

# Biological Resources Assessment

Marsalla # 1 Natural Gas Exploration Project  
Solano County, California

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## SUMMARY

The proposed project is situated 6.39 miles north of the City of Pittsburg and 8.64 miles southeast of the City of Fairfield in unincorporated Solano County, California. The proposed project site is located 20 feet north of Birds Landing Road (see Appendix A, Figures I and 2). The proposed project is needed to develop additional natural gas reserves in the State of California. The objective of the proposed project is to locate untapped natural gas sources with potential for development both within and/or outside of existing natural gas fields. Synthesis Planning was contracted by the project proponent to perform this Biological Resources Assessment for the proposed project site and buffer area.

Four (4) vegetation communities were observed within the study area and include the following: 1. *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance, 2. *Frankenia salina* Herbaceous Alliance, 3. *Salicornia depressa* Herbaceous Alliance, and 4. Ruderal-disturbed vegetation. As part of this Biological Resources Assessment the potential for occurrence of special-status plant species and special-status wildlife species was evaluated.

Best construction practices (BMPs), avoidance and minimization measures, as well as mitigation measures to prevent take of individuals discussed above are included in this report.

### List of Acronyms and Abbreviations

BMP	Best Management Practices
BRA	Biological Resources Assessment
CalGEM	California Department of Conservation, Geologic Energy Management Division
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
COFW	California Department of Fish and Wildlife (formerly COFG)
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CHP	California Highway Patrol
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CSC	California Species of Concern
DBH	Diameter breast height
ESHA	Environmentally Sensitive Habitat Area
FESA	Federal Endangered Species Act
FGC	Fish and Game Code
HOO	Horizontal Directional Drilling
HOPE	High-density polyethylene
HWMP	Hazardous Waste Management Plan
Lantos	Lantos Enern:v LLC
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
RWQCB	Regional Water Quality Control Board
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
USACE	US Army Corps of Engineers
UTM	Universal Trans Mercator
WHR	Wildlife Habitat Relationships
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
USACE	US Army Corps of Engineers
UTM	Universal Trans Mercator
WHR	Wildlife Habitat Relationships

## **1.0 INTRODUCTION**

The purpose of this Biological Resources Assessment is to provide technical information and to review the proposed project study area, situated 6.39 miles north of the City of Pittsburg and 8.64 miles southeast of the City of Fairfield in unincorporated Solano County, California. The proposed project site is located 20 feet north of Birds Landing Road (see Appendix A, Figures 1 and 2). The proposed project is needed to develop additional natural gas reserves in the State of California. The objective of the proposed project is to locate untapped natural gas sources with potential for development both within and/or outside of existing natural gas fields. Synthesis Planning prepared this Biological Resources Assessment (BRA) to provide sufficient detail to determine the potential effects of the proposed project on federally- and state-listed wildlife and plant species. This BRA was conducted to determine the potential for special-status vegetation communities, plant and animal species to occur within the project study area, and to identify the limitations to potential development of the project. The BRA is prepared in accordance with legal requirements found in Section 7 (a)(2) of the Endangered Species Act (16 U.S. C 1536(c)) and also provides information required for an Initial Study/Mitigated Negative Declaration as part of the California Environmental Quality Act (CEQA) review for the project. The document presents technical information upon which later decisions regarding project affects are developed.

The project area is located in Section 5 of the Denverton 7.5- minute topographic quadrangle. The project site is located within Township 3N and Range 01E. Surrounding land uses consist of agricultural, recreational, rural residences, and open space.

### **1.1 Project Description**

Lantos Energy LLC (Lantos) is proposing to construct a drill site and drill one (1) exploratory natural gas well from the proposed drill site over a one (1) year period. The proposed Marsalla well is located at Latitude 38.133385 and Longitude 121.898040. If drilling is successful, Lantos proposes to install the required production equipment including a natural gas pipeline. The proposed pipeline would be constructed from the proposed drill site to an existing natural gas pipeline located approximately 0.04 miles (200 feet) southwest of the proposed well site. The proposed pipeline would be installed using traditional open-cut trench methods. No boring will be used to install the pipeline. No hydraulic fracturing is proposed. The entire proposed project will be located within the Secondary Management Area of the Suisun Marsh. The entirety of the proposed project would be installed on private lands.

The drill site location was selected to minimize impacts to sensitive resources including wetlands. The proposed well site will encompass an area of 100 feet by 170 feet (approximately 17,000 square feet, or 0.39 acres) with an access road measuring 40 feet in length and 20 feet in width (approximately 800 square feet, or 0.02 acres). All project impacts would occur in upland grassland habitat. The proposed project site was also selected because it is near an existing public road, and would require only a short section of new access road to be constructed, minimizing disturbance to native habitats areas.

## **Project Phases**

The proposed project includes three (3) phases: a site preparation phase, a drilling and testing phase and a production phase. A detailed description of each phase is presented below.

### ***Site Preparation Phase***

Prior to initiating site preparation activities, all workers will be given an environmental orientation to ensure that those working in the project area understand the sensitivity of the areas adjacent to the proposed well site and proposed access road, and the necessity of avoiding disturbance to these areas. The environmental orientation will also discuss emergency response guidelines and conservation and mitigation measures designed to avoid or minimize potential environmental impacts.

Project area boundaries will be clearly delineated by project biologists to ensure all activities are confined to the approved work area and to avoid wetland areas outside of the proposed well site and proposed access road as previously delineated by wetland biologists. Project biologists will oversee removal of vegetation from the proposed well site and proposed access road. Any vegetation removed will be transported to an off-site waste disposal facility. Fill materials will be placed on the proposed well site and proposed access road to raise the elevation of the proposed well site and proposed access road. Fill materials will consist of sand and/or base rock.

Lantos will use above ground steel tanks to store *its* drilling cutting and excess mud during drilling and completion operation and no sump will be constructed as part of this project. All drilling mud and cuttings will be transported offsite to an approved disposal site.

Existing public roads will be used to provide access from Birds Landing Road to the proposed project area. A new access road will need to be constructed from the existing private gravel road to the proposed well site; the new access road will encompass approximately 20 feet in width by 40 feet in length. Lantos estimates that approximately five (5) days will be needed to prepare the proposed well site and proposed access road. Site preparation activities will operate 8 hours per day.

### ***Drilling & Testing Phase***

The drilling phase of the proposed project will last approximately 28 days. The drilling phase includes six (6) days for mobilization and demobilization of the drill rig, 22 days for drilling, and two (2) days for various tasks associated with the drilling phase including installation of blowout prevention equipment, cementing, mud-logging, etc.

Drilling equipment will be mobilized to the site and rigged up. The project will use Paul Graham *Rig* located in *Rio Vista*. The drill rig is registered in the California Portable Emission Registration Program. Temporary facilities, equipment and materials necessary for the drilling operation will be set up and stored on the proposed well site (i.e., drilling mud supplies, water, drilling materials and casing, crew support trailers, pumps and piping, portable generators, fuels and lubricants, etc.).

The completion and testing phase of the project, if the well is not a dry hole, will take approximately three (3) days. Night lighting will be required and available only during the drilling phase. However, to the greatest extent possible night lighting will be directed inward and down to minimize off site impacts without compromising safety.

No hazardous materials will not be used or stored on the location with the exception of diesel fuel. However, the proposed project will not result in the production of hazardous waste as defined and regulated by Titles 22 and 23 of the California Code of Regulations. Rather, the project will generate non-hazardous designated waste, including drilling muds and oily wastes, able to be disposed of in a permitted Class II disposal facility. In the unlikely event an anticipated waste were to later be deemed a hazardous Class I waste by the state, such waste would be treated, stored and disposed of at an offsite facility permitted to accept Class I waste.

Any hazardous materials (very unlikely) and non-hazardous waste will be transported by a licensed transportation company. The commercial transportation, identification, and designation of appropriate shipping routes for these materials will be in conformance with the adopted Solano County and Incorporated Cities Hazardous Waste Management Plan (HWMP). California regulates the transportation of hazardous waste originating or passing through the State, by statute, in the California Health and Safety Code and Title 22 and 13 of the California Code of Regulations (CCR). The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing these regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Transportation of hazardous waste is also regulated under the Hazardous Materials Regulations Section 49 of the Code of Federal Regulations (CFR). The Environmental Protection Agency (EPA) has exempted the transportation of produced water, drilling fluids, drill cuttings and rig wash as the EPA believes these "special wastes" are lower in toxicity than other wastes being regulated as hazardous waste under Resource Conservation and Recovery Act (*Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*, EPA, October 2002).

Above ground portable tanks will be used for mixing and storing drilling fluids. All fluids will be disposed of in accordance with the requirements of the Regional Water Quality Control Board (RWQCB). The solids that accumulate in the above ground tanks will be transported offsite for disposal.

Surface casing would be set, cemented, and blowout prevention equipment installed at the wellhead and tested. The amount of surface casing used depends upon factors such as expected well pressures, the depth of fresh water, and the competence of the strata in which the well casing will be cemented. Blowout prevention equipment is bolted to the surface casing and will be tested per California Department of Conservation, Geologic Energy Management Divisions (CalGem) requirements. All successive drilling occurs through the blowout prevention equipment, which can be operated to control well pressures at any time. Blowout prevention equipment will be regulated

by the CalGEM. CalGEM engineers will be notified for required tests and other operations (blowout prevention, surface casing integrity).

Well casing is designed to protect underground and surface waters suitable for irrigation or domestic purposes. CalGEM's well construction standards have the fundamental purpose to ensure zonal isolation. Zonal isolation means that natural gas coming up a well from the productive, underground geologic zone will not escape the well and migrate into other geologic zones, including zones that might contain fresh water. Zonal isolation also means that the fluids that are put down a well for any purpose will stay in that zone and not migrate to another zone. To achieve zonal isolation, CalGEM regulations require that a cement barrier be placed between the well and surrounding geologic strata or stratum. The cement bonds to the surrounding rock and well casing and forms a barrier against fluid migration. Cement barriers must meet certain standards for strength and integrity. If these cement barriers do not meet the standards, CalGEM requires the operator to remediate the cement barrier. Metal casings, which can be several layers depending on the depth of a well, also separate the fluids going up and down a well bore from the surrounding geology. If the integrity of a well is compromised by ground movement or other mechanisms, the well operator must remediate the well to ensure zonal isolation. Well casing standards are prescribed in Title 14 CCR, Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1722.2 - 1722.4. Sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from each well and additional quantities of drilling fluid would be available at each site (Title 14, CCR Section 1722.6).

Drilling will continue for the well until target depth is reached. Once target depth is reached, the proposed well will be fully tested and evaluated. The proposed well will be tested with a flow line running to a portable test separator. Any produced gas will be flared and liquids will be stored in a portable tank for transportation to an off-site facility.

Equipment, personnel and supply deliveries will continue through the course of the drilling program. Approximately 10 to 15 personnel will be on site at any given time during drilling operations and drilling activities will operate 24 hours per day.

Should the proposed well be found to have insufficient commercial natural gas potential it would be plugged and abandoned per CalGEM regulations and specifications, in accordance with Title 14 CCR, Division 2, Chapter 4, Subchapter I, Article 3, Sections 1723 - 1723.8 and the proposed well site restored for agricultural activities.

After the well is drilled and the well is either completed or abandoned, the drilling rig and related equipment will be removed from the proposed well site. The above activities would be completed for each of the exploratory natural gas well.

### ***Production Phase***

If economic quantities of natural gas are discovered, the well will be completed and production facilities will be installed. Production facilities include a gas meter, a heater/separator, dehydrator, production water and condensate storage tanks. Lantos estimates that approximately 10 days will be required to install the necessary production equipment and pipeline.



A six (6)-inch natural gas pipeline collection system would also be installed during this phase of the project. Survey crews will be employed to set centerline stakes for the pipeline trenches and to delineate work areas prior to commencing pipeline installation activities.

Clearing of grassland habitat will be required along the proposed pipeline alignment. No disturbance or removal of any other vegetative community types will occur.

#### Open-Cut Trench Methods (Trenching)

Trenching requires the use of a trencher or backhoe to establish an open trench of approximately four (4) to six (6) feet deep and approximately two (2) feet wide. The pipeline work area will measure 10 feet wide by 200 feet in length (approximately 2,000 square feet, or 0.05 acres). Pipe will be placed beside the trench by the stringing crew. Pipe joints will be bonded together, and all joint connections will be inspected and tested prior to laying the pipe into the trench. The pipeline will then be lowered into the trench by a small side-boom crane. The pipe will then be covered with soils that were excavated during the trenching operation and the ground compacted above the pipe.

Construction conditions may require pipe bends for which field bending would not be practical. In this case, pipe joints will be welded together and all joint connections will be inspected prior to laying the pipe into the trench. The pipeline will then be lowered into the trench by a small side-boom crane. The pipe will then be covered with soils that were excavated during the trenching operation and the ground compacted above the pipe.

At the time of backfilling, a colored warning tape will be buried approximately 18 inches above the pipeline to indicate the presence of a buried pipeline to future third party excavators. [n roadways, the backfilled soil will be compacted using a roller or hydraulic compactor prior to placement of gravel or pavement. The surface of the road or area adjacent to the road will be returned to its condition prior to installation of this section of the proposed pipeline. After the pipeline is buried, the construction corridor will be re-contoured to approximately the same grade or slope that existed prior to pipeline installation. It should be noted that an exception to mechanical excavation would be hand digging to locate buried utilities, such as other pipelines, cables, and waterlines. Water trucks will be used for dust control along the ROW as required.

Lantos estimates that the proposed pipeline would be completed within eight (8) days at the same time as the production equipment is being installed. Pipeline installation activities will operate 12 hours per day. Production activities will operate 24 hours per day.

Natural gas will be metered for customer sales at the proposed well site. The proposed well site will be inspected on a daily basis. By-products from natural gas production including production water will be stored temporarily on site. By-products will be periodically transported from the proposed well site by truck for off-site disposal and/or recycling at an applicable facility. During the producing life of a well, a workover service rig (a small mobile drilling rig) may be occasionally required to improve production.

