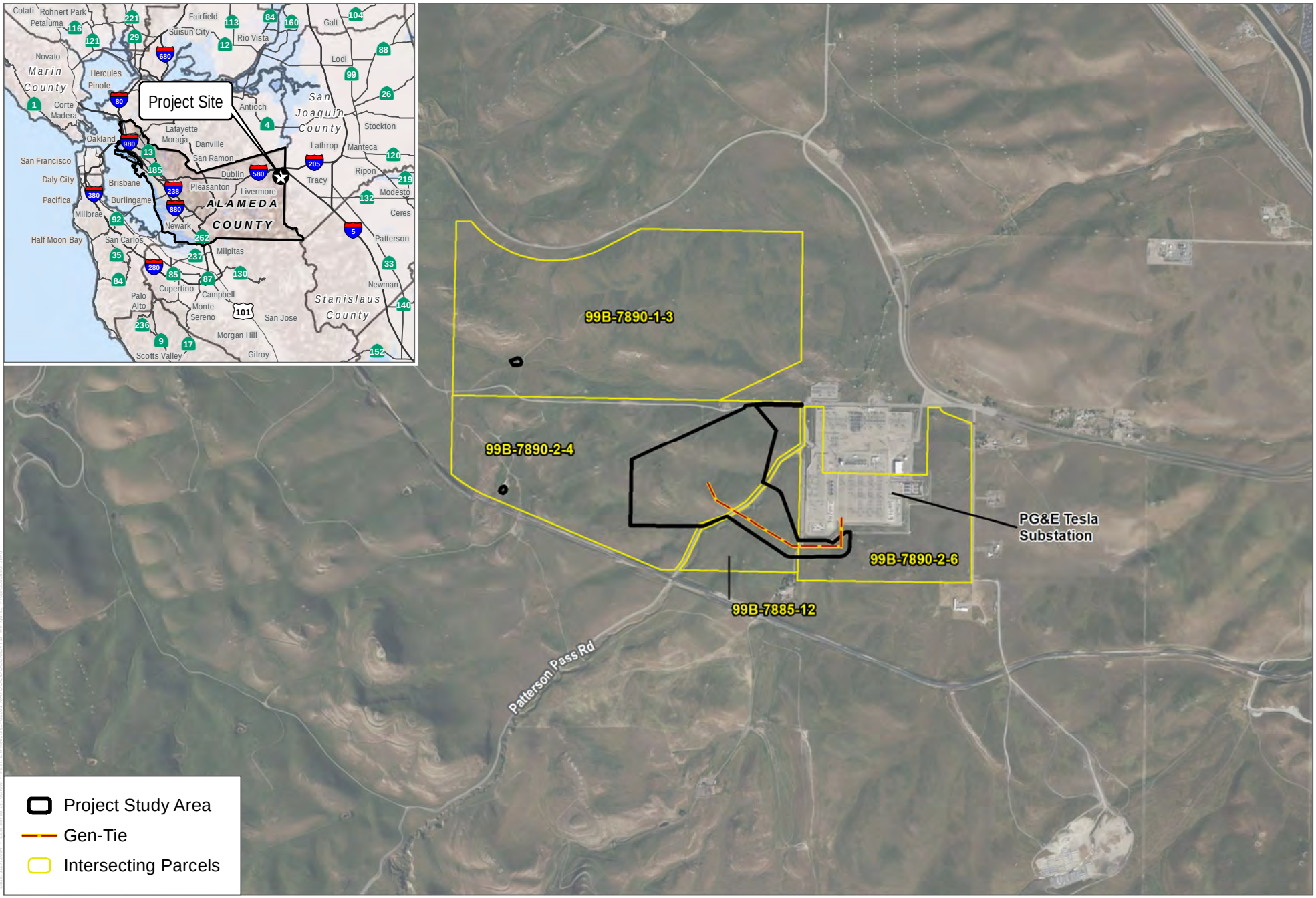
Appendix A
Figures 1–6



SOURCE: Bing Maps 2024, Open Street Map 2019

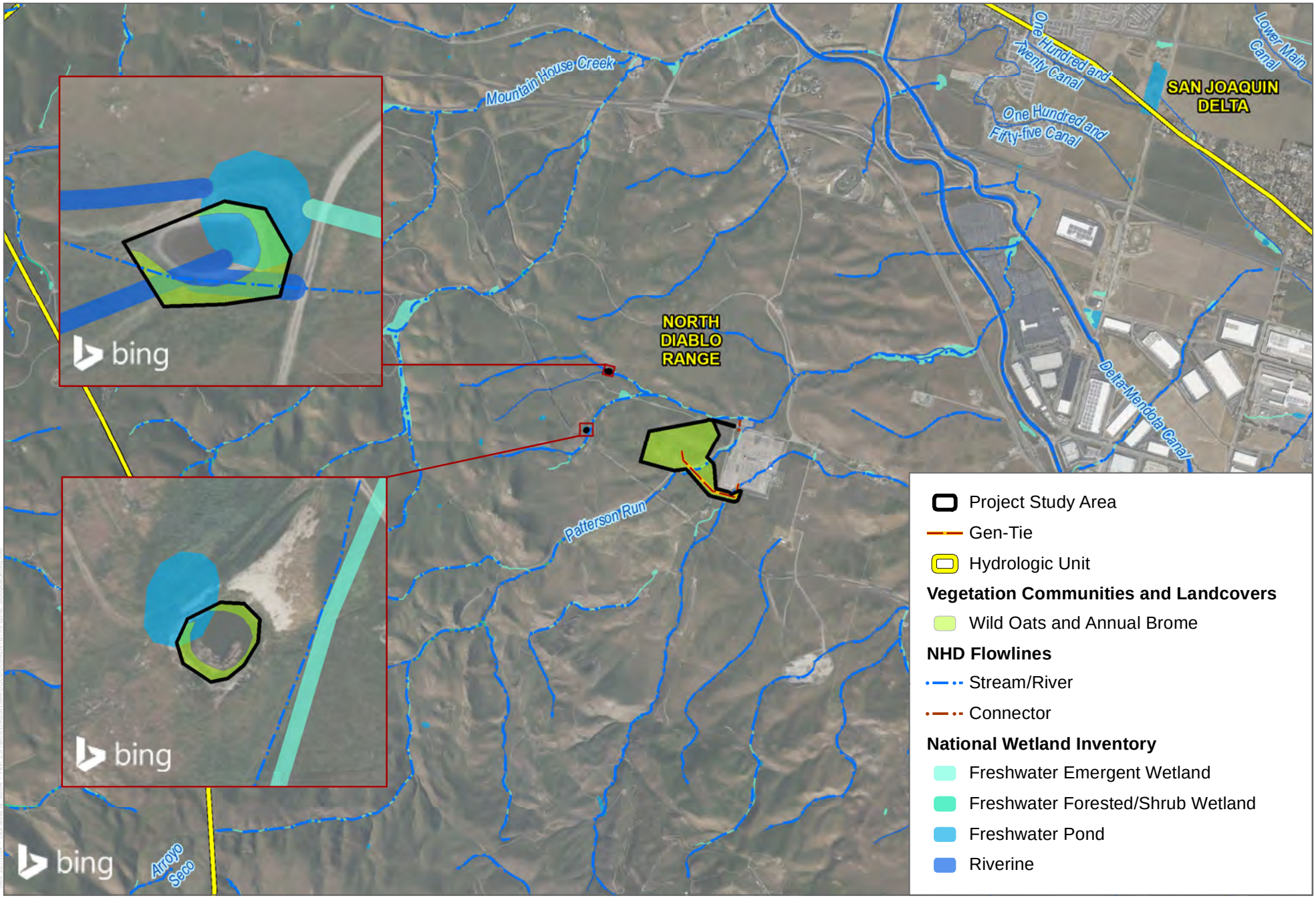
DUDEK

0 1,000 2,000 Feet

FIGURE **1**

Project Location

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA



SOURCE: Bing Maps 2024, Open Street Map 2019, USFWS 2019, USGS 2019

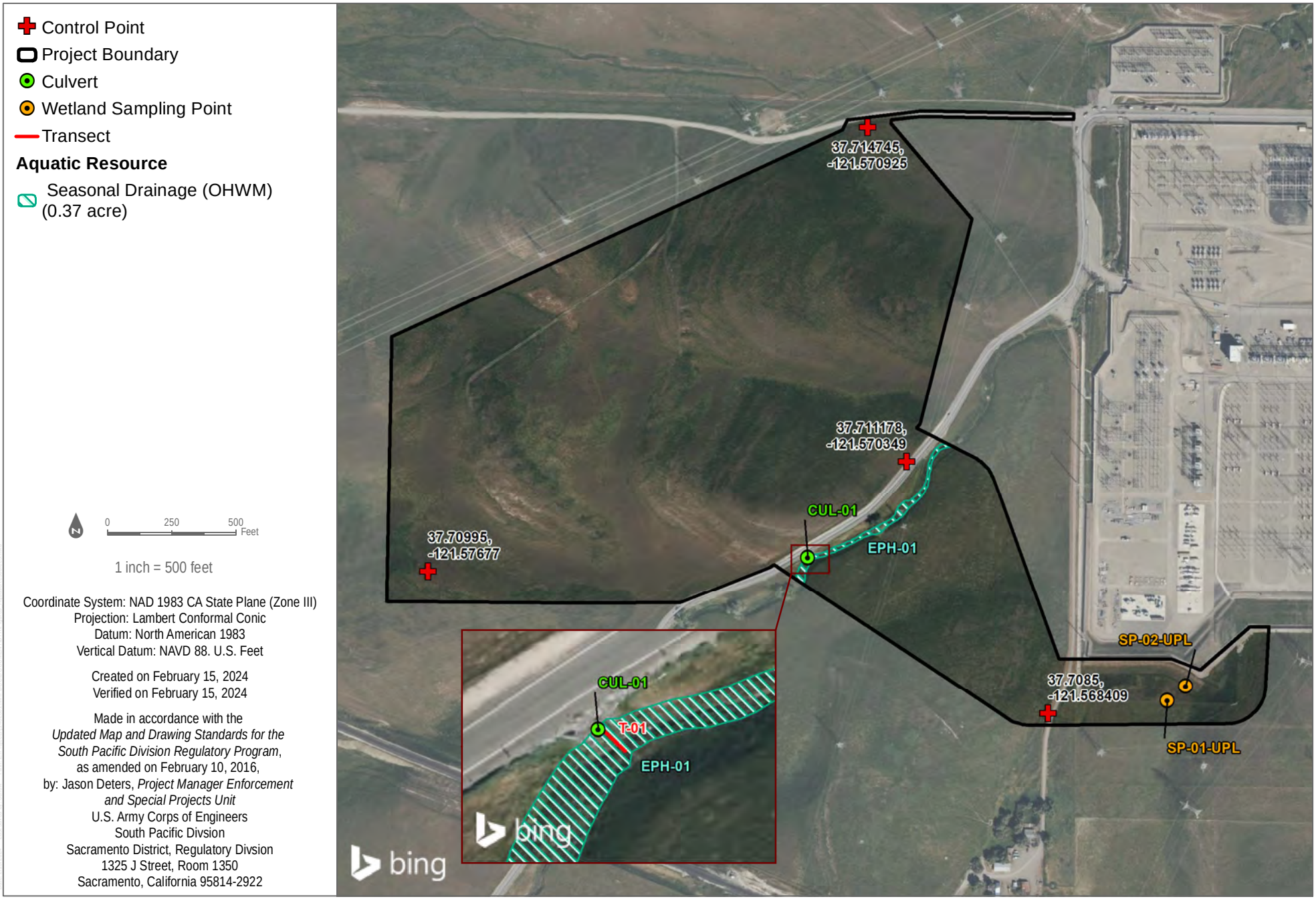
DUDEK

0 0.5 1 Miles

FIGURE **2**

Biological Setting

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA

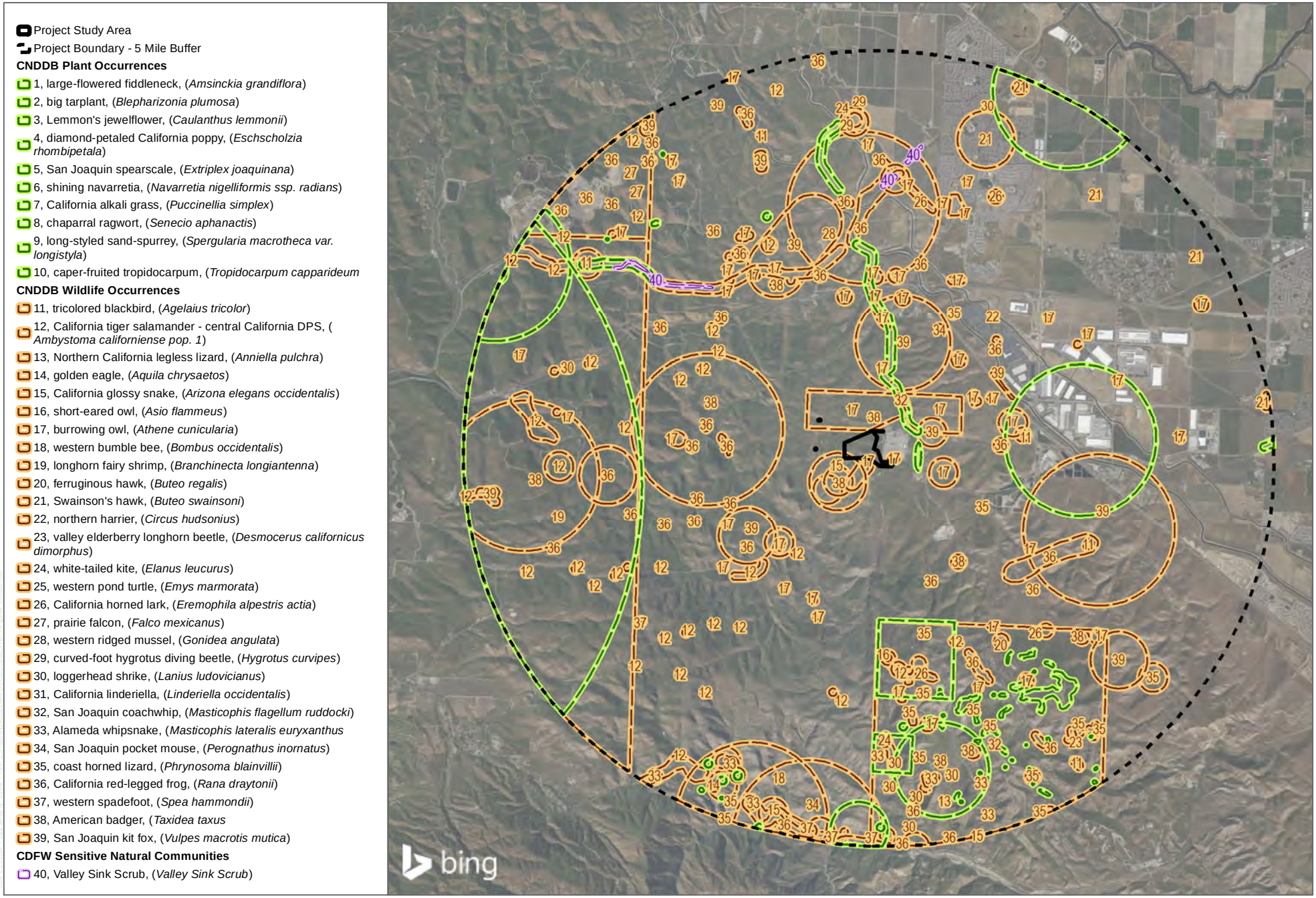


SOURCE: Bing Maps (accessed 2024); Open Streets Map 2019

FIGURE 3

Aquatic Resources Delineation

DUDEK



SOURCE: Bing Maps 2022; CA Dept. of Fish and Wildlife 2021

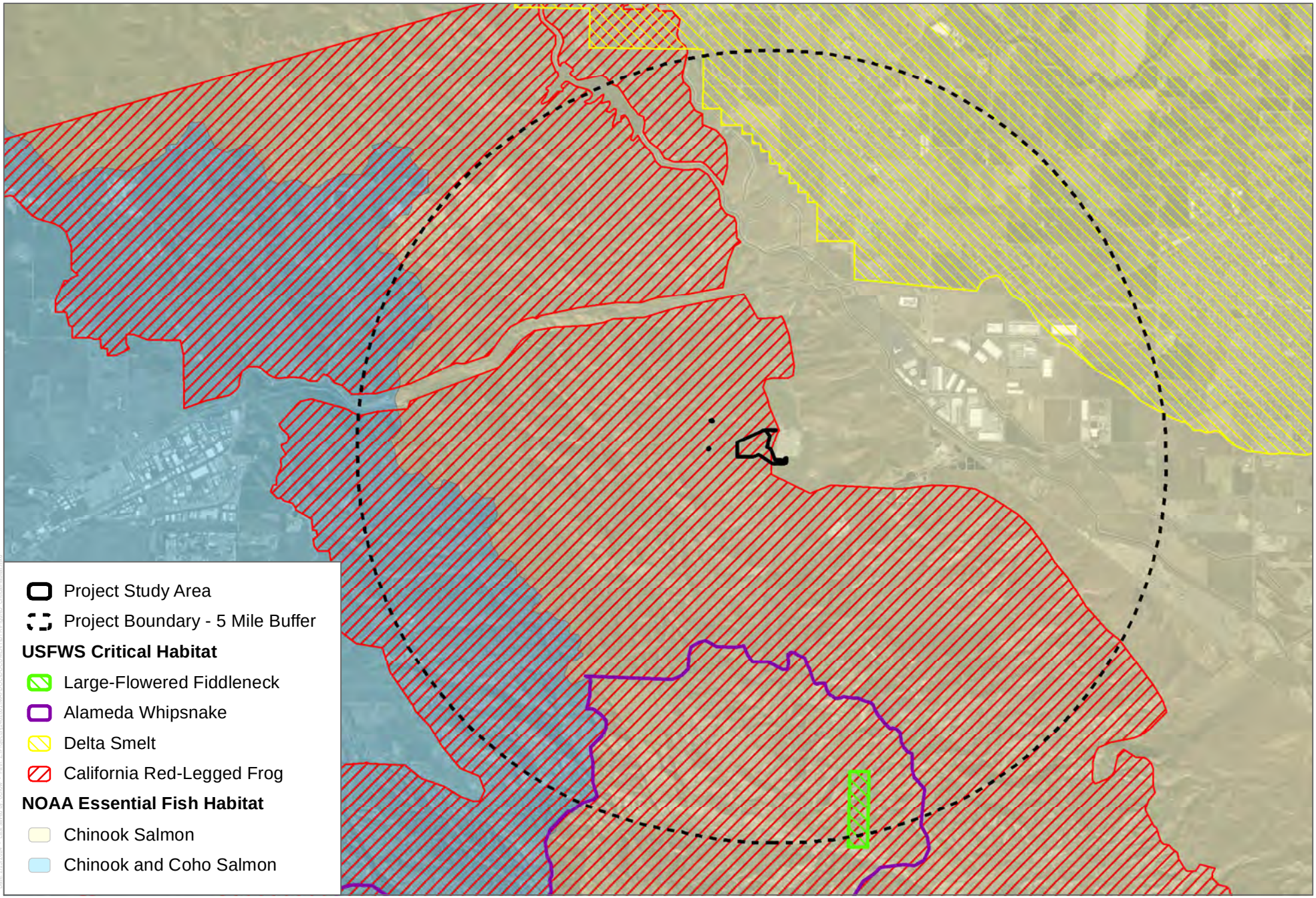
DUDEK

0 0.75 1.5 Miles

FIGURE 4

Special-Status Species Occurrences

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA



SOURCE: Bing Maps 2022, USFWS 2022, NOAA 2021

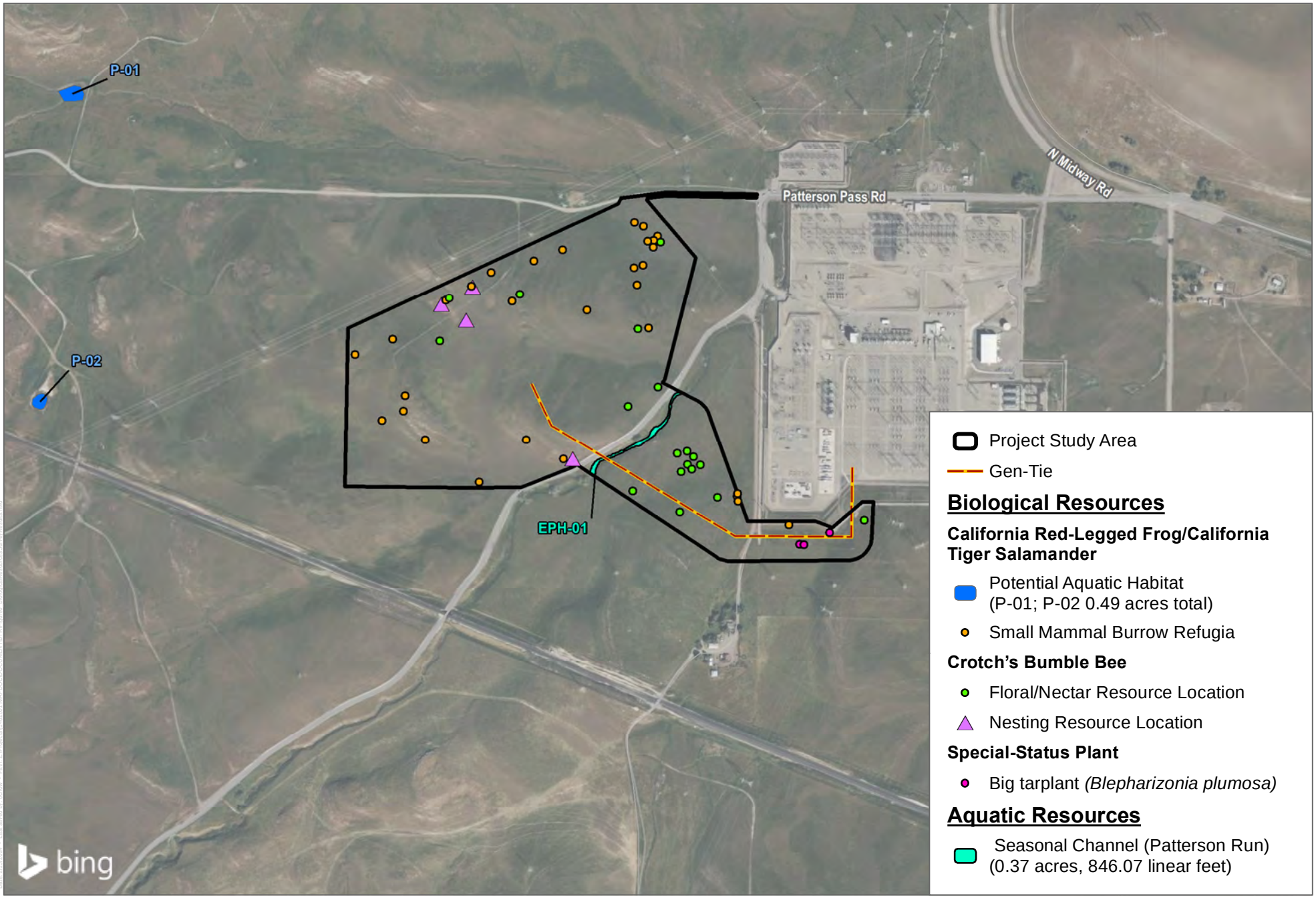
DUDEK

0 0.75 1.5 Miles

FIGURE 5

Critical Habitat and Essential Fish Habitat

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA



SOURCE: Bing Maps 2022, Open Street Map 2019, USGS 2022

DUDEK

0 425 850 Feet

FIGURE 6

Biological Resources Survey Results

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA

Appendix B
Database Search Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Byron Hot Springs (3712176) OR Clifton Court Forebay (3712175) OR Union Island (3712174) OR Altamont (3712166) OR Midway (3712165) OR Tracy (3712164) OR Mendenhall Springs (3712156) OR Cedar Mtn. (3712155) OR Lone Tree Creek (3712154))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Allium sharsmithiae Sharsmith's onion	PMLIL02310	None	None	G2	S2	1B.3
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Amsinckia grandiflora large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S2S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S2	SSC
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Atriplex minuscula lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Branchinecta longiantenna longhorn fairy shrimp	ICBRA03020	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Caulanthus lemmonii Lemmon's jewelflower	PDBRA0M0E0	None	None	G3	S3	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chlorogalum pomeridianum var. minus dwarf soaproot	PMLIL0G042	None	None	G5T3	S3	1B.2
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Cirsium fontinale var. campylon Mt. Hamilton thistle	PDAST2E163	None	None	G2T2	S2	1B.2
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Deinandra bacigalupii Livermore tarplant	PDAST4R0V0	None	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T3	S3	
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Fritillaria falcata talus fritillary	PMLIL0V070	None	None	G2	S2	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Hygrotus curvipes curved-foot hygrotus diving beetle	IICOL38030	None	None	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Leptosyne hamiltonii Mt. Hamilton coreopsis	PDAST2L0C0	None	None	G2	S2	1B.2
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Madia radiata showy golden madia	PDAST650E0	None	None	G3	S3	1B.1
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis flagellum ruddocki San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S3	SSC
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia pop. 1 song sparrow ("Modesto" population)	ABPBXA3013	None	None	G5T3?Q	S3?	SSC
