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

~~January 31, 2025~~February 4, 2025

Prepared for:

Levy Alameda, LLC
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Contact: Kelene Strain
KStrain@capstoneinfra.com

Prepared by:

Stantec Consulting Services Inc.
2999 Oak Road, Suite 800
Walnut Creek, CA 94597
Contact: Jared Elia
jared.elia@stantec.com

California Endangered Species Act

Incidental Take Permit Application for California tiger salamander (*Ambystoma californiense*) Central California Distinct Population Segment, Crotch's bumble bee (*Bombus crotchii*), San Joaquin kit fox (*Vulpes macrotis mutica*), and Western burrowing owl (*Athene cunicularia hypugaea*)

Potentia-Viridi Battery Energy Storage System Project

Alameda County, California

~~January~~ February 2025

Levy Alameda, LLC

Submitted by:
Levy Alameda, LLC
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Contact: Kelene Strain, Environmental & Permitting Manager

Prepared for:
California Energy Commission
Lisa Worrall, Senior Environmental Planner
Lisa.Worrall@energy.ca.gov

Table of Contents

List of Tables

Appendices

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 curent
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), Crotch's bumble bee (*Bombus crotchii*), San Joaquin kit fox (*Vulpes macrotis mutica*) and western burrowing owl (*Athene cunicularia hypugaea*) 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

Levy Alameda, LLC
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada

1.2 Applicant Contact

Kelene Strain, Environmental & Permitting Manager
Capstone Infrastructure Corporation
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Email: LMcLeod@capstoneinfra.com

1.3 California Environmental Quality Act Lead Agency Contact

California Energy Commission.
Lisa Worrall, Biological Unit Supervisor
Lisa.Worrall@energy.ca.gov

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, Crotch's bumble bee, ~~and~~ San Joaquin kit fox and western burrowing owl 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
- Crotch's bumble bee – State candidate threatened

- San Joaquin kit fox – State threatened
- Western burrowing owl – State candidate threatened

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 (Figure 1 Regional Map, Figure 2 Project Vicinity, and Figure 3 Project Site Aerial). Development of the BESS facility would occur within a 70 acres leased area of APN 99B-7890-002-04, which currently consists of fallowed annual grasslands suitable for grazing. Of the approximately 70-acre lease area, approximately 58.8 acres would be permanently disturbed for development of the BESS facility. 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. As shown on Figure 3 Project Site Aerial, a gen-tie study area of approximately 32 acres was evaluated. Out of the 32 acres evaluated, only 1.9 acres is expected to be permanently disturbed for installation of the transmission and interconnecting facilities. A total of 60.7 acres within the approximately 102-acre project area would disturbed as part of Project implementation.

The Project location was selected due to it being large enough to support development of the Project, its 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 Project Objectives

The Project objectives are:

- Construct and operate an economically viable, and commercially financeable, 400-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 CPUC'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, O&M, and eventual decommissioning of a 400 MW BESS with an energy storage capacity up to 3,200 MWhs. Charging from or discharging to the electrical grid would be a 500kV gen-tie connecting the Project substation to the POI within the existing PG&E Tesla Substation. The BESS Facility would include the following components:

- Battery Energy Storage System (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

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~~ 50 ft minimum for outer loop
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 Buildings	~~1~~3	100 ft x ~~50~~ 48 ft x ~~30~~ 24 ft (L x W x H)
Fire Water Storage Tank (30,000 Gallon) – Above Ground	2	10 ft x 24 ft (H x D)
Water Storage Tank (10,000 Gallon) – Above Ground	1	11.5 ft x 11.75 ft (H x D)
Wastewater Holding Tank (5,000 Gallon) – Below Ground	2	16.5 ft x 7.5 ft x 8 ft (L x W x H)
Emergency Generators	2	25 ft x 10 ft x 12 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 Permanent Project Footprint

Component	Permanent Disturbance
BESS Yards	13.3 acres
Project Substation	5.4 acres
Access Roads	7.1 acres
Laydown Yards/Storage Areas	14.0 acres
O&M Area	1.8 acres
Stormwater Detention Areas	9.0 acres