At the conclusion of the well(s) economic life (production), the well will be abandoned and plugged in accordance with CCR Sections 1723 - 1723.8. In this case, a Notice of Intention to

abandon the well(s) will be submitted to CalGEM for review and approval. During a typical well abandonment, recoverable production equipment and wellhead will be salvaged from the well and the hole will be plugged with cement. The casing will be cut off six (6) feet below ground surface, capped with a welded plate and the cellar backfilled. Once the well is abandon, any sand and/or gravel used to build up the proposed well site and *proposed* access road will then be removed. Contours will be re-established to near grade conditions present at the time of project initiation. After all equipment is removed, the proposed well site and proposed access road will be restored back to wetland and upland habitat.

## 2.0 STUDY METHODOLOGY

This Biological Resources Assessment used the best available scientific and commercial data to evaluate the potential effects to biological resources from the proposed project. Literature review, aerial imagery and field surveys informed the descriptions of the vegetation communities, identification of present and past occurrences of special-status species in the vicinity of the proposed project, and the assessment of habitats for special-status animal species.

### 2.1 Literature Search

Information on special-status plant and animal species was compiled through a review of the literature and database searches. Database searches for known occurrences of special-status species focused on the Denverton, Birds Landing, Honker Bay, and Antioch North U.S. Geologic Service 7.5-minute topographic quadrangles. The following sources were reviewed to determine which special-status plant and wildlife species have been documented in the vicinity of the project site:

- U.S. Fish and Wildlife Service (USFWS) quadrangle species lists (USFWS 2022)
- USFWS list of special-status animals for Solano County (USFWS 2022)
- California Natural Diversity Database records (CNDDDB) (CNDDDB 2022)
- California Department of Fish and Wildlife's (CDFW) Special Animals List (CDFW 2022)
- State and Federally Listed Endangered and Threatened Animals of California (CDFW [s] ] 2022)
- California Native Plant Society (CNPS) Electronic Inventory records (CNPS 2022)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)

The USFWS electronic list of Endangered and Threatened Species was queried electronically ([www.fws.gov/sacramento/es\\_spp\\_lists-overview.htm](http://www.fws.gov/sacramento/es_spp_lists-overview.htm)). The Ca!Fish IMAPS Viewer ([www.calfish.org/DataandMaps/CalFishGeographicData](http://www.calfish.org/DataandMaps/CalFishGeographicData)), developed by CDFW Biogeographic Branch for analysis of fisheries, was also reviewed. [s] ]

The CDFW BIOS website and the *California Essential Habitat Connectivity Project: A strategy for conserving a connected California* (Spencer et al. 2010) were reviewed for wildlife movement information. The CDFW BIOS website and the CNDDDB were reviewed for documented nursery sites. Other sources of information regarding reported occurrences include locations previously reported to the U.C Berkeley Museum of Vertebrate Zoology and the California Academy of Sciences.

### 2.2 Field Surveys

Cord Hute, Senior Biologist for Synthesis Planning, conducted botanical and biological surveys of the project site and buffer area on November 29, 2021. Mr. Hute analyzed on-site and buffer area habitats for suitability for special-status plant and animal species during these surveys.

A reconnaissance-level biological survey of the project site was conducted. Habitat types

encountered during the surveys were characterized primarily by dominant and subdominant plant species, and wildlife use was described based on known and anticipated occurrences. Species were recorded as present if they were observed, if species' vocalizations were heard, or if diagnostic field signs were found (i.e., scat, tracks, pellets). Surveys were conducted on the project site and in an area approximately 200 feet wide around the project site (hereafter referred to as the project buffer area).

Special-status wildlife species, in particular, were surveyed for to determine the presence or absence of such species or their habitat.

The survey was conducted to identify the following:

- Suitability of habitat(s) to support sensitive wildlife species;
- Presence of wildlife species and their habitats;
- Potential of the site to contain sensitive habitats, including vernal pools, natural wetlands, etc.;
- Potential of the site to support sensitive small mammal species;
- Potential of the site to support sensitive avian species (e.g., migratory birds, raptors, waterfowl, etc.);
- Habitat condition, quality and vegetation associations; and
- On-site, adjacent and surrounding land uses.

Synthesis utilized the guidance of Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2022). Plant surveys were conducted using demographic survey techniques/guidelines including conducting floristically based surveys, identifying to species level for all plants encountered, and identifying to the level necessary to detect sensitive plants, if present. When possible, the surveys were conducted within the correct phenological time to detect targeted sensitive plant species. The identity of plant species not currently blooming were determined, where feasible, by other characteristics or features of the plants structure. Botanical field surveys were conducted in a manner which maximized the likelihood of locating special status plants and sensitive natural communities that were present. Botanical field surveys were floristic in nature, meaning that every plant taxon that occurs in the project area is identified to the taxonomic level necessary to determine rarity and listing status. Surveys were limited to habitats known to support special status plants. During field surveys, the entire project site and a 200 foot buffer area around the project site were surveyed on 30 foot transects through the entire survey area. Botanical field surveys were conducted at the times of year when plants will be both evident and identifiable (during flowering or fruiting). See Section 5 for survey results and impacts discussion.

Synthesis utilizes GIS Pro, a mobile software program, to collect field data on plant and animal species identified during surveys. The program is installed on an Apple iPad. Aerial topographic maps and satellite photographic images are loaded into the GIS Pro program on the iPad in order to provide as accurate location data as possible during the documentation of individual plant species populations. In addition, the iPads operate on an internal GIS locator independent of cellular service data coverage, which ensures the most accurate location possible during remote field work. When a special-status plant species or population was observed, the surveying biologist creates a population polygon (or

area) in GIS Pro. The polygon is drawn corresponding to the location and shape and size of boundaries of the population. The date the species is observed, the biologist's name, and species name are recorded in the polygon record. Data on the estimated number of individual plants observed in each population may also be collected. A CNDDDB field survey form is completed for each special-status species or population identified. In the case of the proposed project, no sensitive wildlife species were observed during surveys.

### **2.3 Impact Assessment Methodology**

The on-site vegetation communities, present and past occurrence locations of federally and state listed species and federal and state species of concern within close proximity of the proposed project area, and habitats for special-status plant and animal species were examined. Based on the current site conditions, the potential for occurrence on the site for special-status biological resources was evaluated and the project description was used to determine any potential direct or indirect effects.

The determination of whether the proposed project may result in adverse impacts to federally-listed special-status species was based on guidelines established by the USFWS under Section 7(a) of the Federal Endangered Species Act (FESA), under which a project that may have an adverse effect impact on listed biological resources must be assessed. FESA states that, "each federal agency shall...insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered or threatened or result in the destruction or adverse modification of habitat of such species." Thus, components of the proposed project were deemed to have an adverse impact on special-status biological resources if they could result in effects as described in the above statement to any listed species or its habitat.

The determination of whether the proposed project may result in adverse impacts to State special-status species was based on CEQA, the CDFW and the CNPS guidelines for special status plants and animals.

Potential impacts from the project to habitats not occupied by species but for which habitats occurred was also evaluated.

### **3.0 ENVIRONMENTAL BASELINE**

The project area is located within the San Francisco Bay-Delta Bioregion. The Bay Area-Delta Bioregion extends from the Pacific Ocean to the Sacramento Valley and San Joaquin Valley bioregions to the northeast and southeast, and a short stretch of the eastern boundary joins the Sierra Bioregion at Amador and Calaveras counties. The bioregion is bounded by the Klamath/North Coast on the north and the Central Coast Bioregion to the south. The Bay Area/Delta Bioregion is one of the most populous areas of the state, encompassing the San Francisco Bay Area and the Sacramento San Joaquin River Delta. The water that flows through the Delta supplies two-thirds of California's drinking water, irrigating farmland, and sustaining fish and wildlife and their habitat. The bioregion fans out from San Francisco Bay in a jagged semicircle that takes in all or part of 12 counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Joaquin, San Mateo, Santa Clara, Solano, Sonoma, and parts of Sacramento, and Yolo. The habitats and vegetation of the Bay Area/Delta Bioregion are as varied as the geography.

#### **3.1 Wetlands and Waters of the U.S. and State**

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards have been developed as a method of defining wetlands through consideration of three criteria: hydrology, soils, and vegetation (USACE 1987).

The U.S. Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB) have jurisdiction over modifications to stream channels, river banks, lakes, and other wetland features. Jurisdiction of the Corps is established through the provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including certain wetlands and unvegetated "other waters of the U.S." The Corps also has jurisdiction over navigable waters, including tidally influenced ones below Mean High Water, under Section 10 of the Rivers and Harbors Act. Jurisdictional authority of the CDFW is established under Section 1602 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code states that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the Department, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFW states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands... unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage." Jurisdictional authority of the RWQCB is established pursuant to Section 401 of the Clean Water Act, which typically requires a water quality certification when an individual or nationwide permit is issued by the Corps. The RWQCB also has jurisdiction over "waters of the State" under the Porter-Cologne Water Quality Control Act.

In addition to the definition and classification procedures developed by federal agencies, some

California resource and regulatory agencies have developed their own wetland definition and classification procedures. Although these State agency procedures are generally based on the USFWS and USACE definition and classification procedure described above, they do differ in specific details.

Numerous State agencies regulate, manage, or otherwise control natural resources within California through a wide variety of general and specific laws and directives, which are carried out by resource departments, commissions, and boards.

The Keene-Nejedly California Wetlands Preservation Act (1976) is the only State legislation besides the Coastal Act to define wetlands. The act states there "is a need for an affirmative and sustained public policy and program directed at their [wetlands] preservation, restoration, and enhancement, in order that such wetlands shall continue in perpetuity". The act provided for acquisition of ten important wetlands, using funds from several sources, and was intended to support preparation of a statewide wetlands plan. However, acquisition funds were not allocated in 1976.

The State Regional Water Quality Control Boards primary role is to enforce the federal Clean Water Act, and in doing so, assert regulatory authority over development activities affecting the water quality of navigable water and wetlands. Under Section 401(a)(1) of the Clean Water Act: Any applicant for a Federal license or permit to conduct any activity...which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State...that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of this Act.

In turn, California Code of Regulations Section 3831(k) defines the State certification required under Section 401 as:

*'Water Quality Certification' means a certification that there is a reasonable assurance that an activity which may result in a discharge to navigable waters of the United States will not violate water quality standards, where the activity requires a federal license or permit.*

In practice, the regional boards have applied their authority over water quality standards to all waters of the State, including wetlands. Discharge to wetlands and riparian wetlands may violate water quality objectives (e.g., turbidity, temperature, or salinity); impair beneficial uses (e.g., groundwater recharge, recreation, wildlife habitat, fish migration, and shellfish harvesting); and conflict with the anti-degradation policy.

The California Department of Fish and Wildlife has Statewide resource responsibilities and authority that directly and indirectly influence projects and activities in coastal zone wetlands. In addition to being responsible for the maintenance and protection of California's fish and wildlife, the CDFW has authorities under California's Public Resources Code, and the federal Fish and Wildlife Coordination Act to regulate or comment on activities in wetland and riparian areas. The CDFW also assumes primary responsibility for implementation of the California State Endangered Species Act, and the Streambed Alteration Agreement (Fish and Game Code Sections 1601-1603). This agreement is one of the State's few direct legal instruments for the protection of streams,

rivers, and lakes. The CDFW also comments directly to the USACE concerning fish and wildlife aspects of Section 10 and Section 404 permits. CDFW's official position regarding the protection of wetlands is that development projects should not result in a net loss of either wetland acreage or wetland habitat value.

A delineation of wetlands and watercourses within the project study area was conducted by a Synthesis Planning wetland ecologist during the site visit. Synthesis Planning identified *Frankenia salina* Herbaceous Alliance (a wetland community) approximately 150 feet to the east of the proposed well site. Synthesis Planning also identified *Salicornia depressa* Herbaceous Alliance (a wetland community) approximately 165 feet south of the proposed well site (south of Bird's Landing Road). Neither of these wetland vegetative communities will be impacted during project implementation.

### 3.2 Vegetation Communities and Wildlife Habitat

Wildlife habitat classifications for this report is based on the California Department of Fish and Game's Wildlife Habitat Relationships (WHR) System (CDFG 1988) which places an emphasis on dominant vegetation, vegetation diversity and physiographic character of the habitat. The value of a site to wildlife is influenced by a combination of the physical and biological components of the immediate environment, and includes such features as type, size, and diversity of vegetation communities present and their degree of disturbance. As a plant community is degraded by loss of understory species, creation of openings, and a reduction in canopy area, a loss of structural diversity generally results. Degradation of the structural diversity of a community typically diminishes wildlife habitat quality, often resulting in a reduction of wildlife species diversity.

Vegetation communities are often classified based on the dominant plant species within the community. Wildlife habitats are typically distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. As a result, wildlife habitats are often classified on a more inclusive manner of the structure of the habitat rather than the specifics of the plant species, resulting in several vegetation communities occurring under one type of wildlife habitat.

The following is a discussion of existing vegetation communities found within the proposed project site and buffer area. Four (4) vegetation community types were observed within the study area. Where appropriate vegetation community types are described using The Manual of California Vegetation Online Website (CNPS 2022). Vegetation types observed were: 1. *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance, 2. *Frankenia salina* Herbaceous Alliance, 3. *Salicornia depressa* Herbaceous Alliance, and 4. Ruderal-disturbed vegetation. For a list of plant species observed in these vegetative communities during biological surveys, please refer to Appendix B.

**1. *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance** was observed covering the entire project site and large areas of the project buffer area. Common species found in this community were composed of introduced grasses and broadleafweedy species, which quickly recolonize disturbed areas.



Grasslands support a variety of mammals, birds, and reptiles, and provide foraging habitat for raptors. Many species use the grassland for only part of their habitat requirements, foraging in the grassland and seeking cover in surrounding tree and scrub cover. Grassland cover provides foraging, nesting, and denning opportunities for resident species such as western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Elgaria coerulea*), gopher snake (*Pituophis melanoleucus*), western meadowlark (*Sturnella neglecta*), goldfinch (*Carduelis tristis*), ring-necked pheasant (*Phasianus colchicus*), red-winged blackbird (*Agelaius phoeniceus*), California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), pocket gophers (*Thomomys* spp.), black-tailed jackrabbit (*Lepus californicus*), and occasionally black-tailed deer (*Odocoileus hemionus columbianus*).