Navarretia nigelliformis ssp. radians shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perognathus inornatus San Joaquin pocket mouse	AMAFD01060	None	None	G2G3	S2S3	
Phacelia phacelioides Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G2	S2	1B.2
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	G3T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Ravenella exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Sylvilagus bachmani riparius riparian brush rabbit	AMAEB01021	Endangered	Endangered	G5T1	S2	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S1	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S3	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S3	

Record Count: 93

CNPS Rare Plant Inventory

Search Results

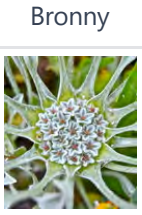
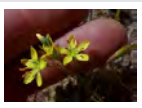
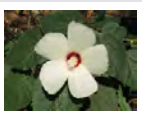
61 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3712154:3712164:3712165:3712155:3712156:3712166:3712174:3712175:3712176**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Acanthomintha lanceolata	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2005 Barry Breckling
Allium sharsmithiae	Sharsmith's onion	Alliaceae	perennial bulbiferous herb	Mar-May	None	None	G2	S2	1B.3	Yes	1980-01-01	 © 2017 John Doyen
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	FE	CE	G1	S1	1B.1	Yes	1974-01-01	 © 2015 Zoya Akulova
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5? T3T4	S3S4	4.2		1994-01-01	 © 2008 Aaron Schusteff
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar(Apr)	None	None	G5T2	S2	1B.2	Yes	1984-01-01	 © 2019 Susan McDougall
Aspidotis carlotta-halliae	Carlotta Hall's lace fern	Pteridaceae	perennial rhizomatous herb	Jan-Dec	None	None	G3	S3	4.2	Yes	1994-01-01	No Photo Available
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available

Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©1998 Dean Wm. Taylor
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	None	None	G1G2	S1S2	1B.1	Yes	1994-01-01	No Photo Available
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Caulanthus lemmonii	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	None	None	G3	S3	1B.2	Yes	2001-01-01	No Photo Available
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T2	S2	1B.1	Yes	1994-01-01	No Photo Available
Chlorogalum pomeridianum var. *minus*	dwarf soaproot	Agavaceae	perennial bulbiferous herb	May-Aug	None	None	G5T3	S3	1B.2	Yes	1994-01-01	 © 1997 Dean Wm Taylor

Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Cirsium fontinale var. *campylon*	Mt. Hamilton thistle	Asteraceae	perennial herb	(Feb)Apr-Oct	None	None	G2T2	S2	1B.2	Yes	1974-01-01	No Photo Available
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	No Photo Available
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	None	None	G5?T3	S3	4.3	Yes	1994-01-01	No Photo Available
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Deinandra bacigalupii	Livermore tarplant	Asteraceae	annual herb	Jun-Oct	None	CE	G1	S1	1B.1	Yes	2001-01-01	No Photo Available
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	None	None	G3T3	S3	1B.2	Yes	1984-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T3	S3	4.2	Yes	2001-01-01	No Photo Available
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	 © 2016 Aaron Schusteff

Fritillaria falcata	talus fritillary	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2013 Aaron Schusteff
Galium andrewsii ssp. *gatense*	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	Apr-Jul	None	None	G5T3	S3	4.2	Yes	1994-01-01	 © 2021 Steve Matson