Stormwater Outfall	0.6 acres
Other*	7.6 acres
Total BESS+	58.8 acres
Transmission and Interconnection Facilities	1.9 acres
Total BESS and Transmission and Interconnection+	60.7 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; however, due to the continuous improvement of these energy storage systems, a specific manufacturer and model has not been selected at this time. 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 10 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, as well as monitoring by the 18 full-time operations staff members. 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, the Northern Access Road and the Southeast Emergency Access Road. The Northern Access Road would be constructed from an existing private road near the northeastern portion of the site and would serve as the primary access to the site. The Southeast Emergency Access Road would be constructed from Patterson Pass Road near the southeastern portion of the site and would be used for emergency access only. As such, the majority of Project traffic would not be expected to travel along the unimproved stretches of Patterson Pass Road. The driveway apron of the Southeast Emergency Access Road would be expanded to allow vehicles space to decelerate off the main road and to provide additional visibility for exiting vehicles to enter onto Patterson Pass Road. In addition, this emergency entrance road has been designed according to the Engineering Design Guidelines for Unincorporated Alameda County to provide 100' of straight driveway perpendicular to the centerline of Patterson Pass Road. The grade has been adjusted to provide a maximum 6% grade for 50' from the road edge.

A Project substation access road would be constructed outside of the perimeter fence, connecting the northeast and southwest driveways, to facilitate Project 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/Storage Area

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 4). The primary laydown yard would be cleared of vegetation, bladed, compacted, and surfaced with

aggregate. 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.

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 southwest to northeast to be captured in a detention basin located on the northeast end of the BESS site, and southward to a detention basin located parallel to Patterson Pass Road. Additional detention basins would be located around the perimeter of the site to capture stormwater runoff from side slopes (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 36-inch corrugated metal pipe or bioswale/ditch would be constructed from one or more of the detention basins located in the southwest portion of the site to the inlet of a new or existing culvert on the north side of Patterson Pass Road. Approximately 10 cubic yards of clean riprap would be placed as an energy dissipator at the outfall to discharge clean stormwater at or below current rates at the elevation of the ordinary high water mark of the existing drainage on the south side of Patterson Pass Road.

2.2.5 Site Secuirty

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, three O&M buildings would be constructed a minimum of 20' apart within the primary laydown yard for the Project's anticipated 18 full-time operations staff. The main O&M building would include basic offices, meeting rooms, and washroom facilities. A 10,000 gallon above ground potable water storage tank would provide water for washroom and sanitary facilities, and sewage/wastewater would be collected in a 2 separate 5,000 gallon below ground sewer holding tanks. 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 remaining two O&M buildings would be used primarily for storage, maintenance and repair activities associated with the Project . Neither of these buildings would have washroom facilities. All O&M buildings 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. This ITP is seeking coverage that includes construction and operation of all transmission infrastructure from the project substation to the Tesla Substation, including the portions that would be constructed and owned by PG&E (POCO

to 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, Transmission Line Route, shows the gen-tie route, scattered rural residences, and existing transmission lines within 1 mile of the proposed 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*
Total	*~1.9 acres*	*~6.7 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 2 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).

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 an Arizona 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 pull box. 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.

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, with seasonal restrictions (May 1 to October 30) to avoid impacts to covered species. Following energization, testing and commissioning would take place

over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q4 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

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
				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
				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

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
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
				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

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
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8
				Cranes	2	8
				Rubber Tired Dozers	2	8
				Tractors/Loaders/ Backhoes	2	8

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.

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 3 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 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 located onsite.

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 end 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, Crotch's bumble bee, San Joaquin kit fox and western burrowing owl 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). 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 Project site to identify potential aquatic breeding sites within dispersal distance of the Project site. 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).

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 Crotch's Bumble Bee

3.2.1 Distribution, Biology, and Habitat Requirements

Crotch's bumble bee is a state candidate for listing as endangered under CESA and is not covered under the EACCS. The Crotch's bumble bee 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 2023). 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.