The rodent, bird, and reptile populations offer foraging opportunities for avian predators such as the northern harrier hawk (*Circus cyaneus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), barn owl (*Tito alba*), and great horned owl (*Bubo virginianus*). Mammalian predators which utilize grasslands include gray fox (*Urocyon cinereoargenteus*) and long-tailed weasel (*Mustelafrenata*).

**2. *Frankenia salina* Herbaceous Alliance** was observed approximately 150 feet to the east of the proposed well site. Stands of *Frankenia salina* occur in seasonally moist or intermittently flooded, clayey, saline soils in association with salt marsh and other halophytic vegetation types. Stands are part of the high marsh vegetation in Northern California salt marshes; inland, they occur on alkaline flats. In general, the alliance is characterized by *F. salina* as the dominant or codominant in the subshrub layers, with *A. subterminale*, *Atriplex* spp., *Agrostis avenacea*, *Batis maritima*, *C. truxillensis*, *D. spicata*, *Hordeum murinum*, *Lasthenia* spp., *Lepidium* spp., *Limonium californicum*, *Monanthochloe littoralis*, *Sarcocornia pacifica*, and/or *Suaeda taxifolia* sometimes present. The dominant layer is < 60 cm tall and cover may be open to continuous.

**3. *Salicornia depressa* Herbaceous Alliance** was observed approximately 165 feet south of the proposed well site (south of Bird's Landing Road). Common glasswort (*Salicornia depressa*) or sea asparagus (*Sarcocornia pacifica*) is dominant or codominant in the subshrub and herbaceous layers with algae and spear saltbush (*Atriplex patula*), triangle orache (*Atriplex prostrata*), pickleweed (*Batis maritima*), saltmarsh tuber-bulrush (*Bolboschoenus maritimus*), buttonweed (*Cotula coronopifolia*), swamp pricklegoass (*Crypsis schoenoides*), salt marsh dodder (*Cuscuta salina*), seashore saltgrass (*Distichlis spicata*), cockspur (*Echinochloa crus-galli*), alkali heath (*Frankenia salina*), Oregon gumplant (*Grindelia stricta*), marshjaumea (*Jaumea carnosa*), rushes (*Juncus* spp.), peppergrass (*Lepidium latifolius*), sea lavender (*Limonium californicum*), shoregrass (*Monanthochloe littoralis*), pale persicaria (*Persicaria lapathifolia*), sea-purslane (*Sesuvium verrucosum*), California cordgrass (*Spartinafoliosa*), estuary seablite (*Suaeda esteroa*), woolly seablite (*Suaeda taxifolia*), saltmarsh arrow-grass (*Triglochin maritima*), and common cocklebur (*Xanthium strumarium*). Vegetation is a herbaceous, with cover intermittent to continuous. Pickleweed-cordgrass is found in coastal salt marshes and alkali flats, and it is a sensitive natural community.

**4. Ruderal-disturbed** vegetation was observed within and along the edge of Birds Landing Road, as well as within the connection point to the existing pipeline. This vegetation type is comprised mostly of non-native weedy herbaceous forb plants.

## **4.0 SPECIAL-STATUS SPECIES AND THEIR HABITATS**

### **4.1 Regulatory Requirements**

#### **4.1.1 Federal Endangered Species Act (FESA)**

To determine whether the proposed project may result in adverse effects to federally listed species, the criteria used was based on guidelines established by the USFW under Section 7(a) of the FESA, in which a project that may have an adverse effect on listed biological resources must be assessed. FESA (16 U.S. Code [USC 1531-1544) provides for the conservation of species that are Endangered or Threatened throughout all or a significant portion of their range, as well as the protection of habitats on which they depend.

Section 7 requires federal agencies to consult with USFWS or NMFS, or both, before performing any action (including actions such as funding a program or issuing a permit) that may affect listed species or designated Critical Habitat. The section 7 consultations are designed to assist Federal agencies in fulfilling their duty to ensure federal actions "do not jeopardize" the continued existence of a species or destroy or adversely modify Critical Habitat.

The USFWS defines temporary and permanent effects as areas denuded, manipulated, or otherwise modified from their pre-project conditions, thereby removing one or more essential components of a listed species' habitat as a result of project activities that include, but are not limited to, construction, staging, storage, lay down, vehicle access, parking, etc. According to the USFWS, temporary effects are limited to one construction season and, at a minimum, are fully restored to baseline habitat values or better within one year following initial disturbance. Permanent effects are not temporally limited and include all effects not fulfilling the criteria for temporary effects.

#### **4.1.2 Federal Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) (Title 16, United States Code [USC], Part 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 Code of Federal Regulations [CFR] 21, 50 CFR 10). Most actions that result in taking of, or the permanent or temporary possession of, a protected species constitute violations of the MBTA. The MBTA also prohibits destruction of occupied nests. The Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most unoccupied bird nests (without eggs or nestlings) is permissible under the MBTA; exceptions include nests of federally threatened or endangered migratory birds, bald eagles (*Haliaeetus leucocephalus*), and golden eagles (*Aquila chrysaetos*). USFWS is responsible for overseeing compliance with the MBTA.

#### **4.1.3 California Endangered Species Act (CESA)**

The California Endangered Species Act (CESA (FGC §§ 2050-2116) is administered by CDFW. The CESA prohibits the "taking" of listed species except as otherwise provided in state law. The

CESA includes FGC Sections 2050-2116, and policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The CESA requires mitigation measures or alternatives to a proposed project to address impacts to any State listed endangered, threatened or candidate species, or if a project would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. Section 86 of the FGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Unlike the ESA, CESA applies the take prohibitions to species under petition for listing (state candidates) in addition to listed species. Section 2081 of the FGC expressly allows CDFW to authorize the incidental take of endangered, threatened, and candidate species if all of the following conditions are met:

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- Issuance of the permit will not jeopardize the continued existence of the species.
- The permit is consistent with any regulations adopted in accordance with §§ 2112 and 2114 (legislature-funded recovery strategy pilot programs in the affected area).
- The applicant ensures that adequate funding is provided for implementing mitigation measures and monitoring compliance with these measures and their effectiveness.

The CESA provides that if a person obtains an incidental take permit under specified provisions of the ESA for species also listed under the CESA, no further authorization is necessary under CESA if the federal permit satisfies all the requirements of CESA and the person follows specified steps (FGC § 2080.1).

#### **4.1.4 California Fish and Game Code**

The California Constitution establishes the California Fish and Game Commission (Commission) (CA Constitution Article 4, § 20). The California Fish and Game Code (FGC) delegates the power to the Commission to regulate the taking or possession of birds, mammals, fish, amphibian and reptiles (FGC § 200). The Commission has adopted regulations setting forth the manner and method of the take of certain fish and wildlife in the California Code of Regulations, Title 14.

#### **4.1.5 California Fish and Game Code- Species Protection**

The FGC establishes CDFW (FGC § 700) and states that the fish and wildlife resources of the state are held in trust for the people of the state by and through CDFW (FGC § 711.7(a)). All licenses, permits, tag reservations and other entitlements for the take of fish and game authorized by FGC are prepared and issued by CDFW (FGC § 1050 (a)).

Provisions of the FGC provide special protection to certain enumerated species such as:

§ 3503 protects eggs and nests of all birds.

§ 3503.5 protects birds of prey and their nests.

§ 3511 lists fully protected birds.

§ 3513 protects all birds covered under the federal Migratory Bird Treaty Act.

- § 3800 defines nongame birds.
- § 4150 defines nongame mammals.
- § 4700 lists fully protected mammals.
- § 5050 lists fully protected amphibians and reptiles.
- § 5515 lists fully protected fish species.

#### **4.1.6 Solano County General Plan**

Solano County General Plan - The Solano County General Plan addresses conversion of agricultural land to other uses in AG Policy AG.P-4, which requires farmland conversion mitigation for either of the following actions: a. a General Plan amendment that changes the designation of any land from an agricultural to a nonagricultural use or b. an application for a development permit that changes the use of land from production agriculture to a nonagricultural use, regardless of the General Plan designation. The General Plan's Policy RS.P-5 also protects wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. It aims to preserve contiguous habitat areas to increase habitat value and to lower land management costs. Finally, Policy RS.P-6 addresses oak woodlands and heritage tree protection, through the adoption of an ordinance to protect oak woodlands as defined in Senate Bill (SB) 1334 and heritage oak trees. The Plan defines heritage trees as the following: (a) trees with a trunk diameter of 15 inches or more measured at 54 inches above natural grade, (b) any oak tree native to California, with a diameter of 10 inches above natural grade, or (c) any tree or group of trees specifically designated by the County for protection because of its historical significance, special character, or community benefit.

#### **4.2 Special-Status Species Reviewed**

For the purposes of this Biological Resources Assessment, special-status species include those that are federally listed as Endangered, Threatened or Proposed for federal listing (candidate) under the USFWS. Other species also evaluated in this Biological Assessment include non-listed federal and California Special Species of Concern (CSC) and those species that fall under the jurisdiction of the USFWS such as the Migratory Bird Treaty Act (MBTA) and the CDFW, such as CEQA Section 15380(d).

Impacts to special-status species were assessed if: (1) those species occurred in habitats similar to those of the project sites and buffer areas, and (2) were known to occur within the general vicinity of the proposed project sites.

*Federally and State-Listed Plant Species.* Review of the USFWS (USFWS 2022), the CNPS (CNPS 2022), and the CNDDDB (CNDDDB 2022) revealed that 45 listed plant species and species of concern have potential to occur in the general project area. Please refer to Table 1 for a list of these species and their habitat requirements. Potential habitat is present for 33 of these 45 plant species within the project site and buffer area. Botanical surveys were conducted on November 29, 2021.

Common Name	Scientific Name	Federal Status	State Status	Habitat/Other Concerns	Potential to Occur on Project Site and Buffer Area
<b>Birds</b>					
Tri-colored blackbird	<i>Agelaius tricolor</i>		CSC	Highly colonial species. Most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	No potential. No habitat suitable for use by this species was observed within the proposed project site or buffer area during biological surveys. Therefore, it is unlikely this species could occur within the proposed project site or buffer area.
Short-eared owl	<i>Asio flammeus</i>		CSC	Found in swamplands (both fresh and salt), lowland meadows, and irrigated alfalfa fields. Tule patches and tall grass needed for nesting and daytime seclusion. Nests on dry ground in depressions concealed by vegetation	Potentially present. Potential nesting and foraging habitat present within the proposed project site and buffer area. No individuals of this species were observed during field surveys. This species has not been documented within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Burrowing owl	<i>Athene cunicularia</i>		CSC	The species is found throughout the Central Valley, in the San Francisco Bay Area, at scattered locations along the coast, and in portions of the desert regions. It is a year-round resident in annual and perennial grasslands or other vegetation communities that support sparse or non-existent tree or shrub canopies.	Potentially present. Potential foraging habitat was observed within the proposed project site and buffer area during biological surveys. However, no potential nesting burrows were observed within the project site or buffer area during surveys. No individual burrowing owls were observed during field surveys. This species has not been documented within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Ferruginous hawk	<i>Buteo regalis</i>		Watch List	Open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon and juniper habitats.	Potentially present. Potential foraging and nesting habitat was observed within the proposed project site and buffer area. No individuals of this species or active/inactive nest sites were observed during field surveys, nor have any been documented in the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Swainson's hawk	<i>Buteo swainsoni</i>		CT	Inhabits grassland, shrubland, and agricultural areas where it has open areas to forage for its small prey and where roost sites are available. In breeding season, also requires nesting trees, usually trees bordering agricultural fields, in wetland borders, and	Potentially present. Potential foraging habitat was observed throughout the proposed project site and buffer area. The closest potential nesting tree habitat for this species was observed 0.61 miles northwest

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Common Name	Scientific Name	Federal Status	State Status	Habitat/Other Resources	Potential to Occur on Project Site and Buffer Area
				on abandoned farms. Forages by soaring over open areas and by searching from perches.	of the proposed project site. No nesting tree habitat was observed within the project site. No individuals of this species or active/inactive nest sites were observed during biological surveys. Swainson's hawk has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see figure 3a).
Mountain plover	<i>Charadrius montanus</i>		CSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms.	Potentially present. Potential foraging and nesting habitat was observed within the proposed project site and buffer area. No individuals of this species were observed during field surveys, nor have any been documented in the vicinity of the proposed project site (CDFW 2022) (see figure 3a).
Yellow rail	<i>Coturnicops noveboracensis</i>		CSC	Freshwater marshlands. Summer resident in eastern Sierra Nevada in Mono County.	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
White-tailed kite	<i>Elanus leucurus</i>		Fully Protected	Rolling foothills and valley margins with scattered oaks and river bottom lands or marshes next to deciduous woodland. Found in open grasslands, meadows, or marshes foraging close to isolated, dense-topped trees for nesting and perching.	Potentially present. Potential foraging and nesting habitat observed within the proposed project site and buffer area. No individuals of this species or active/inactive nest sites were observed during field surveys, nor have any been documented in the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Salt marsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>		CSC	Resident of the San Francisco Bay Region in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging, and tall grasses, tule patches, and willows for nesting.	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were

Common Name	Scientific Name	Federal Status	State Status	Habitat/Other Notes	Potential to Occur on Project Site (Huffer et al.)
California black rail	<i>lateralis jamaicensis coturniculus</i>		CT	Inhabits fresh water marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Requires water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Song sparrow	<i>Melospiza melodia</i>		CSC	Resident of brackish-water marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in <i>Salicornia</i> marshes. Nests in <i>Grindelia</i> slough channels.	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Suisun song sparrow	<i>Melospiza melodia maxillaris</i>		CSC	Resident of brackish-water marshes surrounding Suisun Marsh. Inhabits cattails, tules, sedges, and <i>Salicornia</i>	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see figure 3a).
Double-crested cormorant	<i>Phalacrocorax auritus</i>		Watchlist	Colonies on small rocky or sandy islands on ponds, lakes, slow-moving rivers, and other bodies of water.	No potential. No habitat suitable for use by this species was observed within the