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2013 Christopher Bronny
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2017 John Doyen
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2014 Neal Kramer
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	 © 2020 Steven Perry
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	Yes	2001-01-01	 © 2004 Janell Hillman
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 ©2000 John Game

Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2010 Aaron Schusteff
Leptosyne hamiltonii	Mt. Hamilton coreopsis	Asteraceae	annual herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©2012 Aaron Schusteff
Lessingia tenuis	spring lessingia	Asteraceae	annual herb	May-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2020 Keir Morse
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1		1994-01-01	 © 2020 Richard Sage
Madia radiata	showy golden madia	Asteraceae	annual herb	Mar-May	None	None	G3	S3	1B.1	Yes	1988-01-01	No Photo Available
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial deciduous shrub	(Apr)May-Sep(Oct)	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2017 Keir Morse
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	None	None	G3G4	S3S4	3.2	Yes	1974-01-01	 © 2008 Aaron Arthur
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	Mar-Jun	None	None	G4	S4	4.2	Yes	2001-01-01	No Photo Available
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
Navarretia nigelliformis ssp. *radians*	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	Yes	1994-01-01	No Photo Available
Phacelia phacelioides	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©2019 Steve Matson

Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	None	None	G3	S3	4.2	Yes	1984-01-01	No Photo Available
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	Yes	1974-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available
Ravenella exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2		1994-01-01	No Photo Available
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	Yes	2017-06-16	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	 © 2005 Dean Wm Taylor
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Showing 1 to 61 of 61 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 24 January 2024].

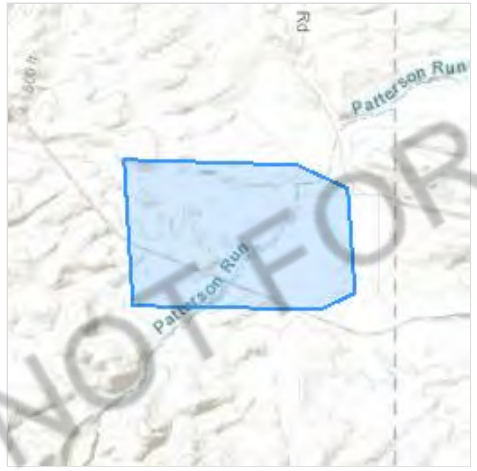
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Alameda County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

NAME	STATUS
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus**Wherever found* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus**Wherever found* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi**Wherever found* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi**Wherever found* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Large-flowered Fiddleneck *Amsinckia grandiflora**Wherever found* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5558	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE

California Red-legged Frog Rana draytonii https://ecos.fws.gov/ecp/species/2891#crithab	Final

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

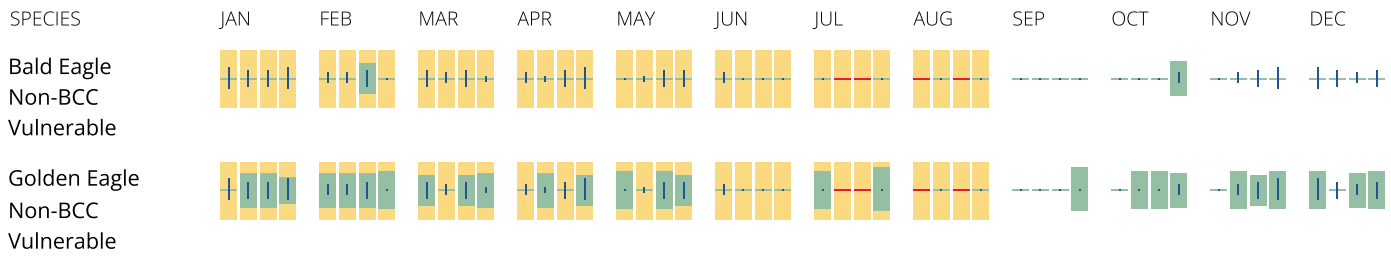
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole *Icterus bullockii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
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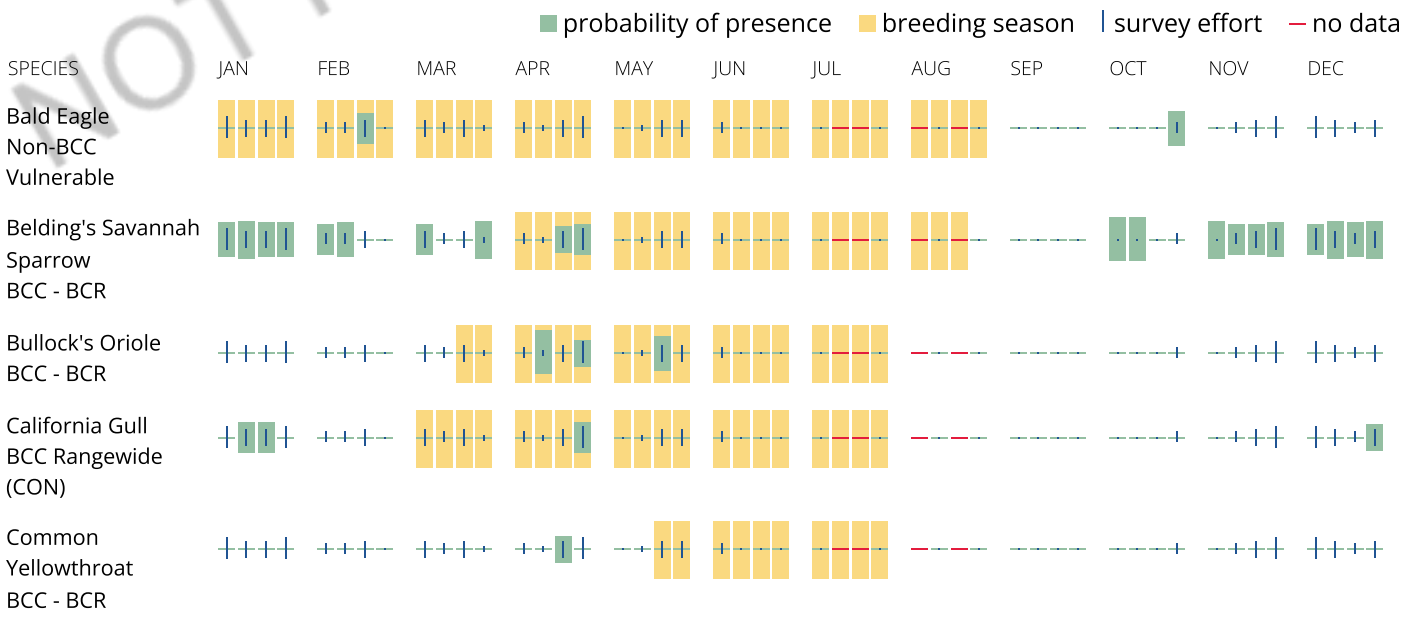
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