3.2.2 Occurrence of the Crotch's Bumble Bee in the Project Area

There is 1 CNDDB occurrence for Crotch's bumble bee within a 9-quadrangle search of the Project site (Figure 5). This documented occurrence is approximately 8 miles northeast of the Project site from 1959, a record of a collection in May (Occ. No. 323; CDFW 2024).

The habitat on site is suitable for this species as the only vegetation community is annual grassland. 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.

3.2.3 Potential for Take of the Crotch's Bumble Bee

Direct impacts to Crotch's bumble bee include mortality or injury from ground-disturbing activities, construction equipment, grading, or other construction activities; and permanent loss of potential foraging and nesting habitat within the construction footprint. Direct mortality and habitat reduction will contribute to further population declines in this species. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

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 Western Burrowing Owl

3.4.1 Distribution, Biology, and Habitat Requirements

The western burrowing owl is a State candidate species. The western burrowing owl is a small ground-dwelling owl that prefers open, arid, and relatively flat to rolling terrain characterized by low growing vegetation and the presence of burrows (Haug et al. 1993; Klute et al. 2003). Common habitat types include grasslands, deserts, prairies, shrub steppes, ephemeral washes, open agricultural areas, and sometimes in human altered environments such as vacant lots, golf courses, community parks, and airports (Haug et al. 1993; Rosenberg and Haley 2004). western burrowing owls can tolerate a certain amount of non-threatening human activity, noise, and disturbance as long as essential habitat requirements are met (Coulombe 1971; Voous 1988; Johnsgard 1998). Essential habitat requirements include short vegetation for foraging opportunities and suitable burrows for nesting, roosting, and predator avoidance.

Western burrowing owl inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993). In California, western burrowing owl distribution is widely scattered throughout much of the lowlands where suitable habitat persists (Shuford and Gardali 2008). Western burrowing owls in California are predominately nonmigratory year-round residents (Klute et al. 2003). Resident owls breed in California, generally between February 1 and August 31, with peak breeding activity from April through July (CDFW 2012; Haug et al. 1993). After breeding, resident western burrowing owls may move from their breeding areas to wander within the region during the winter months, particularly in central and southern California (Coulombe 1971; Martin 1973; Botelho 1996). Western burrowing owls exhibit strong site fidelity and adults often return to the same burrow or a nearby area each year for breeding.

~~In addition, the California~~ resident ~~population of western burrowing owl is supplemented with migratory owls. Migratory owls breed in Canada and the northern United States, leave their breeding grounds in September and October to overwinter in the south, then return north to their breeding grounds in March and April (Klute et al. 2003; Trulio et al. 2024). Most migrant owls are thought to winter in Mexico and in the southern portion of the western burrowing owl range in the United States, including California.~~

Western burrowing owls may utilize different areas throughout the year for breeding, foraging, overwintering, dispersal, or transient/migration stops, and therefore may only occupy areas for a short period of the year. Western burrowing owls require open areas with low and sparse growing vegetation for foraging opportunities and unobstructed visibility for predator avoidance (Klute et al. 2003). Western burrowing owls are most active in foraging bouts during night, dawn, and dusk, but may be active throughout the day. As an opportunistic foraging generalist, a western burrowing owls diet primarily comprises large insects and small rodents but can include a wide variety of prey.

Western burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox (*Vulpes* sp.), desert tortoise (*Gopherus agassizii*), and other wildlife. They generally depend on other species to dig suitable burrows for use but may also use anthropogenic surrogate burrows such as rubble piles or drainage pipes when natural burrows are limited (Ronan 2002). If formerly occupied burrows are

badly damaged or collapsed, western burrowing owls cannot repair them and must seek alternate sites.