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur on Project Site and Buffer Area
				May also nest on artificial substrates, trees, or vegetation mats in marshes. Uses sites free from ground predators and near foraging areas.	proposed project site or buffer area during biological surveys. Therefore, it is unlikely this species could occur within the proposed project site or buffer area.
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE	CE	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed. Feeds away from cover on invertebrates from mud-bottomed sloughs.	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
California Ridgeway's rail	<i>Rallus obsoletus obsoletus</i>	FE	CE	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Potentially present. Potential foraging and nesting habitat (saline emergent wetland) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
California least tern	<i>Sterna antillarum browni</i>	FE	CE	Nests in colonies along the coast from San Francisco Bay south to northern Baja California. Colonial nester on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	No potential. No habitat suitable for use by this species was observed within the proposed project site or buffer area during biological surveys. Therefore, it is unlikely this species could occur within the proposed project site or buffer area.
<b>Mammals</b>					
Western red bat	<i>Lasiurus blossevillei</i>		CSC	Forages over open areas, roosts in trees or caves.	Potentially present. Potential foraging habitat present within the project site and buffer area. No roosting habitat present within the project site and buffer area. No individuals of this species were observed during field surveys, nor have any been



Common Name	Scientific Name	Federal Status	State Status	Habitat/Occurrences	Potential to Occur on Project Site and Buffer Area
Salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE	CE/Fully Protected	Found only in saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat. Build loosely organized nests above ground. Require higher areas for flood escape.	documented in the project site or buffer area (CDFW 2022) (see Figure 3a).  Potentially present. Potential foraging and nesting habitat was observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). Individuals of this species were not observed during field surveys. Individuals of this species have been documented approximately 165 feet south of the proposed well site (south of Bird's Landing Road) (CDFW 2022)(see Figure 3a).
Suisun shrew	<i>Sorex ornatus sinuosus</i>		CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Require dense low-lying cover and driftweed and other litter above the mean high tide line for nesting and foraging.	No potential. No habitat suitable for use by this species was observed within the proposed project site or buffer area during biological surveys. Therefore, it is unlikely this species could occur within the proposed project site or buffer area.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	CT	Inhabit annual grasslands or grassy open stages with scattered shrubby vegetation. Require loose-textured sandy soils for burrowing, and a suitable prey base.	Potentially present. Suitable habitat for this species is present in the proposed project site and buffer area. No suitable burrows were observed within the boundaries of the proposed project site or buffer area. No sign (i.e., scat, tracks, digging, prey remains, etc.) of kit fox activity was observed in the project site or buffer area during biological surveys. No individuals of this species were observed during field surveys, nor have any been documented in the project site or buffer area (CDFW 2022) (see Figure 3a).
<b>Amphibians and Reptiles</b>					
California tiger salamander	<i>Ambystoma californiense</i> Population 1	FT	CT	Primarily inhabit non-native grassland providing underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Potentially present. Potential habitat for this species was observed within the project site and buffer area. No burrows suitable for aestivation were observed within the proposed project site or buffer area during biological surveys. Individuals of this species were not observed during

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					field surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Northern California legless lizard	<i>Anniella pulchra</i>		CSC	Sandy or loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Potentially present. Potential foraging and nesting habitat was observed within the proposed project site and buffer area during biological surveys. No individuals of this species were observed during field surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
California glossy snake	<i>Arizona elegans occidentalis</i>		CSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the coast, Traverse, and Peninsular Ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Potentially present. Potential habitat was observed within the proposed project site and buffer area during biological surveys. No individuals of this species were observed during field surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Western pond turtle	<i>Emys marmorata</i>		CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Require basking sites and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	Potentially present. Potential nesting habitat (grassland habitat) was observed within the project site and buffer area. Potential foraging habitat (saline emergent wetland and drainage ditch) were observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	FT	CT	Typically found in chaparral habitat. May venture up to 500 feet into adjacent habitats, including grassland, oak savanna, and occasionally oak-bay woodland. Grassland habitats are used by male whipsnakes most extensively during the mating season in spring.	No potential. No habitat suitable for use by this species was observed within the proposed project site or buffer area during biological surveys. Therefore, it is unlikely

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				Female whipsnakes use grassland areas most extensively after mating, possibly in their search for suitable egg-laying sites.	this species could occur within the proposed project site or buffer area.
California red-legged frog	<i>Rana draytonii</i>	FT	CSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to aestivation habitat, consisting of small mammal burrows and moist leaf litter.	Potentially Present. Potential upland aestivation habitat suitable for this species was observed within the proposed project site and buffer area. No aquatic breeding habitat for this species was observed within the proposed project site or buffer area. However, aquatic breeding habitat is present in farm ponds approximately 0.69 miles northwest and 1.02 miles southeast of the proposed well site. No sign of this species was observed during biological surveys. This species has not been documented within the general vicinity of the proposed project site according to CNDDDB (CDFW 2022) (see Figure 3a).
Giant garter snake	<i>Thamnophis gigas</i>	FT	CT	Prefers fresh water marsh and low gradient streams. Has adapted to drainage ditches and irrigation canals.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area
Fish					
Sacramento perch	<i>Archoplites interruptus</i>		CSC	Prefers warm water, aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Delta smelt	<i>Hypomesus transpacificus</i>	FT	CE	Found only from the Suisun Bay upstream within the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. Spawn in shallow, fresh or slightly brackish water upstream of the mixing zone. Most spawning happens in tidally influenced backwater sloughs and channel ed.,ewaters.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur on Project Site and Buffer Area
Steelhead - Central Valley DPS	<i>Oncorhynchus mykiss irideus pop. 11</i>	FT	-	After maturing for 1 to 3 years in the ocean, adult steelhead typically begin their spawning migration into the Sacramento and San Joaquin Delta System in fall and winter. Adult steelhead enter the mainstream Sacramento River in July, peak in abundance in the fall, and continue migrating through February and March. Juvenile steelhead will remain in fresh water and continue to rear for 1 to 3 years before migrating to the ocean in November through May to mature. Smolt typically migrate to the ocean during march through June.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Sacramento splittail	<i>Pogonichthys Macrolepidotis</i>	-	CSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay, associated marshes, slow moving river sections, and dead end sloughs. Require flooded vegetation for spawning and forage for young.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Longfin smelt	<i>Spirinchus thaleichthys</i>	FC	CT	The longfin smelt is a pelagic (living in open water) schooling fish known to inhabit the San Francisco Bay-Delta. Longfin smelt migrate to the fresher water of the Delta to spawn in the winter, returning to bay waters in late spring.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
<b>Insects</b>					
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	FE	-	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes. Primary host plant is <i>Erigonum nlidum var. auriculatum</i> . Feeds on the nectar of other wildflower, as well as host plant.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	-	Endemic to the grasslands of the northern two-thirds of the Central Valley. Found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	-	Endemic to the grasslands of the Central Valley, Central Coast Mountains, and South Coast Mountains in astatic rain-filled pools. Inhabit small clear-water sandstone-depression pools and grassed swales, earth slumps or basalt-flow depression pools.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Midvalley fairy shrimp	<i>Branchinecta mesovallensis</i>	-	-	Shallow vernal pools, vernal swales and various artificial ephemeral wetland habitats.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.

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Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur on Project Sill' and Buffer Area
					to occur within the proposed project site or buffer area.
Monarch • California overwintering population	<i>Danaus plexippus pop. 1</i>	Candidate	.	Closed-cone coniferous forest Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Hairy water flea	<i>Dumontia oregonensis</i>	.	.	Vernal pools. In California, known only from Mather Field.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Antioch efflerian robberfly	<i>Efferia antiochi</i>	.	.	Known only from Antioch Dunes.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Delta green ground beetle	<i>Elaphants viridis</i>	FT	.	Restricted to the grassland margins of vernal pools, primarily between Jepson Prairie and Travis Air Force Base.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Western ridged mussel	<i>Gonidea angulata</i>	.	.	Aquatic. Primarily creeks, rivers, and less often lakes. Originally in most of state, now extirpated from Central and Southern California.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Middlekauff's shieldback katydid	<i>Idiostatus middlekauffi</i>	.	.	Known only from Antioch Dunes.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	.	Inhabit vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
California linderiella	<i>Linderiella occidentalis</i>	.	.	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.

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Common Name	Scientific Name	Federal Status	State Status	Habitat/Observed Locations	Potential to Occur on Project Site and Buffer Area
Hurd's metapogon robberfly	<i>Metapogon hurdi</i>	-	-	Known only from Antioch Dunes.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Antioch multilid wasp	<i>Myrmosula pacifica</i>	-	-	Known only from Antioch Dunes.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Antioch andrenid bee	<i>Perdita scitula antiochensis</i>	-	-	Known only from the Antioch dunes and Oakley. Visits flowers of <i>Eriogonum</i> , <i>Gutierrezia californica</i> , <i>Heterotheca grandiflora</i> , and <i>lessingia glandulifera</i> .	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Antioch spicid wasp	<i>Philanthus nasalis</i>	-	-	Previously known only from Antioch Dunes in Contra Costa County. Now known only from the inland sand hills in Santa Cruz County.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Antioch Dunes halictid bee	<i>Sphexodogastra antiochensis</i>	-	-	Known only from Antioch Dunes.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
<b>Plants</b>					
Alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	-	List 18.2	Alkali playa, valley and foothill grassland, and vernal pools. Low ground, alkali flats, and flooded lands in annual grassland or in playas or vernal pools. Elevational range: 1 to 170 meters. Blooming period: March through June.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Heartscale	<i>Atriplex cordulata</i> var. <i>cordulata</i>	-	List 18.2	Alkaline flats and scalds in the Central valley or sandy soils in chenopod scrub, valley or foothill grassland, and meadows. Elevational range: 1 to 150 meters. Blooming period: April through October.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur on Project Site and Buffer Area
Crownscale	<i>Atriplex corona/a var. corona/a</i>		List 4.2	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range: 1 to 590 meters. Blooming period: March through October.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) /see Figure 3b).
Brittlescale	<i>Atriplex depressa</i>		List IB.2	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools. Usually found in alkali scalds or alkali clay soils in meadows or annual grassland. Rarely associated with riparian, marsh, or vernal pool habitat. Elevational range: 1 to 320 meters. Blooming period: May through October.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has been documented approximately 0.4 miles east of the proposed well site by CNDDDB (CDFW 2022) (see Figure 3b).
Big tarplant	<i>Blepharizonia plumosa</i>		List IB.1	Valley and foothill grassland. Found on dry hills and plains in annual grassland. Found on clay to clay-loam soils, usually on slopes and often in burned areas. Elevational range: 15 to 455 meters. Blooming period: July to October.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) /see Figure 3b).
Congdon's tarplant	<i>Centromadia panyi var. congonii</i>		List IB.1	Valley and foothill grassland in alkaline soils, sometimes described as heavy white clay. Elevational range: 1 to 230 meters. Blooming period: May through October.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Pappose tarplant	<i>Centromadia panyi ssp. panyi</i>		List IB.2	Coastal prairies, meadows, seeps, coastal salt marsh, valley and foothill grassland. Vernal mesic, often alkaline sites. Elevational range: 2 to 420 meters. Blooming period: May through November.	Potentially present. Habitat for this species (annual grassland, saline emergent wetland, and freshwater emergent wetland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur on Project Site and Buffer Area or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Parry's rough tarplant	<i>Centromadia panyi ssp. rudis</i>		List 4.2	Vernal pools and valley and foothill grassland. Elevational range: 0 to 100 meters. Blooming period: May through October.	No Potential. No suitable habitat was observed within the proposed project site or buffer area. This species is not expected to occur within the proposed project site or buffer area.
Hispid salty bird's-beak	<i>Chloropyron mole ssp. hispidum</i>		List 18.1	Meadows, seeps, playas, and valley and foothill grassland. Found on damp alkaline soils, especially in alkaline meadows and alkali sinks. Elevational range: 5 to 155 meters. Blooming period: July through September.	Potentially present. Habitat for this species is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) see Figure 3b).
Soft salty bird's-beak	<i>Chloropyron mole ssp. molle</i>	FE	List 18.2	Coastal salt marsh. Elevational range: 0 to 5 meters. Blooming period: July through November.	Potentially present. Habitat for this species is present within the project buffer area (saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) see Figure 3b).
Bolander's water-hemlock	<i>Cicuta maculata var. bolanderi</i>		List 28.1	Marshes and freshwater/brackish marshes. Elevational range: 0 to 200 meters. Blooming period: July through September.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) see Figure 3b).
Suisun thistle	<i>Cirsium hydrophilum var. hydrophilum</i>	FE	List 18.1	Found in salt marsh. Grows with <i>Scirpus, distichlis</i> near small watercourses within salt marsh. Elevational range: 0 to 1 meter. Blooming period: July through September.	Potentially present. Habitat for this species is present within the project buffer area (saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in



Common Name	Scientific Name	Federal Status	State Status	Habitat/Occurrences	Potential to Occur on Project Site and Buffer Area
Small-flowered morning-glory	<i>Convolvulus simulans</i>		List 4.2	Chaparral, coastal scrub, and valley and foothill grassland. Elevation range: 30 to 700 meters. Blooming period: March through July.	Proximity to the proposed project site (CDFW 2022) (see Figure 3b). Potentially present. Habitat for this species is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Hoover's cryptantha	<i>Cryptantha hooveri</i>		List IA	Valley and foothill grassland. Elevational range: 9 to 150 meters. Blooming period: April through May.	Potentially present. Habitat for this species is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Dwarf downingia	<i>Downingia pilosula</i>		List 28.2	Valley and foothill grassland (mesic sites), vernal pools, vernal lake and pool margins with a variety of associates. Elevational range: 1 to 485 meters. Blooming period: March to May.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Small spikerush	<i>Eleocharis parvula</i>		List 4.3	Marshes and swamps. Elevational range: 1 to 3,020 meters. Blooming period: April through September.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Antioch Dunes buckwheat	<i>Eriogonum nudum</i> <i>var. psychicola</i>		List 18.1	Known only from Antioch Dunes. Elevational range: 3 to 20 meters. Blooming period: July to October.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Mt. Diablo buckwheat	<i>Eriogonum trinaculum</i>		List 18.1	Associated with chaparral, coastal scrub, valley and foothill grassland on dry, exposed clay soils or sandy substrates. Elevational range: 3 to 350 meters. Blooming period: April through September.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022).