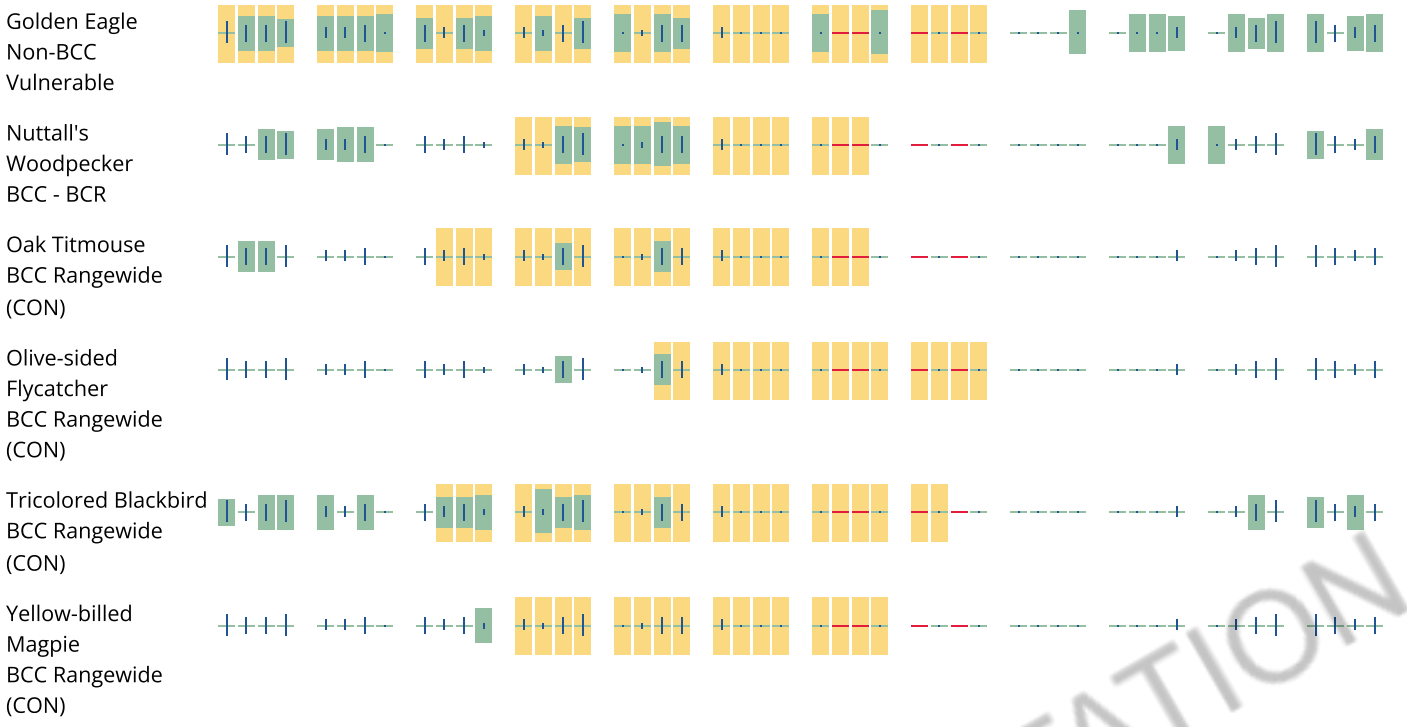
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which

means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C

FRESHWATER POND

- PUBHh
- PUSA

RIVERINE

R4SBC
R4SBA
R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Alameda Area, California

Potentia-Viridi BESS Site

January 24, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

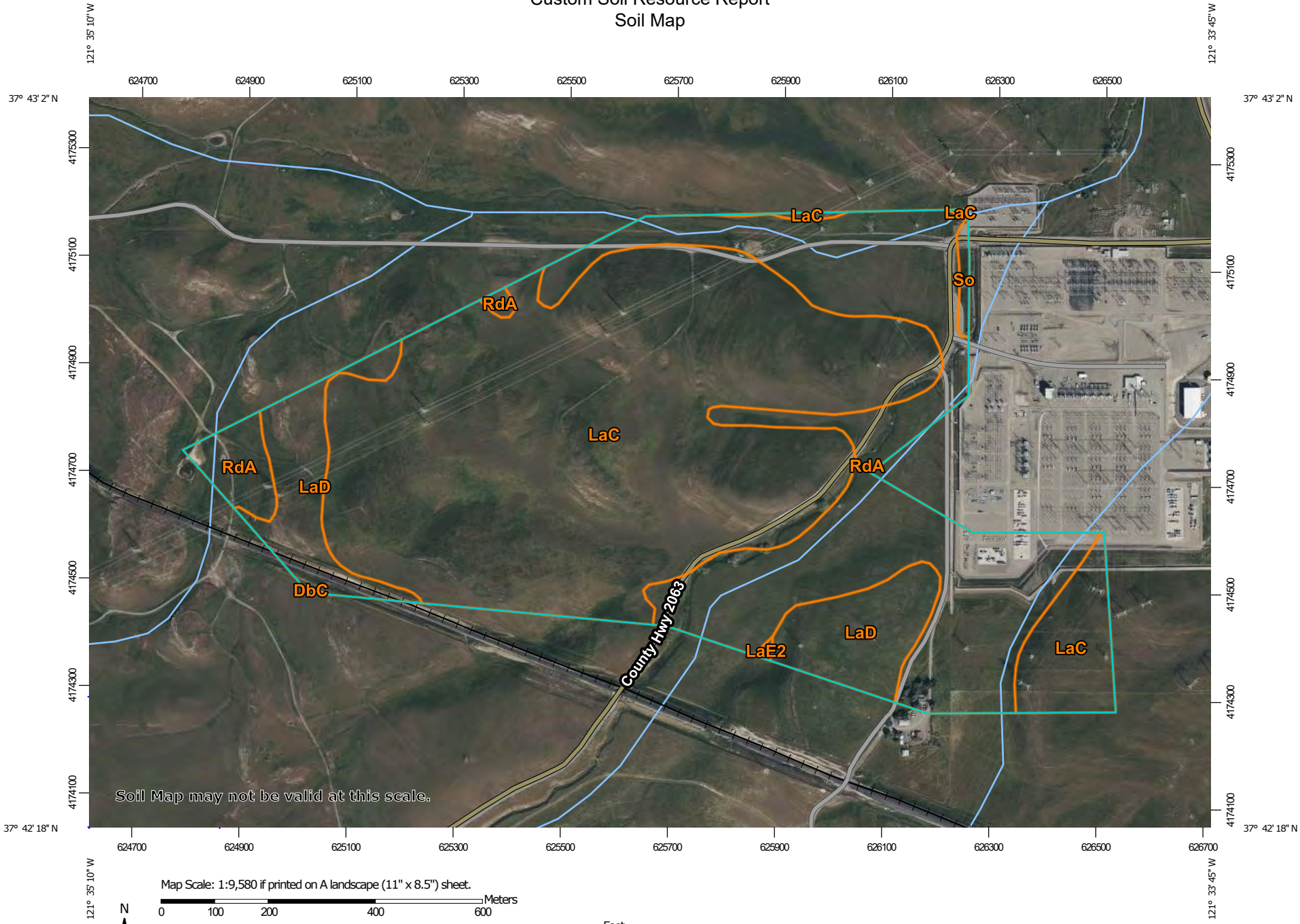
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:9,580 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda Area, California
Survey Area Data: Version 17, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 9, 2022—Mar 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DbC	Diablo clay, 7 to 15 percent slopes	0.1	0.0%
LaC	Linne clay loam, 3 to 15 percent slopes	144.4	59.1%
LaD	Linne clay loam, 15 to 30 percent slopes, MLRA 15	23.9	9.8%
LaE2	Linne clay loam, 30 to 45 percent slopes, eroded	0.2	0.1%
RdA	Rincon clay loam, 0 to 3 percent slopes	75.0	30.7%
So	Sycamore silt loam, 0 to 2 percent slopes, MLRA 14	1.0	0.4%
Totals for Area of Interest		**244.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Alameda Area, California

DbC—Diablo clay, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: hb36
Elevation: 300 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Diablo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Diablo

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from shale and siltstone

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 42 inches: silty clay
H3 - 42 to 50 inches: silty clay
H4 - 50 to 54 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Hydric soil rating: No

Minor Components

Altamont
Percent of map unit: 5 percent
Hydric soil rating: No

Pescadero
Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Linne
Percent of map unit: 5 percent
Hydric soil rating: No

LaC—Linne clay loam, 3 to 15 percent slopes

Map Unit Setting
National map unit symbol: hb3l
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile
H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: bedrock

Properties and qualities
Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Hydric soil rating: No

Minor Components

Altamont

Percent of map unit: 5 percent
Hydric soil rating: No

Diablo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

LaD—Linne clay loam, 15 to 30 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2w63l
Elevation: 110 to 1,560 feet
Mean annual precipitation: 13 to 22 inches

Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale

Typical profile

Ap - 0 to 9 inches: clay loam
A1 - 9 to 14 inches: clay loam
A2 - 14 to 29 inches: clay loam
AC - 29 to 32 inches: sandy clay loam
Ck - 32 to 36 inches: fine sandy loam
Cr - 36 to 51 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 35 to 50 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XY013CA - Loamy Mountains <20"ppt
Hydric soil rating: No

Minor Components

Diablo

Percent of map unit: 5 percent
Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Altamont

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave
Hydric soil rating: Yes

Haploxerolls, landslides

Percent of map unit: 1 percent
Landform: Landslides, slumps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

LaE2—Linne clay loam, 30 to 45 percent slopes, eroded

Map Unit Setting

National map unit symbol: hb3n
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Linne and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: bedrock

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R014XD092CA - CLAYEY HILLS
Hydric soil rating: No

Minor Components

Altamont

Percent of map unit: 5 percent
Hydric soil rating: No

Diablo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

RdA—Rincon clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hb4j
Elevation: 10 to 600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Valley floors, fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 16 inches: clay loam
H2 - 16 to 52 inches: sandy clay
H3 - 52 to 60 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 5 percent
Hydric soil rating: No

Pleasanton

Percent of map unit: 5 percent
Hydric soil rating: No

San ysidro

Percent of map unit: 5 percent
Hydric soil rating: No

So—Sycamore silt loam, 0 to 2 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2xcbh
Elevation: 310 to 380 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 60 to 61 degrees F
Frost-free period: 336 to 349 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Sycamore and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sycamore

Setting

Landform: Alluvial fans, flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: silt loam
Akg - 7 to 18 inches: silt loam
ACkg - 18 to 30 inches: silt loam
Ckg1 - 30 to 44 inches: silt loam

Ckg2 - 44 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Very high (about 12.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R014XG918CA - Loamy Fan
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Yolo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