Nesting western burrowing owls select nest burrows with shorter vegetation, greater burrow density, and greater percentage of bare ground than generally available (Plumpton and Lutz 1993). western burrowing owls have a strong affinity for previously occupied nesting and wintering sites and will often return to previously occupied burrows, particularly if they had successful reproduction in previous years (Gervais et al. 2008). Although western burrowing owls nest within one burrow, they usually occupy a "nest site" composed of both the nesting cavity burrow and nearby satellite burrows where nesting activities are not occurring. In addition, western burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Historically, the western burrowing owl was widespread and described as common or abundant in California. Western burrowing owls occurred throughout most of California's counties where suitable low growing vegetation habitat existed except for coastal counties north of Marin County and in mountainous areas (Shuford and Gardali 2008). The highest densities of western burrowing owl were historically reported in interior valleys and coastal lowlands (Grinnell and Miller 1944).

The most current research indicates that the western burrowing owl range in California has not drastically changed from its historical range, but the species has disappeared or greatly declined as a breeding bird in many areas that were previously occupied. Western burrowing owls have been extirpated as a breeding species from at least 19 of the 51 California counties that it previously occurred in and is nearing extirpation in an additional 10 counties (DeSante et al. 1996, 2007; Wilkerson and Siegel 2010). This approximately equates to a 16 percent decrease in the former California breeding range and is nearing extirpation in an additional 13 percent of the former breeding range as a result of numerous anthropogenic sources. The most important of these are direct mortality and permanent habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, ground squirrels, from grazing and agricultural lands.

3.4.2 Occurrence of the Western Burrowing Owl in the Project Area

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).

The habitat on the Project site is moderate-quality annual grassland for western burrowing owl. 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 western burrowing owl. 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 western burrowing owls were observed during the field surveys.

3.4.3 Potential for Take of the Western Burrowing Owl

The Project site occurs within the range of the species and may directly and indirectly impact potential foraging and nesting habitat for western burrowing owl; however, no owls have been observed within the Project site following multiple rounds of surveys in 2023, 2024 and 2025. The Project will have temporary and permanent impacts to potential foraging and nesting habitat. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

Chapter 4. Project Impact on Continued Existence of the Covered Species

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 60.7 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 and the nearest stock ponds that provide suitable aquatic breeding habitat are approximately 0.3 miles from the Project study area. 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 Crotch's Bumble Bee

The petition to list Crotch's bumble bee as endangered under CESA (The Xerces Society et al. 2018) states that this species was historically common in the southern two-thirds of California, but is now absent from most of its range, specifically in the center of its range including the Central Valley. In the Central Valley, agriculture and rapid urbanization have been the main threat to this species nesting and foraging habitat. It is estimated that this species has gone through an average decline of 67%, including relative abundance and persistence in their current range (The Xerces Society et al. 2018). Tracking extant populations of Crotch's bumble bee is limited due to the species still being surveyed in its historical range throughout the state and additional studies on the species and their habitat are still recommended to help with this effort.

4.2.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to Crotch's bumble bee nesting and foraging habitat associated with the grassland vegetation community. Although suitable nesting habitat is present, no bumble bee species were observed during the 2023 and 2024 field surveys. 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 Crotch's bumble bee are minimized. Potential Project effects to this species would be direct temporary and permanent effects associated with nesting and foraging habitat. Although suitable nesting habitat will be impacted, there is only 1 historical CNDDB record within a 9-quadrangle search of the Project site and no bumble bees were observed during focused surveys. 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.

4.3 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 60.7 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 Western Burrowing Owl

The petition to list western burrowing owl as threatened or endangered under CESA (CDFW 2024) states that the California counties where burrowing owls are thought to have been extirpated, including portions of the northern Central Valley, all of the coastal Bay Area, most of the central and southern coast, as well as some areas in the interior of the Bay Area. The petition states areas of extirpation comprise roughly 16% of the burrowing owls' former range. The petition states burrowing owls are likely to be very close to being extirpated from another 13% of their range, including in portions of the Central Valley, the remaining areas in the interior Bay Area, and the central and southwestern coasts.