Common Name	Scientific Name	Federal Status	State Status	Habitat/Occurrences	Potential to Occur on Project Site and Buffer Area (see Figure 3b).
Contra Costa wallflower	<i>Erysimum capitatum</i> <i>var. angustatum</i>	FE	CE, List IB.1	Stabilized interior dunes of sand and clay near Antioch along the San Joaquin River. Elevational range: 3 to 20 meters. Blooming period: March through July.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Diamond-petaled California poppy	<i>Eschscholzia rhombipetala</i>		List 18.1	Valley and foothill grassland. Elevational range: 0 to 975 meters. Blooming period: March through April.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
San Joaquin spearscale	<i>Extriplex joaquiniana</i>		List IB.2	Chenopod scrub, alkali meadow, and foothill grassland. Found in seasonal wetlands with <i>Distichis spicata</i> and <i>Frankenia</i> spp. Elevational range: 1 to 320 meters. Blooming period: April through October.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Stinkbell	<i>Fritillaria agrestis</i>		Rank 4.2	Cismontane woodland, chaparral, valley and foothill grassland, pinyon and juniper woodland. Elevation range: 10 to 1,555 meters. Blooming period: March through June.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Fragrant fritillary	<i>Fritillaria liliacea</i>		List IB.2	Coastal scrub, valley and foothill grassland, and coastal prairie. Often found on serpentine or clay soils. Elevational range: 3 to 410 meters. Blooming period: February through April.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see figure 3b).
Hogwallow startfish	<i>Hesperis matronalis</i>		List 4.2	Valley and foothill grassland in vernal pools. Elevational range: 0 to 505 meters. Blooming period: March through June.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.

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Carquinez goldenbush	<i>Isocoma arguta</i>		List IB.1	Valley and foothill grassland. Alkaline soils, lower hills, and flats. Elevational range: 1 to 20 meters. Blooming period: August through December.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has been documented approximately 0.4 miles east of the proposed well site by CNDDDB (CDFW 2022) (see Figure 3b).
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE	List IB.1	Valley and foothill grassland, vernal pools, low depressions, swales, cismontane woodland. Extirpated from most of its range. Elevational range: 1 to 445 meters. Blooming period: March through June.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Coulter's goldfields	<i>Lasthenia glabrata ssp. collinerti</i>		List IB.1	Coastal salt marsh, playas, valley and foothill grassland and vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. Associated with low-lying alkali habitats in inland valleys. Elevational range: 1 to 1,400 meters. Blooming period: February through June.	Potentially present. Habitat for this species is present within the project buffer area (saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Delta tulle pea	<i>Lathyrus jepsonii var. jepsonii</i>		List IB.2	Freshwater and brackish marshes. Typically on marsh and slough edges, along with <i>Typha</i> , <i>Aster /entus</i> , <i>Rosa californicus</i> , <i>Juncus spp.</i> , <i>Scilpus</i> , etc. Elevational range: 0 to 4 meters. Blooming period: May through September.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Legenere	<i>Legenere limosa</i>		List 18.1	Vernal pools. Elevational range: 1 to 880 meters. Blooming period: April through June.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Woolly-headed lessingia	<i>Lessingia hololeuca</i>		List 3	Found in broadleaved upland forest, coastal scrub, lower montane coniferous forest, valley and foothill	Potentially present. Habitat for this species (annual grassland) is present within the

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observation	Potential to Occur on Project Site and Buffer Area
				grassland. Elevational range: 15 to 305 meters. Blooming period: June through October.	project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see figure 3b).
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>		Rare/ List IB.I	Freshwater and brackish marshes, riparian scrub. Elevational Range: 0 to 10 meters. Blooming period: April through November.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Redwood lily	<i>Lilium rubescens</i>		List 4.2	Broadleaved upland forest, chaparral, lower montane coniferous forest, north coast coniferous forest, and upper montane coniferous forest. Elevation ranges from 30 to 1,910 meters. Blooms April through September.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Delta mudwort	<i>Limose/la australis</i>		List 2B.1	Freshwater and brackish marshes, riparian scrub. Usually on mud banks of the delta in marshy or scrubby riparian associations, often with Mason's lilaeopsis. Elevational range: 0 to 3 meters. Blooming period: May through August.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Abram's lupine	<i>Lupinus albifrons var. abramsii</i>		List 3.2	Broadleaved upland forest, chaparral, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Elevational range: 125 to 2,000 meters. Blooming period: April through June.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Three-ranked hump moss	<i>Meesia triaetra</i>		List 4.2	Boes fens meadows seeps subalpine coniferous	None. The PROPOSED project site and buffer

Common Name	Scientific Name	Federal Status	State Status	Habitat/Observances	Potential to Occur in Project Site and Buffer Area
				forest, and upper montane coniferous forest. Elevational range: 1,300 to 2,953 meters. Blooming period: July.	area does not contain habitat in which this species could occur.
Marsh microseris	<i>Microseris paludosa</i>		List IB.2	Closed cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland. Elevational range: 5 to 355 meters. Blooming period: April through July.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Little mouseltail	<i>Myosilites minimus ssp. apilis</i>		List 3.1	Wetlands and vernal pools. Elevation range: 20 to 640 meters. Blooming period: March through June.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Baker's navarretia	<i>Navarretia eucocephala ssp. bakeri</i>		List 18.1	Cismontane woodland, lower montane coniferous forests, meadows and seeps, valley and foothill grassland, mesic vernal pools. Elevation range: 5 to 1,740. Blooming period: April to July.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Colusa grass	<i>Neostaplia colusana</i>	FT	CE, List 18. I	Wetlands and vernal pools. Elevational range: 5 to 200 meters. Blooming period: May through August.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Antioch Dunes evening-primrose	<i>Oenothera bielskoides ssp. Howei</i>	FE	CE/List IB. 1	Interior dunes. Remnant river bluffs and sand dunes east of Antioch. Elevational range: 0 to 30 meters. Blooming period: March through September.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Bearded popcorn-flower	<i>Plagiobothrys hystrix</i>		List IB.1	Vernal pools in valley and foothill grassland. Elevational range: 10 to 50 meters. Blooming period:	None. The proposed project site and buffer area does not contain habitat in which this

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Common Name	Scientific Name	Federal Status	State Status	Habitat/Observed	Potential Occurrence on Project Site and Buffer Area
California alkali grass	<i>Puccinellia simplex</i>	-	List IB.2	April through May. Grassland and riparian. Elevational range: 2 to 930 meters. Blooming period: March through May.	species could occur. Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Sweet marsh ragwort	<i>Senecio hydrophiloides</i>	-	List 4.2	Lower montane coniferous forest, meadows, and seeps. Elevational range: 0 to 2,800 meters. Blooming period: May through August.	None. The proposed project site and buffer area does not contain habitat in which this species could occur.
Keck's checkerbloom	<i>Sida/cea keckii</i>	FE	List IB.1	Cismontane woodland and valley and foothill grassland. Elevational range: 180 to 425 meters. Blooming period: April through May.	Potentially present. Habitat for this species (annual grassland) is present within the project site and buffer area. Plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
Suisun marsh aster	<i>Symphotrichum lentum</i>	-	List IB.2	Marshes and swamps (brackish and freshwater). Most often along sloughs with phragmites, cattails, scirpus, blackberry, etc. Elevational range: 0 to 3 meters. Blooming period: May to November.	Potentially present. Habitat for this species is present within the project buffer area (freshwater wetland habitat east of the well site, and saline emergent wetland approximately 165 feet south of the well site). This plant species was not observed during field surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3b).
<b>Environmentally Sensitive Habitat Areas</b>					
Stabilized Interior Dunes (Not present in project site or buffer)					
Valley Needlegrass Grassland (Not present in project site or buffer)					
Northern Claypan Vernal Pool (Not present in project site or buffer)					
Coastal Brackish Marsh (Not present in project site or buffer)					

Status Codes:

**Federal**

**State**

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FE = Federally listed as Endangered  
FT = Federally listed as Threatened  
FC = Federal Candidate species

CE = California listed as Endangered  
CT = California listed as Threatened  
CR = California listed as Rare  
CFP = California Fully Protected  
CSC = Species of Special Concern  
WL = CDFW Watch List  
FP = Fully Protected

**California Rare Plant Rank (formerly known as CNPS Lists)**

California Rare Plant Rank IA = Plants presumed extinct in California  
California Rare Plant Rank 1B = Plants rare, threatened, or endangered in California and elsewhere  
California Rare Plant Rank 2A = Plants presumed extirpated from California, but more common elsewhere  
California Rare Plant Rank 2B = Plants rare or endangered in California, but more common elsewhere  
California Rare Plant Rank 3 = Plants about which we need more information; a review list  
California Rare Plant Rank 4 = Plants of limited distribution; a watch list.  
California Rare Plant Rank Rarity Status of .1 = Seriously endangered in California  
California Rare Plant Rank Rarity Status of .2 = Fairly endangered in California

Status, distribution, and habitat information from the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CDFW 2022); California Native Plant Society, California Rare Plant Electronic Inventory (CNPS 2022); and USFWS Online Endangered Species Database (USFWS 2022).

These surveys were conducted within the blooming period of five (5) of the 33 special-status plant species identified as potentially occurring within the project site and buffer area:

- Pappose tarplant
- Soft salty bird's-beak
- Carquinez goldenbush
- Mason's lilaeopsis
- Suisun marsh aster

Survey findings for these five (5) targeted special-status plant species that had blooming periods during surveys was negative. We cannot say with certainty if any of the remaining 28 plant species are present in the project site or buffer area without further surveys.

### 4.3 Special-Status Wildlife Species

The following is a discussion of species having potential to occur on site and/or are species that are prominent in today's regulatory environment. This document does not address impacts to species that may occur in the region but for which no habitat occurs on site. Species-specific information described below is primarily from USFWS 2022 and CDFW 2022, unless otherwise noted.

**Short-eared owl** - A California species of concern, the short-eared owl is one of the most widely distributed owls. In North America, this owl primarily inhabits open grasslands, marshes, and tundra. The short-eared owl is a ground nester requiring dry sites with enough vegetation to conceal the female. Breeding takes place from mid-February through June. This owl hunts day and night feeding on small mammals and occasionally other birds. It uses hearing, vision, feathers, and flight adaptations for foraging.

We observed potential foraging habitat (non-native annual grassland and marshland) throughout the proposed project site and buffer area. Potential nesting habitat (non-native annual grassland and marshland with adequate vegetation to conceal female owls) was observed south of Birds Landing Road approximately 165 feet away from the project site. Grassland and marsh habitat within the proposed project site and within 165 feet of the project site did not contain adequate quantities of vegetation to provide nesting habitat. No individual short-eared owls were observed during the course of biological surveys, nor were sign of species presence (i.e., whitewash, castings, feathers, etc.) identified within the proposed project site and buffer area. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3a).

**Burrowing Owl**-The burrowing owl (western race) is found throughout western North America, west of the Mississippi River and south into Mexico. Other burrowing owl races occur in arid, open habitats from the provinces of southern and southwestern Canada to southern Florida and South America. In California the range of western burrowing owl extends through the lowlands south and west from north central California to Mexico, with small, scattered populations occurring in the Great Basin and the desert regions of the southwestern part of the state. Burrowing



Owls are absent from the coast north of Sonoma County and from high mountain areas such as the Sierra Nevada and the ranges extending east from Santa Barbara to San Bernardino. Burrowing Owl populations have been greatly reduced or extirpated from the San Francisco Bay Area and along the California coast to Los Angeles. They have also apparently disappeared from the Coachella Valley. The remaining major population densities of Burrowing Owls in California are in the Central and Imperial Valleys (CDFW 2022).

Burrowing owls require habitat with three (3) basic attributes: open, well-drained terrain; short, sparse vegetation; and underground burrows or burrow facsimiles. During the breeding season, they may also need enough permanent cover and taller vegetation within their foraging range to provide them with sufficient prey, such as small mammals. Burrowing owls occupy grasslands, deserts, sagebrush scrub, agricultural areas (including pastures and untilled margins of cropland), earthen levees and berms, coastal uplands, and urban vacant lots, as well as the margins of airports, golf courses, and roads (CDFW 2022).

Burrowing owls select sites that support short vegetation, even bare soil, presumably because they can easily see over it. However, they will tolerate tall vegetation if it is sparse. Owls will perch on raised burrow mounds or other topographic relief, such as rocks, tall plants, fence posts, and debris piles, to attain good visibility (CDFW 2022).

The most important habitat consideration for the western burrowing owl is the availability of underground burrows throughout their life cycle. Although the owls nest and roost in these burrows, they do not (contrary to their name) create them. Rather, the owls rely on other animals to dig their burrows. Throughout their range, they use burrows excavated by fossorial (i.e., digging) mammals or reptiles, including prairie dogs, ground squirrels, badgers, skunks, armadillos, woodchucks, foxes, coyotes, and gopher tortoises. Where the number and availability of natural burrows is limited (e.g., where burrows have been destroyed or ground squirrels eradicated), owls will occupy drainage culverts, cavities under piles of rubble, discarded pipe, and other tunnel like structures. For western burrowing owls, what constitutes an isolated habitat patch and the minimum size of a viable patch of habitat (i.e., habitat capable of sustaining a population over a long time period) are not well documented. These parameters are affected by habitat quality, the juxtaposition of the site relative to other suitable habitat, surrounding land uses, and prey availability. Burrowing owls have been observed in small (i.e., 1 acre) lots nearly surrounded by development, and owls will fly through urban areas to forage in nearby areas. However, the type and minimum extent of development that constitutes a movement barrier between occupied patches and nearby foraging areas are not known (CDFW 2022).