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Appendix C

Plant and Wildlife Species Compendium

Plant Species

Vascular Species

Eudicots

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – prostrate pigweed

APOCYNACEAE – DOGBANE FAMILY

Asclepias fascicularis – Mexican whorled milkweed

ASTERACEAE – SUNFLOWER FAMILY

Blepharizonia plumosa – big tarplant
* *Carduus pycnocephalus* – Italian plumeless thistle
* *Centaurea calcitrapa* – red star-thistle
* *Centaurea solstitialis* – yellow star-thistle
* *Cynara cardunculus* – cardoon
* *Grindelia squarrosa* – curlycup gumweed

Holocarpha virgata – yellowflower tarweed

Isocoma acradenia – alkali goldenbush
* *Lactuca serriola* – prickly lettuce

Lasthenia sp. – unidentified goldfield species
* *Silybum marianum* – blessed milkthistle

Xanthium spinosum – spiny cocklebur

BORAGINACEAE – BORAGE FAMILY

Amsinckia intermedia – common fiddleneck

Heliotropium curassavicum – salt heliotrope

Plagiobothrys canescens – valley popcornflower

BRASSICACEAE – MUSTARD FAMILY

* *Brassica nigra* – black mustard

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Atriplex prostrata* – fat hen

Atriplex sp. – unidentified Atriplex species
* *Salsola tragus* – prickly Russian thistle

CONVOLVULACEAE – MORNING-GLORY FAMILY

* *Convolvulus arvensis* – field bindweed

EUPHORBIACEAE – SPURGE FAMILY

Croton setiger – dove weed

FABACEAE – LEGUME FAMILY

Lupinus microcarpus – valley lupine

Lupinus sp. – unidentified lupine species

Trifolium sp. – unidentified clover species

GERANIACEAE – GERANIUM FAMILY

* *Erodium botrys* – longbeak stork's bill

Erodium cicutarium – redstem stork's bill

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound

MALVACEAE – MALLOW FAMILY

Malvella leprosa – alkali mallow

OROBANCHACEAE – BROOM-RAPE FAMILY

Castilleja exserta – exserted Indian paintbrush

POLYGONACEAE – BUCKWHEAT FAMILY

* *Rumex crispus* – curly dock

SALICACEAE – WILLOW FAMILY

Populus fremontii – Fremont cottonwood

VERBENACEAE – VERVAIN FAMILY

Verbena lasiostachys – western vervain

Monocots

CYPERACEAE – SEDGE FAMILY

Bolboschoenus maritimus – salt marsh bulrush

Eleocharis sp. – unidentified spikerush species

POACEAE – GRASS FAMILY

* *Avena fatua* – wild oat
* *Bromus diandrus* – ripgut brome
* *Bromus rubens* – red brome

Distichlis spicata – salt grass

* *Festuca perennis* – perennial rye grass

Festuca sp. – unidentified fescue species

* *Hordeum murinum* – mouse barley
* *Poa bulbosa* – bulbous bluegrass
* *Polypogon monspeliensis* – annual rabbitsfoot grass

THEMIDACEAE – BRODIAEA FAMILY

Brodiaea elegans – harvest brodiaea

Dipterostemon capitatus – bluedicks

Triteleia laxa – Ithuriel's spear

Wildlife Species

Amphibians

Frogs

HYLIDAE – TREEFROGS

Pseudacris sierra – Sierran treefrog

Birds

Blackbirds, Orioles and Allies

ICTERIDAE – BLACKBIRDS

Agelaius phoeniceus – red-winged blackbird

Agelaius tricolor – tricolored blackbird

Sturnella neglecta – western meadowlark

Falcons

FALCONIDAE – CARACARAS AND FALCONS

Falco sparverius – American kestrel

Finches

FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus – house finch

Flycatchers

TYRANNIDAE – TYRANT FLYCATCHERS

Tyrannus verticalis – western kingbird

Hawks

ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES

Buteo jamaicensis – red-tailed hawk

Jays, Magpies and Crows

CORVIDAE – CROWS AND JAYS

Corvus corax – common raven

Larks

ALAUDIDAE – LARKS

Eremophila alpestris – horned lark

New World Vultures

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura –turkey vulture

Pigeons and Doves

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

Shorebirds

CHARADRIIDAE – LAPWINGS AND PLOVERS

Charadrius vociferus – killdeer

Starlings and Allies

STURNIDAE – STARLINGS

* *Sturnus vulgaris* – European starling

Waterfowl

ANATIDAE – DUCKS, GEESE, AND SWANS

Anas platyrhynchos – mallard

Lophodytes cucullatus – hooded merganser

Wood Warblers and Allies

PARULIDAE – WOOD-WARBLERS

Setophaga coronata – yellow-rumped warbler

New World Sparrows

PASSERELLIDAE – NEW WORLD SPARROWS

Passerculus sandwichensis – savannah sparrow

Mammals

Canids

CANIDAE – WOLVES AND FOXES

Canis latrans – coyote

Squirrels

SCIURIDAE – SQUIRRELS

Otospermophilus beecheyi – California ground squirrel

Reptiles

Lizards

PHRYNOSOMATIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

* signifies introduced (non-native) species

Appendix D
Photo Record

Photo 1. Non-native annual grasslands, March 2023.

Photo 2. Non-native annual grasslands and site topography, March 2023.

Photo 3. Exposed bedrock within non-native annual grasslands, March 2023.

Photo 4. Rocky outcrops that may provide nesting habitat for native bumble bees, March 2023.

Photo 5. Stock pond (Pond 1) west of the Project site, March 2023.

Photo 6. Stock pond (Pond 2) west of the Project site, March 2023.

Photo 7. Pond 1 at the start of August 2023, with very little water remaining.

Photo 8. Pond 2 at the start of August 2023, with considerable water remaining.

Photo 9. Patterson Run (EPH-01) with moderate flow in March 2023.

Photo 10. Patterson Run (EPH-01) with dry streambed at the start of August 2023.

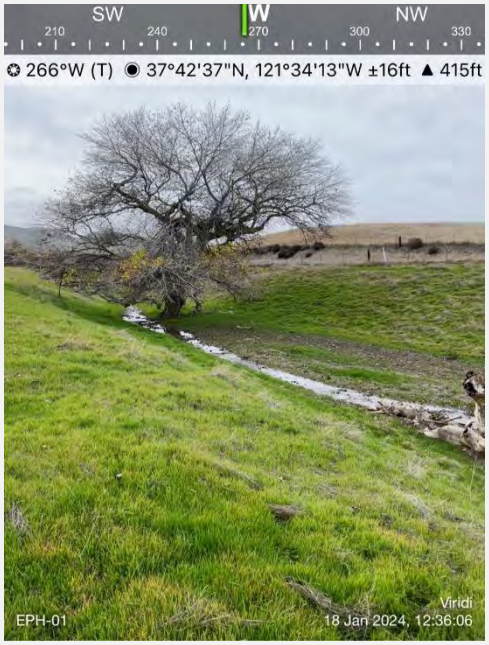

Photo 11. Patterson Run (EPH-01) with moderate flow in January 2024.

Photo 12. Patterson Run (EPH-01), deep channel near Patterson Pass Road in January 2024.

Photo 13. Non-native annual grassland habitat on the generation-tie alignment, August 2023.

Photo 14. Example of a small mammal burrow with large soil tailing present on the Project site, August 2023.

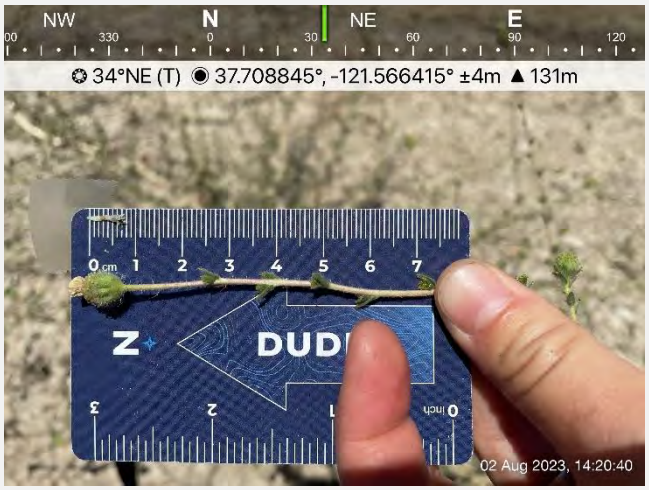

Photo 15. Sample of big tarplant, *Blepharizonia plumosa*, blooming in August 2023.

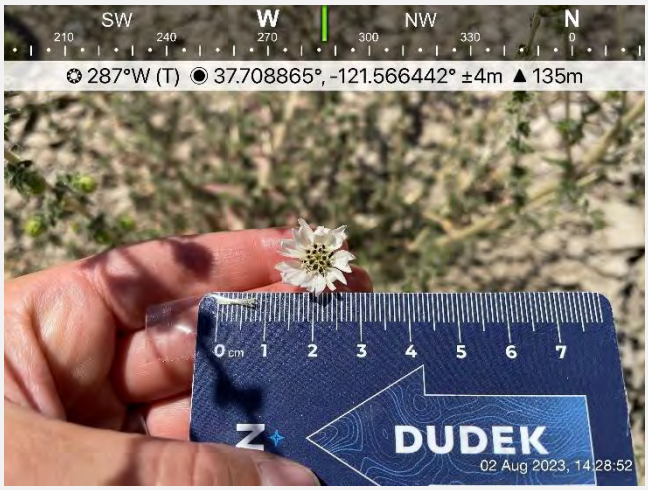

Photo 16. Flower of big tarplant, *Blepharizonia plumosa*, August 2023.

Photo 17. Grassland wash/swale microhabitat surrounding the big tarplant, near the southwest corner of the PG&E substation.

Photo 18. Similar grassland wash/swale microhabitat surrounding two additional big tarplants found on the Project site.