4.4.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to potential western burrowing owl foraging and nesting habitat associated with the grassland vegetation community. Although suitable nesting habitat is present, no western burrowing owls were observed during the 2023, 2024 and 2025 field surveys. 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 western burrowing owl 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.

Chapter 5. Minimization and Mitigation Measures

The Project applicant has worked closely with wildlife biologists, in consultation with resource agencies, through the design process to minimize impacts on California tiger salamander, Crotch's bumble bee, San Joaquin kit fox, and western burrowing owl. 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).

5.1 General Avoidance and Minimization Measures for Construction and Decommissioning

Implementation of applicable general avoidance and minimization measures will reduce potential adverse effects to EACCS special-status wildlife during construction of the Project. These measures are listed below.

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 piles, firearms, open fires (such as barbecues), 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 designated 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 major storms or within 24 hours 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 (if necessary).

5.2 California Tiger Salamander Avoidance and Minimization Measures

Implementation of applicable amphibian avoidance and minimization measures will reduce potential adverse effects to EACCS-covered amphibians that utilize the site as upland refuge and overland migration habitat during construction of the Project. 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

- 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 (EACCS AMPH-1).
- 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.
- 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 USFWS 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 June 15 through 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, impacts to California tiger salamander will be minimized. To compensate for direct impacts California tiger salamander, the Applicant will purchase and ensure long-term conservation of a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standardized mitigation ratios for California tiger salamander are 3:1 (three acres preserved for each acre removed).

Therefore, Permanent impacts will be mitigated at a minimum of 3:1 for California tiger salamander (See Table 7 in Section 5.7). Final mitigation ratios will be based on consultation with CDFW.

5.3 Crotch's Bumble Bee Avoidance and Minimization Measures

Pre-construction bumble-bee surveys and avoidance buffers conducted per the recommendations outlined in CDFW's Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023) will avoid potential impacts to these species by preventing direct harm. The following measures are recommended to avoid, minimize, or mitigate impacts to Crotch's bumble bee:

- The pre-construction survey will be performed by a biologist with expertise in surveying for bumble bees and include at least three (3) survey passes that are not on sequential days or in the same week, preferably spaced two to four weeks apart. The timing of these surveys shall coincide with the Colony Active Period (April 1 through August 31 for Crotch bumble bee). Surveys shall occur at least 1 hour after sunrise and 2 hours before sunset. Surveys will not be conducted during wet conditions (e.g., foggy, raining, or drizzling) and surveyors will wait at least 1 hour following rain. Optimal surveys are when there are sunny to partly sunny skies that are greater than 60° Fahrenheit. Surveys may be conducted earlier if other bees or butterflies are flying. Surveys shall not be conducted when it is windy (i.e., sustained winds greater than 8 mph). Within non-developed habitats, the biologist shall look for nest resources suitable for bumble bee use. Ensuring that all nest resources receive 100% visual coverage, the biologist shall watch the nest resources for up to five minutes, looking for exiting or entering worker bumble bees. Worker bees should arrive and exit an active nest site with frequency, such that their presence would be apparent after five minutes of observation. If a bumble bee worker is detected, then a representative shall be identified to species. Biologists should be able view several burrows at one time to sufficiently determine if bees are entering/exiting them depending on their proximity to one another. It is up to the discretion of the biologist regarding the actual survey viewshed limits from the chosen vantage point which would provide 100% visual coverage; this could include a 30- to 50-foot-wide area. If a nest is suspected, the surveyor can block the entrance of the possible nest with a sterile vial or jar until nest activity is confirmed (no longer than 30 minutes).

- If nest resources occupied by Crotch bumble bee are detected within the construction area, no construction activities shall occur within 100 feet of the construction zone, or as determined by a qualified biologist through evaluation of topographic features or distribution of floral resources. The nest resources will be avoided for the duration of the Crotch bumble bee nesting period (February 1 through October 31). Outside of the nesting season, it is

assumed that no live individuals would be present within the nest as the daughter queens (gynes) usually leave by September, and all other individuals (original queen, workers, males) die. The gyne is highly mobile and can independently disperse to outside of the construction footprint to proposed open space or other suitable areas beyond that have suitable hibernacula resources. Because construction will have occurred in the area outside of the occupied nesting resources, no suitable habitat will be present in the impact area, and it is assumed that new queens will disperse to habitat outside of the construction area.