It is assumed that corridors between small habitats and other suitable areas would partly offset the insular effects of small or isolated habitats on owl populations by increasing foraging potential and facilitating dispersal or colonization. The size and dimensions of corridors that would be adequate to facilitate movements of burrowing owls between suitable habitats has not been studied. Also, these requirements probably vary with the distance between suitable habitats, surrounding land uses, and the type and quality of habitat within the corridor (CDFW 2022).

This opportunistic feeder will consume arthropods, small mammals, birds, amphibians, and reptiles. Insects are often taken during the day, while small mammals are taken at night. In

California, crickets and meadow voles were found to be the most common food items. In urban areas, burrowing owls are often attracted to street lights, where insect prey congregates (CDFW 2022).

Owls have been detected foraging out to 1 mile from their burrows. Inter-nest distances, which indicate the limit of an owl's territory, have been found to average between 61 and 214 meters (198 and 695 feet). Nocturnal foraging can occur up to several kilometers away from the burrow, and owls concentrate their hunting uncultivated fields, ungrazed areas, and other habitats with an abundance of small mammals (CDFW 2022).

Burrowing owls in California typically begin pair formation and courtship in February or early March, when adult males attempt to attract a mate. Like other owls, western burrowing owls breed once per year in an extended reproductive period, during which most adults mate monogamously. Both sexes reach sexual maturity at one (**1**) year of age. Clutch sizes vary, and the number of eggs laid is proportionate to prey abundance (the more prey that is available, the more eggs owls tend to lay). Clutches in museum collections in the western United States contain 1 to 11 eggs. The incubation period is 28-30 days. The female performs all the incubation and brooding and is believed to remain continually in the burrow while the male does all the hunting. The young fledge at 44 days but remain near the burrow and join the adults in foraging flights at dusk (CDFW 2022).

We observed potential habitat (non-native annual grassland) for burrowing owls in the proposed project site and buffer area. No potential burrows that were of appropriate size for use by this species were observed within the boundaries of the proposed project site or buffer area. No individual burrowing owls were observed during the course of biological surveys, nor were sign of species presence (i.e., whitewash, castings, feathers, etc.) identified within the proposed project site and buffer area. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3a).

**Ferruginous Hawk** - Ferruginous hawk is a winter resident and migrant of California. In the winter, this species can be found throughout California, with the exception of the extreme northeastern and northwestern regions (Zeiner et. al 1990). Ferruginous hawks migrate to California in August or September and return to their breeding grounds in late February or early March. This species was recently identified nesting in California, but its nesting habitats are still unknown throughout the state.

This species occurs in open habitats including, grasslands, shrubsteppes, sagebrush, deserts, saltbush-greasewood shrublands, and outer edges of pinyon-pine and other forest. Ferruginous hawks forage for prey, including rabbits (*Lepus* sp.), ground squirrels (*Spermophilus* sp.), and mice (*Peromyscus* sp.), by low flights over open, treeless areas, and glide to intercept prey on the ground.

This species may be present feeding and nesting in the general project area between August and early March. Suitable foraging habitat was observed in the general project area. As stated previously, Ferruginous hawks are a winter resident and migrant of California. Ferruginous hawks migrate to California in August or September and return to their breeding grounds in late February or early March. As such, this species is not expected to nest in the proposed project site or buffer

area, and no impacts are expected to this species. No individuals of this species were observed during surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3a).

**Swainson's Hawk** - Swainson's hawks typically nest in scattered trees within grassland, shrubland, or agricultural landscapes (e.g., along stream courses or in open woodlands). Nests are typically at the edges of narrow bands of riparian vegetation, in isolated oak woodland, and in lone trees, roadside trees, or farmyard trees, as well as in adjacent residential areas. Historically and in existing native habitat, Swainson's hawk forage in open stands of grass-dominated vegetation, sparse shrublands, and small, open woodlands. In many parts of range today, the species has adapted well to foraging in agricultural areas (especially in alfalfa), but cannot forage in most perennial crops or in annual crops that grow higher than native grasses, where prey are more difficult to find. Swainson's hawks also forage in areas with cultivation activities that expose prey (e.g., flood irrigation, primarily in alfalfa fields; burning; and disking).

Swainson's hawks are known to forage within a 10-mile radius of nest sites, suggesting that the presence of suitable foraging habitat within the vicinity of nesting habitat is essential to their reproductive success. Main foods taken on breeding grounds are vertebrates (mammals, birds, and reptiles).

Suitable foraging habitat [vegetated upland areas] for the Swainson's hawk was identified throughout the project site and buffer area during biological surveys. However, no suitable nesting habitat (trees) for this species were observed within the proposed project site or buffer area. The closest nesting habitat to the project site is approximately 3,200 feet (0.61 miles) to the north of the project site. No individual Swainson's hawks were observed during the biological surveys, nor were any active nests observed. Swainson's hawk has not been documented within the general area of the proposed project site by CNDDDB (CDFW 2022) (see Figure 3a). Based on the negative findings of our biological surveys, we conclude that it is highly unlikely that this species occurs within the project site and buffer area. Additionally, we conclude that no impacts to this species will occur as a result of project implementation, and no mitigation measures are recommended.

**Mountain Plover** - The mountain plover is a small bird approximately 9 inches tall, resembling the killdeer (*Charadrius vociferus*) in size. It is light brown above with a lighter colored breast, but lacks the contrasting dark breast belt common to many other plover species. During the breeding season, it has a white forehead and a dark line between the beak and eye, which contrasts with the dark crown.

Mountain plovers historically occupied grassland and shrub-steppe ecoregions that were inhabited by nomadic grazing ungulates such as bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), and burrowing mammals such as kangaroo rats (*Dipodomys spp.*), and prairie dogs (*Cynomys spp.*). These species dominated the grassland landscape at both breeding and wintering sites, and their grazing, wallowing, and burrowing activities created and maintained a mosaic of vegetation and bare ground to which mountain plovers adapted. Short vegetation, bare ground, and a flat topography are recognized as important mountain plover habitat characteristics at nesting and wintering locales. Mountain plover nesting sites are dominated by short vegetation and bare ground, often with manure piles or rocks nearby. In addition to nesting on prairie dog

towns, mountain plovers show a strong affiliation to sites that are heavily grazed by domestic livestock.

Breeding occurs in east-central and southwestern Montana, tablelands of Wyoming, eastern Colorado plains, northeast and locally to west-central and north-central New Mexico, as well as in Oklahoma and Texas panhandles. Most birds winter from north-central California to the Mexico border, with some birds west of the Coast Range in southern countries. They depart California wintering grounds in early and mid-March, either flying nonstop over the Sierra Nevada Great Basin and Rocky Mountains to breeding areas, or moving eastward across Arizona and New Mexico before flying northward to breeding areas of Colorado, Montana, and Wyoming.

Suitable foraging habitat [vegetated upland areas-annual grassland in project buffer and grain fields in the project site and buffer area] for the mountain plover was identified throughout the project site and buffer area during biological surveys. Mountain plovers are only known as a winter residents of the State of California. Therefore, no nesting impacts are expected to this species. No individual mountain plovers were observed during the biological surveys. Mountain plovers have not been documented within the general area of the proposed project site by CNDDDB (CDFW 2022) (see Figure 3a).

**Yellow Rail** -The Yellow Rail is a small, secretive marshbird that runs under vegetation. It has a short yellow or blackish bill, short tail, buffy yellow chest and face, as well as yellowish and black streaks on its back. In addition, it has a dark crown, dark stripe through its eyes, and an indistinct white patch at the back of its wings. Juveniles are similar to adults, but are darker and more spotted.

The yellow rail inhabits shallow and wet meadows; in winter, drier fresh-water and brackish marshes, as well as dense, deep grass, and rice fields. Nests typically occur in small marshes, with sedges (*Carex spp.*) as the principal vegetation component. The main sources of food for the yellow rail are small snails, aquatic insects, and seeds.

The yellow rail breeds in the northern U.S., including North Dakota, Minnesota, Wisconsin and Michigan. However, much of its breeding range is in Canada, and covers Alberta, Saskatchewan, Manitoba, Ontario, and the southern borders of Quebec, Northwest Territories and Nunavut. A disjunct breeding population exists in south-central Oregon (Klamath Basin) that likely migrates to the central California coast area in winter. The central and eastern North American populations of the Yellow Rail migrate along the central U.S. and arrive at the wintering grounds on the U.S. southeastern coast. Yellow rails are known to use two nests, one for incubating eggs and the other for brooding young.

Preferred foraging and nesting habitat (i.e., shallow and wet meadows; in winter, drier fresh-water and brackish marshes, as well as dense, deep grass, and rice fields. Nests typically occur in small marshes, with sedges (*Carex spp.*) as the principal vegetation component) for yellow rail was not observed within the proposed project site. However, habitat was observed in managed tidal marshes approximately 165 feet south of the proposed project site. No individual yellow rails or active nest sites were observed during biological surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**White-Tailed Kite** - The white-tailed kite has no federal status, and is a California special animal. The white-tailed kite inhabits low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Riparian areas adjacent to open areas are also used. The white-tailed kite uses trees with dense canopies for cover and the specific plant associations seem to be unimportant with the vegetation structure and prey abundance apparently more important. In southern California, it also roosts in saltgrass and Bermuda grass. It uses herbaceous lowlands with variable tree growth and dense population of voles. Substantial groves of dense, broad-leafed deciduous trees are used for nesting and roosting.

Although threatened with extinction in North America during the early twentieth century, the white-tailed kite has recovered since then, expanding its range in the United States from small portions of California, Texas, and Florida to Oregon and Washington, as well as into Middle America. Prior to the 1960s, this species occurred in low numbers across much of its range. Population decreases appeared to be common during this time, especially in Mexico and Central America, however, since 1960, the population status and range of this raptor in North America have improved markedly. The breeding range stronghold in North America is California, with nearly all areas up to the western Sierra Nevada foothills and southeast deserts occupied. It is common in the central valley of California and along the entire length of the California coast, breeding has been documented regularly in the far west counties of Oregon, and breeding has also been documented recently in southwest Washington. It is a common breeder in southern Texas. Its breeding range continues south along the coast in Mexico, into Central America and in South America in Colombia south to Buenos Aires.

In California, the white-tailed kite is a common to uncommon, year-long resident in coastal and valley lowlands, and is rarely found away from agricultural areas. It inhabits herbaceous and open stages of most habitats mostly in cismontane California. It has extended its range and increased numbers in California in recent decades. Although apparently a resident bird throughout most of its breeding range, dispersal occurs during the non-breeding season resulting in some range expansion during the winter. It is believed to become nomadic during low abundance of California voles and the population changes in a regular and predictable fashion directly tied to changing vole numbers.

The white-tailed kite preys mostly on voles and other small, diurnal mammals, occasionally on birds, insects, reptiles, and amphibians. It takes small mammal prey approximately 95 percent of the time and can be considered a small mammal specialist. The activity patterns are generally similar throughout its range, with hunting success approximately 40 to 50 percent. It soars, glides, and hovers less than 100 feet above the ground in search of prey. It hunts almost exclusively by hovering from 15 to 75 feet in height. The hovering bouts last from 1 to 60 seconds during which time it scans the ground beneath and periodically looks from side to side, apparently for potential competitors or predators.

Pairs of this species are found together year-round but more individuals are paired from December through August. It makes a nest of loosely piled sticks and twigs that are lined with grass, straw, or rootlets. The nest is placed near the top of a dense oak, willow, or other tree stand, usually 20 to 100 feet above ground in trees that vary from 15 to 150 feet in height. The nest is located near

an open foraging area. It is monogamous, and breeds from February to October, with a peak from May to August.

The California population of the white-tailed kite was reduced by habitat loss, shooting and possibly egg collecting and by the 1930s. Extinction was predicted for this species. Most of the changes in population numbers appear to be related to changes in the population sizes of the prey base. Threats to this species are likely the result of conversion of natural or agricultural lands to urban or commercial property, clean farming techniques that leave few residual vegetation areas for the prey, increased competition for nest-sites with other raptors and corvids, a relatively long-term drought throughout California during much of the time from 1982 to 1991, and increased disturbances at nest sites. A significant threat to the species is the degradation of habitat, especially the loss of nest trees and foraging habitat.

Suitable foraging habitat for the white-tailed kite was identified throughout the project site and buffer area during biological surveys. However, no suitable nesting habitat (trees) for this species were observed within the proposed project site or buffer area. The closest nesting habitat to the project site is approximately 3,200 feet (0.61 miles) to the north of the project site. No individual white-tailed kites were observed during the biological surveys, nor were any active nesting sites observed. White-tailed kites have not been documented within the general area of the proposed project site by CNDDDB (CDFW 2022) (see Figure 3a). Based on the negative findings of our biological surveys, and the lack of nesting habitat, we conclude that it is highly unlikely that this species occurs within the project site and buffer area. Additionally, we conclude that no impacts to this species will occur as a result of project implementation, and no mitigation measures are recommended.

**Salt Marsh Common Yellow-throat** - The salt marsh common yellowthroat inhabits emergent vegetation and nests in fresh and brackish marshes and moist floodplain vegetation around the San Francisco Bay. Common yellowthroats will use small and isolated patches of habitat as long as groundwater is close enough to the surface to encourage the establishment of dense stands of rushes, cattails, willows, and other emergent vegetation. Ideal habitat, however, is comprised of extensive, thick riparian, marsh, or herbaceous floodplain vegetation in perpetually moist areas, where populations of brown-headed cowbirds are low. This species nests primarily in fresh and brackish marshes, although they nest in salt marsh habitats that support tall vegetation. This species builds open-cup nests low in the vegetation, and nests from mid-March through late July.

Potential foraging and nesting habitat (saline emergent wetland) was observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**California Black Rail** - The California black rail is a small rail that inhabits a variety of marsh types. California black rails are most abundant in extensive tidal marshes with some freshwater input. They nest primarily in pickleweed-dominated marshes with patches or borders of bulrushes, often near the mouths of creeks. Black rails build nests in tall grasses or marsh vegetation during spring, and lay about six eggs. Nests are usually constructed of pickleweed, and are placed directly

on the ground or slightly above ground in vegetation. Black rails feed on terrestrial insects, aquatic invertebrates, and possibly seeds. The California black rail was listed under the CESA in 1971 and is fully protected species under state Fish and Game Code.