Appendix E

Special-Status Species Potential to Occur within the Project Study Area

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Plants				
Allium sharsmithiae	Sharsmith's onion	None/None/1B.3/No	Chaparral, Cismontane woodland; Rocky, Serpentinite/perennial bulbiferous herb/Mar–May/1,310–3,935	**Not expected to occur.** The site is outside of the species' known elevation range.
Amsinckia grandiflora	large-flowered fiddleneck	FE/SE/1B.1/No	Cismontane woodland, Valley and foothill grassland/annual herb/(Mar)Apr–May/885–1,800	**Not expected to occur.** The site is outside of the species' known elevation range.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	None/None/1B.2/No	Chaparral (rocky)/perennial evergreen shrub/Jan–Mar (Apr)/ 1,410–3,605	**Not expected to occur.** The site is outside of the species' known elevation range.
Astragalus tener var. *tener*	alkali milk-vetch	None/None/1B.2/No	Playas, Valley and foothill grassland (adobe clay), Vernal pools; Alkaline/annual herb/Mar–June/5–195	**Not expected to occur.** The site is outside of the species' known elevation range.
Atriplex cordulata var. *cordulata*	heartscale	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy); Alkaline (sometimes)/annual herb/Apr–Oct/0–1,835	**Low potential to occur.** Valley and foothill grassland is present but generally lacking sandy soils. No documented occurrences within 5 miles of the Project Study Area (PSA) (CDFW 2024).
Atriplex depressa	brittlescale	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools; Alkaline, Clay/annual herb/Apr–Oct/5–1,045	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. The nearest documented occurrence is approximately 5 miles northwest of the PSA from 2003 (Occ. No. 28; CDFW 2024).
Atriplex minuscula	lesser saltscale	None/None/1B.1/No	Chenopod scrub, Playas, Valley and foothill grassland; Alkaline, Sandy/annual herb/May–Oct/50–655	**Low potential to occur.** Valley and foothill grassland is present but generally lacking sandy soils. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Balsamorhiza macrolepis	big-scale balsamroot	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Serpentinite (sometimes)/perennial herb/Mar–June/150–5,100	**Low potential to occur.** Valley and foothill grassland present but lacks serpentine soils preferred by this species. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Blepharizonia plumosa	big tarplant	None/None/1B.1/Yes	Valley and foothill grassland; Clay (usually)/annual herb/July–Oct/ 100–1,655	**Known to occur.** Three individuals were found on the PSA near the southwest corner of the PG&E substation during the rare plant survey on August 8, 2023. Suitable valley and foothill grassland with clay loam soils present. The nearest documented occurrence is approximately 0.25 mile east of the PSA from 2003 (Occ. No. 15; CDFW 2024).
Calochortus pulchellus	Mt. Diablo fairy-lantern	None/None/1B.2/No	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland/perennial bulbiferous herb/Apr–June/100–2,755	**Low potential to occur.** Valley and foothill grassland present but lacks wooded and brushy slope microhabitat preferred by this species. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Caulanthus lemmonii	Lemmon's jewelflower	None/None/1B.2/No	Pinyon and juniper woodland, Valley and foothill grassland/annual herb/Feb–May/260–5,180	**Moderate potential to occur.** Suitable valley and foothill grassland present. The nearest documented occurrence is approximately 3.5 miles south of the PSA, a historical record from 1938 (Occ. No. 35; CDFW 2024).
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	None/None/1B.1/Yes	Valley and foothill grassland (alkaline)/annual herb/May–Oct(Nov)/ 0–755	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Chlorogalum pomeridianum var. *minus*	dwarf soaproot	None/None/1B.2/No	Chaparral (serpentinite)/perennial bulbiferous herb/May–Aug/ 1,000–3,280	**Not expected to occur.** The site is outside of the species' known elevation range.
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	None/None/1B.1/No	Meadows and seeps, Playas, Valley and foothill grassland; Alkaline/annual herb (hemiparasitic)/June–Sep/5–510	**Not expected to occur**. The site lacks damp alkaline soils preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Chloropyron palmatum	palmate-bracted bird's-beak	FE/SE/1B.1/Yes	Chenopod scrub, Valley and foothill grassland; Alkaline/annual herb (hemiparasitic)/May–Oct/15–510	**Low potential to occur.** Valley and foothill grassland is present but the Pescadero soils preferred by this species are only a minor component of the soils on the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Cirsium fontinale var. *campylon*	Mt. Hamilton thistle	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Seeps, Serpentinite/perennial herb/(Feb)Apr–Oct/330–2,915	**Not expected to occur.** The site lacks serpentine soils preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Deinandra bacigalupii	Livermore tarplant	None/SE/1B.1/Yes	Meadows and seeps (alkaline)/annual herb/June–Oct/490–605	**Not expected to occur.** The site lacks suitable meadow seep habitats preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	None/None/1B.2/No	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub/perennial herb/Apr–June/640–3,590	**Not expected to occur.** The site lacks suitable chaparral, woodland, or scrub habitat for this species. There are no documented occurences within 5 miles of the PSA (CDFW 2024).
Delphinium recurvatum	recurved larkspur	None/None/1B.2/Yes	Chenopod scrub, Cismontane woodland, Valley and foothill grassland; Alkaline/perennial herb/Mar–June/10–2,590	**Moderate potential to occur.** There is suitable valley and foothill grassland with alkaline soils present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eryngium spinosepalum	spiny-sepaled button-celery	None/None/1B.2/No	Valley and foothill grassland, Vernal pools/annual/perennial herb/ Apr–June/260–3,195	**Moderate potential to occur**. There is suitable valley and foothill grassland present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eschscholzia rhombipetala	diamond-petaled California poppy	None/None/1B.1/No	Valley and foothill grassland (alkaline, clay)/annual herb/Mar–Apr/ 0–3,195	**Moderate potential to occur.** There is suitable valley and foothill grassland with alkaline clay soils present. The nearest documented occurrence is approximately 3.4 miles south of the PSA from 2012 (Occ. No. 9; CDFW 2024).
Extriplex joaquinana	San Joaquin spearscale	None/None/1B.2/Yes	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; Alkaline/annual herb/Apr–Oct/5–2,735	**Moderate potential to occur**. There is suitable valley and foothill grassland with alkaline soils present. The nearest documented occurrence is approximately 3.8 miles northwest of the PSA from 2015 (Occ. No. 117; CDFW 2024).
Fritillaria falcata	talus fritillary	None/None/1B.2/No	Chaparral, Cismontane woodland, Lower montane coniferous forest; Serpentinite, Talus (often)/perennial bulbiferous herb/Mar–May/ 985–5,000	**Not expected to occur.** The site is outside of the species' known elevation range.
Helianthella castanea	Diablo helianthella	None/None/1B.2/No	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Rocky (usually)/perennial herb/Mar–June/195–4,265	**Not expected to occur.** No suitable forest, woodland, or chaparral habitats present, and only a single small rocky outcrop area within the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hesperolinon breweri	Brewer's western flax	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Serpentinite (usually)/annual herb/May–July/100–3,100	**Not expected to occur.** No suitable chaparral or woodland habitat present, and no serpentine soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	None/None/1B.2/No	Marshes and swamps (freshwater)/perennial rhizomatous herb (emergent)/June–Sep/0–395	**Not expected to occur.** No suitable freshwater marsh or swamp habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hoita strobilina	Loma Prieta hoita	None/None/1B.1/No	Chaparral, Cismontane woodland, Riparian woodland; Mesic, Serpentinite (usually)/perennial herb/May–July (Aug–Oct)/100–2,820	**Not expected to occur.** No suitable chaparral or woodland habitat present, and no serpentine soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Legenere limosa	legenere	None/None/1B.1/No	Vernal pools/annual herb/Apr–June/5–2,885	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Leptosyne hamiltonii	Mt. Hamilton coreopsis	None/None/1B.2/No	Cismontane woodland (rocky)/annual herb/Mar–May/1,800–4,265	**Not expected to occur.** The site is outside of the species' known elevation range.
Lilaeopsis masonii	Mason's lilaeopsis	None/SR/1B.1/No	Marshes and swamps (brackish, freshwater), Riparian scrub/perennial rhizomatous herb/Apr–Nov/0–35	**Not expected to occur.** The site is outside of the species' known elevation range.
Limosella australis	Delta mudwort	None/None/2B.1/No	Marshes and swamps (brackish, freshwater), Riparian scrub; Streambanks (usually)/perennial stoloniferous herb/May–Aug/0–10	**Not expected to occur.** The site is outside of the species' known elevation range.
Madia radiata	showy golden madia	None/None/1B.1/No	Cismontane woodland, Valley and foothill grassland/annual herb/ Mar–May/80–3,985	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Malacothamnus hallii	Hall's bush-mallow	None/None/1B.2/No	Chaparral, Coastal scrub/perennial deciduous shrub/ (Apr)May–Sep(Oct)/35–2,490	**Not expected to occur.** No chaparral or coastal scrub habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Navarretia nigelliformis ssp. *radians*	shining navarretia	None/None/1B.2/No	Cismontane woodland, Valley and foothill grassland, Vernal pools; Clay (sometimes)/annual herb/(Mar)Apr–July/215–3,280	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. The nearest documented occurrence is approximately 2.1 miles south of the PSA, a historical record from 1997 (Occ. No. 61; CDFW 2024).
Phacelia phacelioides	Mt. Diablo phacelia	None/None/1B.2/No	Chaparral, Cismontane woodland; Rocky/annual herb/Apr–May/ 1,640–4,490	**Not expected to occur.** The site is outside of the species' known elevation range.
Plagiobothrys glaber	hairless popcornflower	None/None/1A/No	Marshes and swamps (coastal salt), Meadows and seeps (alkaline)/annual herb/Mar–May/50–590	**Not expected to occur.** No suitable coastal salt or alkaline meadow habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Puccinellia simplex	California alkali grass	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Alkaline, Flats, Lake Margins, Vernally Mesic/annual herb/Mar–May/5–3,050	**Low potential to occur.** Valley and foothill grassland is present, but with limited mesic areas. The nearest documented occurrence is approximately 4.4 miles northwest of the PSA, a historical record from 1958 (Occ. No. 41; CDFW 2024).
Ravenella exigua	chaparral harebell	None/None/1B.2/No	Chaparral (rocky, usually serpentinite)/annual herb/May–June/ 900–4,100	**Not expected to occur.** The site is outside of the species' known elevation range.
Senecio aphanactis	chaparral ragwort	None/None/2B.2/No	Chaparral, Cismontane woodland, Coastal scrub; Alkaline (sometimes)/annual herb/Jan–Apr (May)/50–2,620	**Not expected to occur.** No suitable chaparral, woodland, or coastal scrub habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	None/None/1B.2/No	Marshes and swamps, Meadows and seeps; Alkaline/perennial herb/Feb–May/0–835	**Not expected to occur**. No suitable marsh or meadow habitats present. The nearest documented occurrences are approximately 3.2 miles northwest and north of the PSA, both historical records (Occ. Nos. 5 and 6; CDFW 2024).
Trifolium hydrophilum	saline clover	None/None/1B.2/No	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools/annual herb/Apr–June/0–985	**Low potential to occur.** Valley and foothill grassland is present, but with limited mesic areas. There are no documented occurences within 5 miles of the PSA (CDFW 2024).
Tropidocarpum capparideum	caper-fruited tropidocarpum	None/None/1B.1/No	Valley and foothill grassland (alkaline hills)/annual herb/Mar–Apr/ 5–1,490	**High potential to occur.** Suitable valley and foothill grassland with alkaline soils present. The nearest documented occurrence is 0.3 mile northeast, a historical record from 1933 (Occ. No. 3). Three additional historical records are within 5 miles of the PSA (Occ. Nos. 1, 4, 11). The nearest recent occurrence is approximately 3.0 miles northwest of the PSA from 2019 (Occ. No. 27; CDFW 2024).
Wildlife				
Invertebrates				
Bombus crotchii	Crotch bumble bee	None/SCE/—/No	Open grassland and scrub communities supporting suitable floral resources.	**Moderate potential to occur.** Grassland contains scattered floral resources and nesting substrates (bare/cracked ground, small rodent burrows, small rocky areas). There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Bombus occidentalis	western bumble bee	None/SCE/—/No	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	**Not expected to occur.** The PSA is outside of the currently known range for this species (CDFW 2023e), and the nearest documented occurrence, approximately 4 miles south of the PSA, is from 1951 (Occ. No. 232; CDFW 2024).
Branchinecta longiantenna	longhorn fairy shrimp	FE/None/—/Yes	Sandstone outcrop pools, alkaline grassland vernal pools, and pools within alkali sink and alkali scrub communities	**Not expected to occur.** Vernal pools absent. Documented occurrences are recorded in the Byron Hot Springs and Altamont quads to the northeast and east of the PSA, but specific locations are not available (CDFW 2024).
Branchinecta lynchi	vernal pool fairy shrimp	FT/None/—/Yes	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT/None/—/No	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*)	**Not expected to occur.** No blue elderberry host plants present in the PSA.
Lepidurus packardi	vernal pool tadpole shrimp	FE/None/—/No	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal lakes, vernal pools, and vernal swales	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Danaus plexippus plexippus pop. 1	monarch - California overwintering population	FC/None/—/No	Wind-protected tree groves with nectar sources and nearby water sources	**Not expected to occur.** No tree groves present on the PSA to provide shelter. There are no documented occurrences within 5 miles of the PSA (CDFW 2024), and there are no known overwintering sites in the vicinity (Xerces 2016).
Fishes				
Acipenser medirostris pop. 1	green sturgeon - southern DPS	FT/None/—/No	Spawns in deep pools in large, turbulent, freshwater rivers; adults live in oceanic waters, bays, and estuaries	**Not expected to occur.** No suitable aquatic habitat present.
Hypomesus transpacificus	Delta smelt	FT/SE/—/No	Sacramento–San Joaquin Delta; seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay	**Not expected to occur.** The PSA is outside of the known range for this species.
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	FT/None/—/Yes	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead	**Not expected to occur.** No suitable aquatic habitat present.
Spirinchus thaleichthys	longfin smelt	FC/ST/—/No	Aquatic, estuary	**Not expected to occur.** The PSA is outside of the known range for this species.
Thaleichthys pacificus	eulachon	FT/None/—/No	Found in Klamath River, Mad River, and Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries	**Not expected to occur.** No suitable aquatic habitat present.
Amphibians				
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	FT/ST, WL/—/Yes	Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent	**High potential to occur.** Abundant suitable grassland habitat with small mammal burrows present on the PSA with aquatic breeding habitat available within dispersal distance. The nearest documented occurrence is approximately 1.6 miles southwest of the PSA from 2012 (Occ. No. 1003); there are numerous other records within 5 miles of the PSA (CDFW 2024).
Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	FPT/SE/—/Yes	Rocky streams and rivers with open banks in forest, chaparral, and woodland	**Not expected to occur.** No suitable rocky stream habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Rana draytonii	California red-legged frog	FT/SSC/—/Yes	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	**High potential to occur.** Abundant suitable grassland habitat with small mammal burrows present on the PSA with aquatic breeding habitat available within dispersal distance. The nearest documented occurrences are approximately 1.5 miles east, south, and west of the PSA (Occ. Nos. 822 from 2001, 1079 from 2008, 1759 from 2012, and 44 from 1993); there are numerous other records within 5 miles of the PSA (CDFW 2024).
Spea hammondii	western spadefoot	None/SSC/—/No	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	**Low potential to occur.** Abundant suitable grassland habitat present, but there are no vernal pools or other ephemeral pools on the site. The nearest documented occurrence is approximately 3.6 miles southwest of the PSA from 2017 (Occ. No. 630; CDFW 2024).
Reptiles				
Anniella pulchra	northern California legless lizard	None/SSC/—/No	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	**Not expected to occur.** Valley-foothill grassland is abundant but PSA lacks moist sandy soils for burrowing. The nearest documented occurrences are approximately 4.2 miles south of the PSA from 2004 and 2000 (Occ. Nos. 11 and 128; CDFW 2024).
Arizona elegans occidentalis	California glossy snake	None/SSC/—/No	Arid scrub, rocky washes, grasslands, chaparral, open areas with loose soil	**Low potential to occur.** Abundant grassland habitat present but with limited loose soils available. The nearest documented occurrence is a historical record from 1984 that overlaps with the PSA (Occ. No. 6; CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Emys marmorata	western pond turtle	None/SSC/—/No	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	**Low potential to occur.** Patterson Run provides low-quality habitat. There are two stock ponds that may provide suitable aquatic habitat but are approximately 0.3 mile from the PSA. Suitable upland habitat present throughout the PSA. The nearest documented occurrence is approximately 3.2 miles north of the PSA, a historical record from 1989 (Occ. No. 128; CDFW 2024).
Masticophis flagellum ruddocki	San Joaquin whipsnake	None/SSC/—/No	Open, dry, treeless areas including grassland and saltbush scrub	**Low potential to occur**. Abundant grassland present with small mammal burrows for refuge, but limited open ground for hunting. The nearest documented occurrence is approximately 0.4 mile northeast of the PSA, a historical record from 1996 (Occ. No. 61; CDFW 2024).
Masticophis lateralis euryxanthus	Alameda whipsnake	FT/ST/—/Yes	Open areas in chaparral and scrub habitat; also adjacent grassland, oak savanna, and woodland	**Not expected to occur.** No suitable chaparral or scrub habitat present. The nearest documented occurrence is approximately 4 miles south of the PSA, a historical record of unknown age (Occ. No. 119; CDFW 2024).
Phrynosoma blainvillii	coast horned lizard	None/SSC/—/No	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	**Low potential to occur.** Grassland habitat is abundant but has limited open areas for sunning and limited loose soils available. The nearest documented occurrence is approximately 1.3 miles southeast of the PSA, a historical record from 1992 (Occ. No. 575; CDFW 2024).
Birds				
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/SSC, ST/—/Yes	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	**Not expected to nest, known to forage.** This species was observed during the field survey in January 2024. However, there is no suitable nesting habitat present on the PSA. There is low-quality nesting habitat at a stock pond approximately 0.5 mile west. Abundant grassland habitat for foraging present. The nearest documented occurrence is 1.8 miles east of the PSA, a historical record from 1998 (Occ. No. 418). Several other occurrences are recorded within 5 miles of the PSA, as recent as 2015 (CDFW 2024).
Ammodramus savannarum (nesting)	grasshopper sparrow	None/SSC/—/No	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	**Low potential to nest or forage**. Open grassland is present but lacks suitable shrubs for perching. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Aquila chrysaetos (nesting and wintering)	golden eagle	None/FP, WL/—/Yes	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	**Low potential to nest, moderate potential to winter/forage**. Transmission towers adjacent to the site provide low-quality nesting habitat. Abundant grassland foraging habitat present. The nearest documented occurrence is approximately 4.9 miles south of the PSA from 2014, a record of a nest in a tower (Occ. No. 323; CDFW 2024).
Asio flammeus (nesting)	short-eared owl	BCC/SSC/—/No	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	**Low potential to nest or forage.** Suitable grassland habitat present for nesting and foraging, but at the edge of known current breeding range in California. The nearest documented occurrence is approximately 2.6 miles south of the PSA, a historical record from 1995 (Occ. No. 15; CDFW 2024).
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC/—/Yes	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	**Moderate potential to nest or forage**. Grassland habitat is abundant but has limited ground squirrel burrows and short grazed vegetation within the PSA. There are 3 documented occurrences adjacent or overlapping with the PSA, from 1982, 2002, and 2006 (Occ. Nos. 48, 468, and 1229). Multiple other documented occurrences are within 5 miles of the PSA, most recently from 2015 (Occ. No. 47; CDFW 2024).
Buteo swainsoni (nesting)	Swainson's hawk	None/ST/—/No	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	**Low potential to nest or forage.** Open grassland with isolated trees available for foraging and nesting, but the PSA is at the edge of the nesting range of the