- If the nest resources cannot be avoided, as outlined in this measure, the project applicant will consult with CDFW regarding the need to obtain an Incidental Take Permit.

- In the event an Incidental Take Permit is needed, mitigation for direct impacts to Crotch's bumble bee will be fulfilled through compensatory mitigation at a minimum 1:1 nesting habitat replacement of equal or better functions and values to those impacted by the Project, or as otherwise determined through the Incidental Take Permit process. Mitigation will be accomplished either through off-site conservation or through a CDFW-approved mitigation bank. If mitigation is not purchased through a mitigation bank, and lands are conserved separately, a cost estimate will be prepared to estimate the initial start-up costs and ongoing annual costs of management activities for the management of the conservation easement area(s) in perpetuity. The funding source will be in the form of an endowment to help the qualified natural lands management entity that is ultimately selected to hold the conservation easement(s). The endowment amount will be established following the completion of a Project-specific Property Analysis Record to calculate the costs of in-perpetuity land management. The Property Analysis Record will take into account all management activities required in the Incidental Take Permit to fulfill the requirements of the conservation easement(s), which are currently in review and development.

5.3.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of nesting and foraging habitat for this species. To compensate for direct impacts on nesting and foraging habitat for Crotch's bumble bee, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. Since this species is not included in the EACCS, the standard mitigation ratio for other species in the plan (3:1) will be applied to this species. Final mitigation ratios will be based on consultation with CDFW.

5.4 San Joaquin Kit Fox Avoidance and Minimization Measures

Implementation of applicable mammal avoidance and minimization measures will avoid potential adverse effects to EACCS-covered mammals that may utilize the project site during construction of the Project In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

- 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 (USFWS 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 area 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 a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standardized mitigation ratios for San Joaquin kit fox are 3:1 (three acres preserved for each acre removed) (ICF 2010). Final mitigation ratios will be based on consultation with CDFW.

5.5 Western Burrowing Owl Avoidance and Minimization Measures

Implementation of applicable birds avoidance and minimization measures will avoid potential adverse effects to EACCS-covered birds that may utilize the project site during construction of the Project In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

- 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.

5.5.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of nesting and foraging habitat for this species. To compensate for direct impacts on potential nesting and foraging habitat for western burrowing owl, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standard mitigation ratio for this species in the plan (3:1) will be applied. Final mitigation ratios will be based on consultation with CDFW.

5.6 Funding

To compensate for direct impacts on habitat for California tiger salamander, Crotch's bumble bee, San Joaquin kit fox and western burrowing owl, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. The Applicant will ensure a long-term conservation plan is implemented with the turnkey mitigation property which will consist of a conservation easement, an endowment and a long term management plan along with a mitigation agreement that will be submitted for approval during coordination with CDFW and USFWS. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. All necessary requirements to acquire the proposed mitigation property will be completed prior to ground disturbance and this process has already been initiated. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. 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. EACCS Mitigation Scoring sheets are provided in Appendix D.

Table 7. Proposed Compensatory Mitigation for Listed Species

Species	Permanent Impacts		
	Impact (acres)	Ratio	Mitigation (acres)
California tiger salamander	60.7	3:1	182.1
Crotch's bumble bee	60.7	3:1	182.1
San Joaquin kit fox	60.7	3:1	182.1
Western burrowing owl	60.7	3:1	182.1

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
Levy Alameda, LLC
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Email: pleitch@capstoneinfra.com

Chapter 7. References

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APPENDIX A – Figures

APPENDIX B – Biological Resources Technical Report

APPENDIX C – Mitigation Property Biological Resources Report

Appendix D - EACCS Mitigation Scoring Sheets