Preferred foraging and nesting habitat (i.e., tidally influenced saltmarshes with abundant growths of pickleweed dissected by tidal sloughs) for the California black rail was not observed within the proposed project site. However, habitat was observed in managed tidal marshes approximately 165 feet south of the proposed project site. No individual black rails or active nest sites were observed during biological surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**Suisun Song Sparrow** - The Suisun song sparrow is one of three subspecies of song sparrows that nest only in salt marsh habitats in the San Francisco Bay area. Prime habitat for Suisun song sparrows consists of large areas of tidally influenced salt marsh dominated by cordgrass and gumplank and intersected by tidal sloughs, offering dense vegetative cover and singing perches. Although this species is occasionally found in brackish marshes dominated by bulrushes, it is apparently very sedentary and is not known to disperse upstream into freshwater habitats. While the range of the Suisun song sparrow has remained relatively unchanged over time, populations have been reduced substantially and are continually threatened by the loss and fragmentation of salt marshes around the Bay. Song sparrows nest as early as March, but peak nesting activity probably occurs in May and June. Song sparrows that nest in salt marshes in the Bay area are known to nest about two weeks earlier than the more widespread *gouldii* subspecies, which nests farther inland in freshwater habitats. This early nesting is apparently an adaptation to breeding in a tidal environment, as high tides in late spring and early summer may destroy large numbers of nests.

Potential foraging and nesting habitat (saline emergent wetland) was observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**Song Sparrow** - Song sparrows are medium-sized and fairly bulky birds with a rounded head. Their bill is short and stout, tail long and rounded, and wings broad. Song sparrows are streaky and brown, with thick streaks on a white chest and flanks. On a closer look, the head is a mix of warm red-brown and slaty-gray. However, these shades as well as the amount of streaking, vary extensively across North America.

Song sparrows are an abundant resident in salt marshes in their described distribution. In a typical San Francisco and Pablo Bay marsh, sparrow territories are lined single file every 10 to 50 m along channels, providing each pair with access to the slough and its associated tall vegetation for song perches and nesting cover. Dense vegetation is required for nesting sites for all song sparrows. Where vegetation is too short and sparse, song sparrow nests are more likely to be exposed to predators or flooding during high tides. The dominant plants of tidal salt marshes, which may be used in the construction of nests, are California cord grass (*Spartina foliosa*) in low elevations,

pickleweed (*Salicornia virginica*) at higher elevations, and gumplant (*Grindelia stricta*) on the highest ground along slough edges and levees.

Song sparrows diet is primarily terrestrial invertebrates gleaned within the marsh plain, making both the marsh plain and tidal channels critical sparrow habitat components.

Potential foraging and nesting habitat (saline emergent wetland) was observed within the project buffer area approximately 165 feet south of the proposed well site (south of Bird's Landing Road). No individuals of this species were observed during field surveys, nor were any active or inactive nest sites observed. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**California Ridgeway's Rail (Formerly California Clapper Rail)** - The California Ridgeway's rail (California clapper rail) is a secretive marsh bird that is currently endemic to marshes of the San Francisco Bay. This species formerly nested at several other locations, including Humboldt Bay (Humboldt County), Elkhorn Slough (Monterey County), and Morro Bay (San Luis Obispo County), but is now extirpated from all sites outside of the San Francisco Bay. California Ridgeway's rails nest in salt and brackish marshes along the edge of the Bay, and are most abundant in extensive salt marshes and brackish marshes dominated by Pacific cordgrass, pickleweed, and marsh gumplant and that contain complex networks of tidal channels. Shrubby areas adjacent to or within these marshes are also important for predator avoidance at high tides. Since the mid-1800s, about 90 percent of the San Francisco Bay's marshlands have been eliminated through filling, diking, or conversion to salt evaporation ponds. As a result, the California Ridgeway's rail lost most of its former habitat, and its population declined severely. The subspecies was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. The USFWS approved a joint recovery plan for the salt marsh harvest mouse and this species in 1984 (USFWS 1984), and an updated Tidal Marsh Species Recovery Plan was approved in 2013. Critical habitat has not been proposed for this species.

This species is typically found in the intertidal zone and sloughs of salt and brackish marshes dominated by pickleweed, Pacific cordgrass, gumplant, saltgrass, jaumea, and adjacent upland refugia. They may also occupy habitats with other vegetative components, which include, but are not limited to, bulrush, cattails, and Baltic rush. Shrubby areas adjacent to or within these marshes are also important for predator avoidance at high tides. The species does not breed in muted tidal or diked salt marshes.

Preferred foraging and nesting habitat (i.e., tidally influenced saltmarshes with abundant growths of pickleweed dissected by tidal sloughs) for the California Ridgeway's rail was not observed within the proposed project site. However, habitat was observed in managed tidal marshes approximately 165 feet south of the proposed project site. No individual California Ridgeway's rails or active nest sites were observed during biological surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**Western Red Bat** - The western red bat is a locally common bat species in some areas of California, occurring from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. The winter range includes western lowlands and coastal regions



south of San Francisco Bay, including the project area. There is migration between summer and winter ranges, and migrants may be found outside the normal range. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. This species feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. This bat species feeds on a variety of insects. The most important prey are moths, crickets, beetles, and cicadas. Foraging flight is slow and erratic. Though capable of rapid, direct flight, it is maneuverable. They are frequently seen foraging in large concentrations. Foraging may be from high above treetops to nearly ground level. The same foraging route may be followed on many occasions.

Western red bats roost primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected from above, open below, and located above dark ground-cover. Such sites minimize water loss. Roosts may be from 2 to 40 feet above ground level. Females and young may roost in higher sites than males.

This species may forage intermittently within the project site and buffer area. No roosting habitat was observed within the project site and buffer area. No individual western red bats were observed in the proposed project site or buffer area during surveys. This species has not been documented as occurring in the project site or buffer area (see Figure 3a) (CDFW 2022). Based on the negative findings of our biological surveys, we conclude that it is highly unlikely that this species occurs within the project site and buffer area. Based on these findings, we conclude that no impacts to this species will occur as a result of project implementation, and no mitigation measures are recommended.

**Salt Marsh Harvest Mouse** - The salt marsh harvest mouse is a rodent endemic to salt marshes, brackish marshes, and adjacent tidally influenced areas of the San Francisco Bay Estuary. The salt marsh harvest mouse depends mainly on dense pickleweed as its primary cover and food source and may utilize a broader source of food and cover that includes saltgrass (*Distichlis spicata*) and other vegetation typically found in the salt and brackish marshes of this region. In natural systems, salt marsh harvest mice can be found in the middle tidal marsh and upland transition zones. Upland refugia are an essential habitat component during high tide events, when the marsh plain is inundated, as salt marsh harvest mice are highly dependent on cover.

Suitable foraging and nesting habitat (i.e., tidally-influenced wetlands with pickleweed) for the salt marsh harvest mouse was not observed within the proposed project site. However, potential habitat was observed in tidally-influenced marshlands approximately 165 feet south of the proposed project site. No salt marsh harvest mice or their sign were observed within the proposed project site or buffer area during biological surveys. Individuals of this species have been documented approximately 165 feet south of the proposed well site (south of Bird's Landing Road) (CDFW 2022)(see Figure 3a). As the project will not result in any impacts to salt marsh harvest mouse habitat, no impacts are expected to occur to these species.

**San Joaquin Kit Fox** - San Joaquin kit fox historically occurred throughout the southern portion of the San Joaquin Valley, along the eastern edge of the San Joaquin Valley, and in the dry interior valleys of the Coast Ranges. The taxon occurs in a variety of open grassland, oak savannah, and shrub vegetation communities. However, in the southern portion of its range it is generally found

in sparse annual grassland and scrub communities (e.g., valley sink scrub, saltbush scrub). San Joaquin kit fox densities vary over the range of the subspecies, but the taxon was found to have densities of between 0.39 to 0.62 individuals per square mile on the Carrizo Plain National Monument (White and Ralls 1994). Den characteristics of the subspecies vary across its range. In the southern portion of its range the taxon often creates dens with two entrances. Natal dens typically have multiple entrances. Entrances are usually 8 to 10 inches in diameter and are normally higher than wide, but kit foxes can utilize dens with entrances as small as four inches in diameter. Kit foxes often change dens on a regular basis. One kit fox was tracked to 70 dens during a two-year study (USFWS 1998). Home ranges for the taxon have been reported by several authors to range from 1 to 12 square miles (USFWS 1998).

Potential foraging habitat (non-native annual grassland cover) is present in the proposed project site and buffer area. No potential burrows (California ground squirrel burrows) that were of appropriate size for use by this species were observed within the boundary of the proposed project site or buffer area of the project site. No sign (i.e., scat, tracks, digging, prey remains, etc.) of kit fox activity was observed during biological surveys. This species has not been documented within the boundaries of or in proximity to the proposed project site (CDFW 2022) (see Figure 3a).

**California Tiger Salamander (CTS)** - The CTS is restricted to grasslands and low-elevation foothill regions in California (generally under 1,500 feet) where it uses seasonal aquatic habitats for breeding. The salamanders breed in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. CTS spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by estivating (going through a dormant period) in refugia (such as burrows created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands or disperse to breeding locations.

Adult CTS are known to travel up to 1.3 miles from breeding sites and sites within 1.3 miles of known breeding sites are considered to be CTS habitat unless there are significant barriers to movement (USFWS 2017a). The proposed project site is located approximately 528 feet northwest of potential breeding habitat (a stock pond).

Potential aestivation habitat for this species was observed within the proposed project site and buffer area. No potential aquatic breeding habitat was observed in the project site or buffer area. No potential aestivation burrow sites were observed within the project site or buffer area during biological surveys. No sign of this species was observed during biological surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a). Based on the negative findings of our biological surveys, and the lack of potential aestivation burrow sites, we conclude that it is highly unlikely that this species occurs within the project site and buffer area. Additionally, we conclude that no impacts to this species will occur as a result of project implementation, and no mitigation measures are recommended.

**Northern California Legless Lizard** - This secretive fossorial lizard is common in suitable habitats in the Coast Ranges from the vicinity of Antioch, Contra Costa County south to the Mexican border. Legless lizards are of spotty occurrence throughout the rest of their range, which

includes the floor of the San Joaquin Valley from San Joaquin County south, the west slope of the southern Sierra, the Tehachapi Mountains west of the desert, and the mountains of southern California. An isolated desert population is known from Whitewater, Riverside County.

This species is common in several habitats but especially in coastal dune, valley-foothill grassland, chaparral, and coastal scrub types. This lizard usually forages at the base of shrubs or other vegetation either on the surface or just below it in leaf litter or sandy soil.

Legless lizards eat insect larvae, small adult insects, and spiders. Legless lizards sometimes seek cover under surface objects such as flat boards and rocks where they lie barely covered in loose soil. They are often encountered buried in leaf litter and commonly burrow near the surface through loose soil.

Little is known about specific habitat requirements for courtship and breeding. Live young are born in the fall. Little information on water requirements. Legless lizards are often found where substrates are slightly moist. Moisture is an essential habitat requirement.

Legless lizards have a relatively low thermal preference, which allows them to be active on cool days as well as early in the morning and even at night during warmer periods, at which time mid-day activity is reduced. Individuals from coastal and southern localities are probably active all year with only brief periods of winter inactivity. Lizards from more inland sites, especially in the Sierra foothills, undergo winter hibernation.

The reproductive season begins with mating activities in late spring or early summer. The gestation period is about 4 months (Jennings and Hayes 1994). Live young are born in September, October, or even November. Litter size ranges from one to four but two is common.

Potential foraging and nesting habitat was observed within the proposed project site and buffer area during biological surveys. No individuals of this species were observed during field surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**California Glossy Snake** - The California glossy snake is a CDFW California species of special concern. The California glossy snake is a medium-sized muscular snake with smooth, glossy scales, a faded or bleached-out appearance, and a short tail. This snake species is generally darker than other California glossy snake subspecies - a tan or light brown ground color with dark brown blotches with dark edges on the back and sides and a pale, unmarked underside.

This species inhabits arid scrub, rocky washes, grassland, and chaparral. It appears to prefer microhabitats of open areas and areas with soil loose enough for easy burrowing. The California glossy snake ranges from the San Francisco Bay Area south into Baja California, Mexico. Within central California this species is found in the inland valley, not on the coast. It is found from sea level to around 7,218 feet.

Glossy snakes feed on a variety of desert lizards including juvenile desert iguanas and zebra-tailed lizards. They are listed as probable predators of side-blotched lizards. Captive individuals have been observed to eat young mice and small birds.

This species is primarily nocturnal, and spends periods of inactivity during the day and during winter in mammal burrows and rock outcrops, and to a lesser extent under surface objects such as flat rocks and vegetation residue. Individuals occasionally burrow in loose soil.

This species lays eggs a few centimeters below the surface in loose soil, under surface objects or near the base of vegetation, or in abandoned mammal burrows.

Potential habitat for this species was observed within the proposed project site and buffer area during biological surveys. No potential aestivation burrow sites were observed within the project site or buffer area during biological surveys. No sign of this species was observed during biological surveys. No individuals of this species were observed during field surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a).

**Western Pond Turtle** - The western pond turtle is a California species of special concern. It is the only native aquatic (freshwater) turtle found in California. Western pond turtles are found in freshwater habitats throughout most of the state (west of the Sierra Nevada crest) up to elevations of about 4,700 feet. They require some slow or slack water aquatic habitat, and are uncommon in high-flow streams. Western pond turtle presence seems to be associated with the presence of basking sites and hatchlings require shallow water habitat with dense algal vegetation in which to forage. Western pond turtles leave aquatic sites to reproduce, aestivate and overwinter, and so upland habitat is an important life history component for the species. Western pond turtles are known to travel up to 100 meters upland from their aquatic habitat in search of a nesting location. These turtles require an upland oviposition site in clay or sandy soils in the vicinity of the aquatic site and may overwinter on land or may remain active in water during the winter season depending on factors poorly understood at this time.