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
				species. The nearest documented occurrence is approximately 4.8 miles northeast of the PSA from 2003 (Occ. No. 1228; CDFW 2024).
Circus hudsonius (nesting)	northern harrier	BCC/SSC/—/No	Nests in open wetlands (marshy meadows, wet lightly grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	**Moderate potential to nest or forage.** Suitable open grassland habitat present. The nearest documented occurrence is approximately 2.2 miles northeast of the PSA from 2001 (Occ. No. 49; CDFW 2024).
Elanus leucurus (nesting)	white-tailed kite	None/FP/—/No	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	**Moderate potential to nest or forage.** Suitable open grassland habitat present with limited individual trees nearby. The nearest documented occurrence is approximately 3.7 miles south of the PSA, a historical record from 1996 (Occ. No. 152; CDFW 2024).
Gymnogyps californianus	California condor	FE/FP, SE/—/No	Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (Sequoiadendron giganteus); forages in relatively open habitats where large animal carcasses can be detected	**Not expected to nest or forage.** The PSA is outside of the known range for this species.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FPD/FP, SE/—/No	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	**Not expected to nest or forage.** No forested habitat or large water bodies in the PSA or vicinity. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Lanius ludovicianus (nesting)	loggerhead shrike	None/SSC/—/No	Nests and forages in open habitats with scattered shrubs, trees, or other perches	**Low potential to nest or forage.** Open grassland habitat is present for foraging, but PSA has limited perches and lacks scattered shrubs or brush for nesting. The nearest documented occurrence is approximately 3.9 miles west of the PSA from 2015 (Occ. No. 113; CDFW 2024).
Melospiza melodia ("Modesto" population)	song sparrow ("Modesto" population)	None/SSC/—/No	Nests and forages in emergent freshwater marsh, riparian forest, vegetated irrigation canals and levees, and newly planted valley oak (Quercus lobata) restoration sites	**Not expected to nest or forage.** No suitable riparian, marsh, or other wet habitats present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/—/No	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	**Not expected to nest or forage.** No high-quality riparian vegetation present on the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Mammals				
Antrozous pallidus	pallid bat	None/SSC/—/No	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	**Low potential to occur.** Abundant grassland habitat present for foraging, but PSA has limited trees and nearby structures for roosting. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC/—/No	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	**Not expected to occur.** No suitable forest or riparian habitat for foraging, and no suitable structures or caves for roosting present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eumops perotis californicus	western mastiff bat	None/SSC/—/No	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	**Not expected to occur.** No suitable chaparral, scrub, or forest habitat for foraging, and no suitable cliffs for roosting present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Sylvilagus bachmani riparius	riparian brush rabbit	FE/SE/—/No	Dense thickets of wild rose, willows, and blackberries growing along the banks of San Joaquin and Stanislaus Rivers	**Not expected to occur.** The PSA is outside of the known range for this species.
Taxidea taxus	American badger	None/SSC/—/Yes	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	**High potential to occur.** Suitable dry open grassland present with evidence of friable soils and burrowing activity near Patterson Pass Road. The nearest documented occurrences are approximately 0.2 mile north (Occ. No. 520 from 2014) and south (Occ. No. 250, unknown date prior to 2004; CDFW 2024). Multiple other records are within 5 miles of the PSA, the most recent from 2015 (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Vulpes macrotis mutica	San Joaquin kit fox	FE/ST/—/Yes	Grasslands and scrublands, including those that have been modified; oak woodland, alkali sink scrubland, vernal pool, and alkali meadow	**Moderate potential to occur.** Suitable open grassland present with evidence of friable soils and burrowing activity near Patterson Pass Road. The nearest documented occurrence is approximately 0.3 mile southwest of the PSA, a historical record from 1984 (Occ. No. 6; CDFW 2024). Multiple other historical records are within 5 miles of the PSA, all prior to 1992 (CDFW 2024).

Sources: CDFW 2024, 2023e; Xerces 2016.
Notes:
Federal Status
FC: Federally listed as a candidate species.
FE: Federally listed as endangered.
FT: Federally listed as threatened.
FPD: Federally listed as protected designation.
None: No federal status.
State Status
FP: State listed as fully protected.
SE: State listed as endangered.
SR: State listed as rare.
SSC: State species of special concern.
ST: State listed as threatened.
None: No state status
California Rare Plant Rank (CRPR) Status
1B: plants rare, threatened, or endangered in California and elsewhere.
2B: plants rare, threatened, or endangered in California but more common elsewhere.
Threat Rank
0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
0.2: Moderately threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat).
0.3: Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).
None: No conservation status.
East Alameda County Conservation Strategy (EACCS)
No: Not covered
Yes: Covered
Potential for Occurrence Ranks
Known to Occur: Known occurrences recorded within the PSA.
High Potential to Occur: The species has not been documented in the PSA but is known to occur in the vicinity and species habitat is present.
Moderate Potential to Occur: The species has not been documented in the vicinity, but the PSA is within the known range of the species, and habitat for the species is present.
Low Potential to Occur: The species has not been documented in the vicinity and the PSA is within the known range of the species, but habitat for the species is of low quality.
Not Expected to Occur: The PSA is outside the known range of the species, and habitat for the species is either absent or of low quality.

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References

Xerces (Xerces Society for Invertebrate Conservation). 2016. State of the Monarch Butterfly Overwintering Sites in California. Report prepared for the U.S. Fish and Wildlife Service. Portland, Oregon: Xerces Society for Invertebrate Conservation. June 2016.

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Appendix F

CRLF Habitat Assessment Datasheets

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.710245, -121.571128.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: N/A Maximum depth: N/A

Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A
☐ ☐

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 20 ft
Depth at bank full: 2 ft
Stream gradient: low

Are there pools (circle one)? YES ☐ NO ☑
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: Runs and glides. No cobbles, some downed logs and branches in the streambed.
Little slope present. Wide, relatively slow flows when filled.

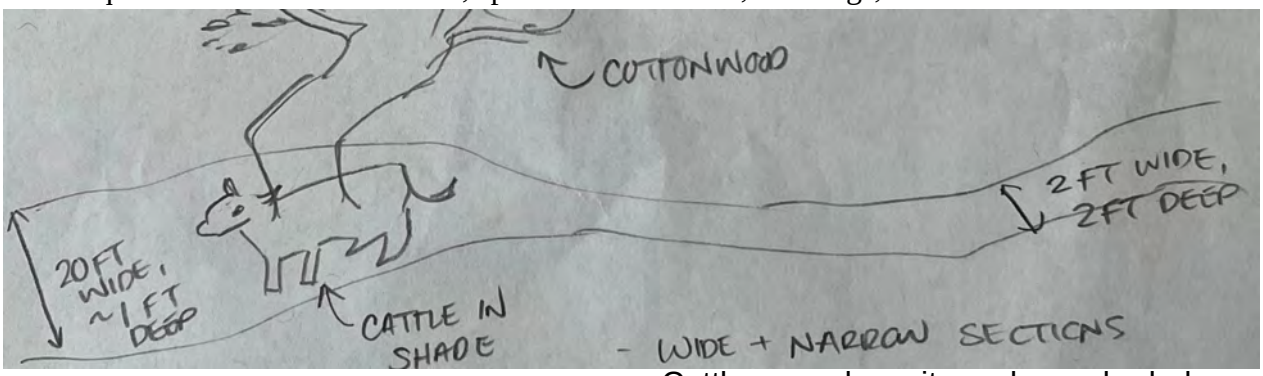
Vegetation: emergent, overhanging, dominant species:
Populus fremontii, Salix sp., Avena sp. upland grassland

Substrate: silt/clay

Bank description: Completely covered in grass (Avena fatua, Bromus sp.); 30-45 degree slope from OHWM.
Some banks deeply incised to streambed.

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: between March and May (variable)

Other aquatic habitat characteristics, species observations, drawings, or comments:



-Cattle grazed on site and use shaded streambed to rest.
-Dry in May, but was flowing in March.

Labeled as "Patterson Run"

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.716578, -121.583643.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 55 meters x 29 meters Maximum depth: ~1 meter

Vegetation: emergent, overhanging, dominant species:
Amaranthus albus, Distichlis spicata, Elymus sp., Bromus rubra, Festuca sp., Polypogon monspeliensis

Substrate: mud/silt

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: contained limited water on 8/2/23
☐ ☑

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: N/A
Depth at bank full: N/A
Stream gradient: N/A

Are there pools (circle one)? YES ☐ NO ☐
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: N/A

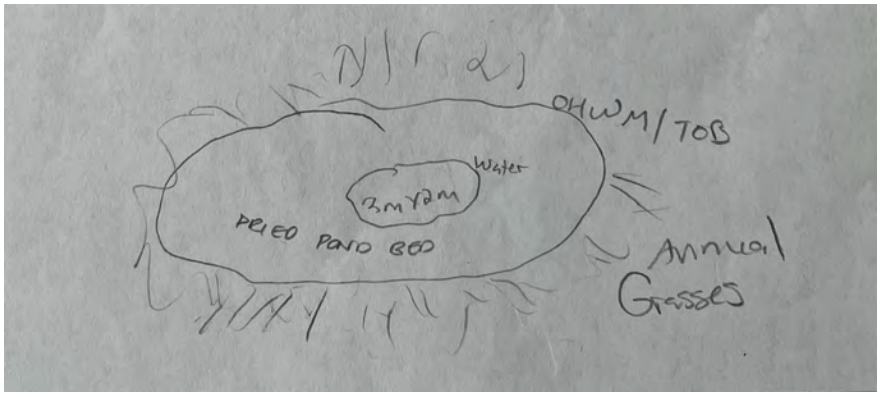
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Bank description: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A

Other aquatic habitat characteristics, species observations, drawings, or comments:



Stock pond slightly west-northwest of Project site
This feature was full to OHWM in Mar 2023; water remaining in Aug 2023 ~3m x 2m

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.711060, -121.584215.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 32 meters x 29 meters Maximum depth: ~2 meter

Vegetation: emergent, overhanging, dominant species:
Bulrush sp., closer to bank is Polypogon monspeliensis, Atriplex prostrata, Rumex crispus, Heliotrope curassavicum, Bolboschoenus maritimus

Substrate: mud/silt

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: well-filled in August 2023
☑ ☐

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: N/A
Depth at bank full: N/A
Stream gradient: N/A

Are there pools (circle one)? YES ☐ NO ☐
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: N/A

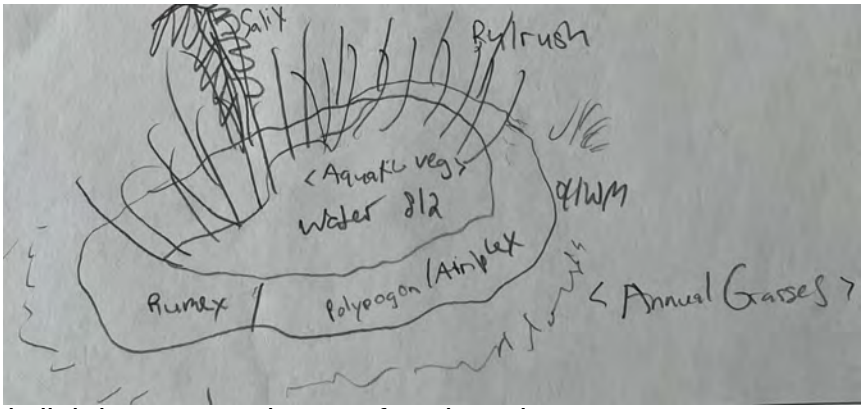
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Bank description: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A

Other aquatic habitat characteristics, species observations, drawings, or comments:



Stock pond slightly west-southwest of Project site
This feature was full to OHWM in Mar 2023

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix G

EACCS Mitigation Score Sheets

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-1 . Impact/Mitigation Scoring for big tarplant in the EACCS study area.

Big tarplant	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Conservation Zones	Inside CZ6 or CZ10	Inside CZ5 or CZ9	--	--	--	Other CZ	5
Elevation	Below 2,000 feet	--	--	--		Above 2,000 feet	5
Land covers impacted/ mitigated	Annual grassland, native grassland	--	--	--	--	All others	5
Soils present in impact area	Clay, Clay-loam	--	--	--	--	others	5
Within EBCNPS Priority Plant Protection Area	Yes	--	No	--	--	--	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							26
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-12. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-2. Impact/Mitigation Scoring for California red-legged frog in the EACCS study area.

California red-legged frog	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	< 1-mile	>1-mile but < 2-miles	--	--	Greater than 2-miles	3
Is there occupied habitat within 2-miles of site?	Yes	--	--	No	--	--	3
Aquatic land covers impacted/ mitigated	Wetland, Ponds, Stream/River	--	--	--	--	All others; none	5
Upland land covers impacted/ mitigated	Riparian, Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Conifer woodland	Cultivated ag, ruderal	--	All others; none	5
Elevation	Below 3,500 feet	--	--	--	--	Above 3,500 feet	5
Presence of ground squirrels or other burrowing mammals	On site	< 0.25-mile of site	> 0.25 but ≤ 0.5 miles	> 0. 5 but ≤ 1.0 miles	> 1.0 but ≤ 1.5 miles	> 1.5 miles	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low numbers and not all aquatic habitats are occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside East San Francisco Bay core recovery area	Yes					No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	0
Total Score							34
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-7. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-3. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	3
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	2
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	0
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							24
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-4. Impact/Mitigation Scoring for golden eagle in the EACCS study area.

Golden eagle	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Presence of golden eagle nest within 1.0-mile of site	Yes	--	--	--	--	No	0
Land covers impacted/ Mitigated	Grassland, Oak woodland	Chaparral and scrub, ruderal	Cultivated ag	Rural residential, Conifer woodland	--	All others	5
Presence of ground squirrels	On site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							11
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-5. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	2
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							22
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-6. Impact/Mitigation Scoring for tricolored blackbird in the EACCS study ar ea.

Tricolored blackbird	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Documented tricolored blackbird nest colony within 0.5-mile of site during previous 3-years.	Yes	--	--	--	--	No	1
Acres of emergent vegetation that could support nesting TRBL	>5	3-5	1-3	0.25 – 1	<0.25	0	0
Acres of foraging habitat within 2-miles colony site	>1000	501-1000	251-500	100-250	<100	0	1
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	0
Total Score							2
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

APPENDIX C – EACCS Mitigation Scoring Sheets

Appendix E. Continued

Table E-4. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	3
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	2
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	0
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							24
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-8. Impact/Mitigation Scoring for golden eagle in the EACCS study area.

Golden eagle	5	4	3	2	1	0	Score
Presence of golden eagle nest within 1.0-mile of site	Yes	--	--	--	--	No	0
Land covers impacted/ Mitigated	Grassland, Oak woodland	Chaparral and scrub, ruderal	Cultivated ag	Rural residential, Conifer woodland	--	All others	5
Presence of ground squirrels	On site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							16
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Table E-11. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	5	4	3	2	1	0	Score
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	2
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							22
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-10. Impact/Mitigation Scoring for tricolored blackbird in the EACCS study area.

Tricolored blackbird	5	4	3	2	1	0	Score
Documented tricolored blackbird nest colony within 0.5-mile of site during previous 3-years.	Yes	--	--	--	--	No	0
Acres of emergent vegetation that could support nesting TRBL	>5	3-5	1-3	0.25 – 1	<0.25	0	0
Acres of foraging habitat within 2-miles colony site	>1000	501-1000	251-500	100-250	<100	0	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							6
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-4. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	5
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	5
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	5
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	5
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							40
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-8. Impact/Mitigation Scoring for golden eagle in the EACCS study area.

Golden eagle	5	4	3	2	1	0	Score
Presence of golden eagle nest within 1.0-mile of site	Yes	--	--	--	--	No	0
Land covers impacted/ Mitigated	Grassland, Oak woodland	Chaparral and scrub, ruderal	Cultivated ag	Rural residential, Conifer woodland	--	All others	5
Presence of ground squirrels	On site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							20
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-11. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	5	4	3	2	1	0	Score
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	3
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							27
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-10. Impact/Mitigation Scoring for tricolored blackbird in the EACCS study area.

Tricolored blackbird	5	4	3	2	1	0	Score
Documented tricolored blackbird nest colony within 0.5-mile of site during previous 3-years.	Yes	--	--	--	--	No	0
Acres of emergent vegetation that could support nesting TRBL	>5	3-5	1-3	0.25 – 1	<0.25	0	3
Acres of foraging habitat within 2-miles colony site	>1000	501-1000	251-500	100-250	<100	0	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							13
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							