Potential aquatic habitat for this species was observed within wetlands located 165 feet south of the proposed project site. Potential nesting habitat for this species was observed within the proposed project site and buffer area. Water levels in the wetland to the south of the project site were too low at the time of our survey to support this turtle species, and no individuals of this species were observed during the survey. No recorded observations of this species have been documented within the proposed project site or buffer area (CNDDDB 2022) (see Figure 3a).

**California Red-Legged Frog** - Breeding habitat for this frog is primarily in ponds, but they will also breed in slow moving streams, or deep pools in intermittent streams. Inhabited ponds are typically permanent and contain emergent and shoreline vegetation. Sufficient pond depth and shoreline cover are both critical, because they provide means of escape from predators for the frogs (Stebbins 1985, CDFW 1988). Additionally, emergent vegetation is necessary for the deposition of eggs. The breeding period begins during heavy rains, from early to late winter, usually November through early May. The larvae mature in 11 to 20 weeks.

Non-breeding California red-legged frogs have been found in both aquatic and upland habitats.

The majority of individuals prefer dense, shrubby or emergent vegetation, closely associated with deep (>0.7 meters) still, or slow moving water. However, some individuals use habitats that are removed from aquatic habitats, seeking cover in ground squirrel burrows, under boulders and logs and in non-native grasslands. Upland refugia habitat includes areas up to 90 meters from a stream corridor and includes natural features, such as boulders, rocks, trees, shrubs, and logs. Incised stream channels with portions narrower than 18 inches and depths greater than 18 inches may also provide habitat. In general, densely vegetated terrestrial areas within the riparian corridor provide important sheltering habitat during the winter flooding of the streams. Along the coast, upland habitat is used throughout the year with animals making straight-line movements between water bodies regardless of the terrain (Bulger et al. 2003).

During dry periods, California red-legged frogs are seldom found far from water. However, during wet weather, individuals may make overland excursions through upland habitats over distances up to 2 miles. These dispersal movements are generally straight-line, point-to-point migrations rather than following specific habitat corridors. Dispersal distances are believed to depend on the availability of suitable habitat and prevailing environmental conditions. Very little is known about how California red-legged frogs use upland habitats during these periods.

During summer, California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat if water is not available (USFWS 2017). This habitat may include shelter under boulders, rocks, logs, industrial debris, agricultural drains, watering troughs, abandoned sheds, or hay-ricks. They will also use small mammal burrows, incised stream channels, or areas with moist leaf litter (Jennings and Hayes 1994). This summer movement behavior, however, has not been observed in all California red-legged frog populations studied.

The historical range of the California red-legged frog extended along the coast from the vicinity of Point Reyes National Seashore, Marin County, California and inland from Redding, Shasta County southward to northwestern Baja California, Mexico (Jennings and Hayes 1985). The current distribution of this species includes only isolated localities in the Sierra Nevada, northern Coast and Northern Traverse Ranges. It is still common in the San Francisco Bay area and along the central coast. It is now believed to be extirpated from the southern Transverse and Peninsular Ranges (USFWS 2017).

Potential aestivation habitat for this species was observed within the proposed project site and buffer area. No potential aquatic breeding habitat was observed in the project site or buffer area. No potential aestivation burrow sites or materials under which this species could aestivate were observed within the project site or buffer area during biological surveys. No sign of this species was observed during biological surveys. This species has not been recorded within the vicinity of the proposed project site (CDFW 2022) (see Figure 3a). Based on the negative findings of our biological surveys, and the lack of potential aestivation sites, we conclude that it is highly unlikely that this species occurs within the project site and buffer area. Additionally, we conclude that no impacts to this species will occur as a result of project implementation, and no mitigation measures are recommended.

#### **4.4 Critical Habitat**

Federally-designated critical habitat for Delta smelt was identified within the buffer area to the south of the project site (USFWS 2022).

#### **4.5 Special Status Natural Communities**

No special-status natural communities were identified within the proposed project site.

## 5.0 IMPACTS ANALYSIS AND STANDARD CONSTRUCTION CONDITIONS

This section summarizes the potential biological impacts from implementation of the proposed project. The analysis of these effects is based on a reconnaissance-level biological survey of the project site and buffer area, a review of existing databases and literature, and personal professional experience with biological resources of the region. Potential effects to federally- and state-listed special-status animal species may occur from the proposed project. Standard Construction Conditions for these biological impacts are provided below. A synopsis of the species potentially affected is presented in Table 2, and is followed by mitigation measures to avoid "take" of individuals.

**Table 2: Special Status Animal Species Potentially Affected by the Proposed Project**

Species	Status (Federal/State)	Habitat Present/Absent	Avoidance Yes/No
Short-eared owl	-/CSC	Present	.Yes
Burrowing owl	-/CSC	Present	Yes
Yellow rail	-/CSC	Present	Yes
California black rail	-/CT	Present	Yes
Song sparrow	-/CSC	Present	.Yes
Suisun song sparrow	-/CSC	Present	.Yes
California Ridgeway's rail	FE/CE	Present	.Yes
San Joaquin kit fox	FE/CT	Present	.Yes
Northern California legless lizard	-/CSC	Present	.Yes
California glossy snake	-/CSC	Present	.Yes
Western pond turtle	-/CSC	Present	.Yes

### Potential Impacts to Common Wildlife and Plant Populations from Project Activities

Direct mortality or injury to common wildlife and plant populations could occur during ground disturbance activities associated with implementation of the project. Small vertebrate, invertebrate, and plant species are particularly prone to impact during project implementation because they are much less to non-mobile, and cannot easily move out of the path of project activities. Other more mobile wildlife species, such as most birds and larger mammals, can avoid project-related activities by moving to other adjacent areas temporarily. Increased human activity and vehicle traffic in the vicinity may disturb some wildlife species. Because common wildlife species found in the project area are locally and regionally common, potential impacts to these resources are considered less than significant. Therefore, no avoidance or minimization measures are proposed at this time.

### Potential Impacts to Nesting Special-Status Avian Species from Project Activities

Implementation of the proposed project could potentially impact individual, foraging, and nesting migratory birds, raptor species, as well as short-eared-eared owls, burrowing owls, yellow rail, salt marsh common yellowthroat, California black rail, song sparrow, Suisun song sparrow, and California Ridgeway's rail (formerly California clapper rail) should they become established within the proposed project site or buffer area prior to project implementation. Impacts to these species could occur through crushing by construction equipment during implementation of project activities. Actively nesting birds could also be affected due to noise and vibration from project activities, if nests are located close enough to project activities. Project related noise and vibration could cause the abandonment of active nest sites. Impacts to these species would be considered significant. In the event that nesting birds become established in the proposed project site or buffer area, the following mitigation measures will be implemented:

If ground disturbing activities occur during the breeding season of these avian species (generally between February through mid-September), surveys for active nests will be conducted by a qualified biologist no more than 10 days prior to start of activities. Pre-construction nesting surveys shall be conducted for nesting migratory avian and raptor species in the project site and buffer area. Pre-construction biological surveys shall occur prior to the proposed project implementation, and during the appropriate survey periods for nesting activities for individual avian species. Surveys will follow required CDFW and USFWS protocols, where applicable. A qualified biologist will survey suitable habitat for the presence of these species. If a migratory avian or raptor species is observed and suspected to be nesting, a buffer area will be established to avoid impacts to the active nest site. Identified nests should be continuously surveyed for the first 24 hours prior to any construction-related activities to establish a behavioral baseline. If no nesting avian species are found, project activities may proceed and no further Standard Construction Conditions measures will be required. If active nesting sites are found, the following exclusion buffers will be established, and no project activities will occur within these buffer zones until young birds have fledged and are no longer reliant upon the nest or parental care for survival.

- Minimum no disturbance of 250 feet around active nest of non-listed bird species and 250 foot no disturbance buffer around migratory birds;
- Minimum no disturbance of 500 feet around active nest of non-listed raptor species;
- and 0.5-mile no disturbance buffer from listed species and fully protected species until breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.
- Once work commences, all nests should be continuously monitored to detect any behavioral changes as a result of project activities. If behavioral changes are observed, the work causing that change should cease and the appropriate regulatory agencies (i.e. CDFW, USFWS, etc.) shall be consulted for additional avoidance and minimization measures.
- A variance from these no disturbance buffers may be implemented when there is compelling biological or ecological reason to do so, such as when the project area would be concealed from a nest site by topography. Any variance from these buffers is advised to be supported by a qualified wildlife biologist and is



recommended that CDFW and USFWS be notified in advance of implementation of a no disturbance buffer variance.

In the case of Western Burrowing Owl, the following measures included in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) shall be implemented by the project proponent for the proposed project:

- a. If preconstruction surveys determine that burrowing owls are present in the proposed project sites and/or buffer areas, a burrowing owl mitigation plan shall be prepared by a qualified biologist describing recommended site specific shelter-in-place measures, worker training, and/or other measures to ensure that Project construction does not result in adverse impacts to the burrowing owls.
- b. Occupied burrows shall not be disturbed during the burrowing owl nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFW verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- c. Burrowing owls present in the project sites or within 500 feet (as identified during preconstruction surveys) shall be moved away from the disturbance area using passive relocation techniques. Prior to commencement of relocation, a management plan shall be prepared and approved by CDFW. Relocation shall be completed between September 1 and January 31 (outside of breeding season). A minimum of one or more weeks is required to relocate the owls and allow them to acclimate to alternate burrows. Passive relocation techniques will follow the CDFG Staff Report on Burrowing Owl Mitigation Guidelines (2012) and include the following measures:
  1. Install one-way doors in burrow entrances. Leave doors in place for 48 hours to ensure owls have left the burrow.
  - ii. Allow one or more weeks for owls to acclimate to off-site burrows. Daily monitoring shall be required for the passive relocation period.
  111. Once owls have relocated off-site, collapse existing burrows to prevent reoccupation. Prior to burrow excavation, flexible plastic pipe shall be inserted into the tunnels to allow escape of any remaining owls during excavation. Excavation shall be conducted by hand whenever possible.
  - iv. Destruction of burrows shall occur only pursuant to a management plan approved by CDFW.
  - v. As an alternative (if approved by CDFW), all occupied burrows identified off-site within 500 feet of construction activities outside of nesting season (September through January) and during nesting season (February 1 through

August 31) could be buffered by hay bales, fencing (e.g. sheltering in place) or as directed by a qualified biologist and the CDFW.

California Ridgeway's rail typically nests and rears young from mid-March through late July. In order to avoid and minimize impacts on nesting California Ridgeway's rail, a 700-foot buffer will be established around active nests. No project related activities will be allowed to occur within this buffer until young have fledged. For the species are no longer attempting to nest. The buffer area can be removed prior to July if a qualified biologist determines that all juveniles have fledged from occupied nests.

### **Potential Impacts to San Joaquin Kit Fox from Project Activities**

Implementation of the proposed project could potentially impact individual San Joaquin kit foxes should they become established within the proposed project buffer area prior to or during project implementation. Impacts to this species could occur through crushing by construction equipment during the construction of the proposed project. These species could also be affected due to noise and vibration from project activities if occupied burrows are located in the vicinity of the proposed project site; project related noise and vibration could cause the abandonment of active denning sites. It should be noted that no San Joaquin kit fox or evidence of the species were observed during biological surveys completed by Synthesis Planning. Additionally, no potential burrows were observed within the boundary of the project site or buffer area. Impacts to these species would be considered significant.

1. If San Joaquin kit foxes become established within the proposed project site prior to project implementation, the project proponent will implement the following measures. These measures contained in the USFWS's *Standardized Recommendations For Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011) apply to the potential dens observed in the buffer area during biological surveys:

- a) For kit fox dens within 200 feet of proposed construction area(s), exclusion zones shall be established prior to construction by a qualified biologist. Exclusion zones shall be roughly circular with a radius of the following distances measured outward from the entrance:

Potential den	50 feet
Atypical den	50 feet
Known den	100 feet
Natal/pupping den (occupied <u>and</u> unoccupied)	UWFWS must be contacted

- b) Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated).

- c) To ensure protection of known dens, exclusion zones should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, or orange construction fencing, as long as it has opening for kit fox ingress/egress and keeps humans and equipment out.
  - d) Exclusion zone barriers shall be maintained until all construction related or operational disturbances have been terminated. At that time all fencing shall be removed to avoid attracting subsequent attention to the dens.
  - e) For potential and/or atypical dens, placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.
  - t) Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.
2. If a natal/pupping den is discovered within the project site or within 200-feet of the project boundaries, the USFWS shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the preconstruction/preactivity survey reveals an active natal pupping den or new information, the project proponent should contact the USFWS immediately to obtain the necessary take authorization/permit.
  3. Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the USFWS. Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed:
    - a. Known dens occurring within the footprint of the project must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.
    - b. If kit fox activity is observed at the den(s) during this period, the dens) should be monitored for at least five (5) consecutive nights from the time of the observation to allow any resident animal to move to another den during its normal activity. Only when the den(s) are determined unoccupied may the den(s) be excavated.
    - c. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den(s) during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den as described above should resume. Destruction of the den(s)

may be completed when in the judgment of the biologist, the animal has escaped, without further disturbance, from the partially destroyed den(s).

4. Potential dens occurring within the footprint of the project or within 50 feet must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. [f no San Joaquin kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.
5. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the de, the excavation activity shall cease immediately and monitoring the den as described above should resume. Destruction of the den may be completed when in the judgment of the biologist, the animal has escaped without further disturbance from the partially destroyed den.
6. If any burrow is considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the USFWS shall be notified immediately.

### **Potential Impacts to Northern California Legless Lizard and California Glossy Snake from Project Activities**

Implementation of the proposed project could potentially impact individual Northern California legless lizards and California glossy snakes should they be present within the site during project implementation. Impacts to these species could occur through crushing of individuals by construction equipment during the implementation of the proposed project. It should be noted that these species were not observed in the project site and buffer area during biological surveys by Synthesis Planning. Impacts to these species would be considered significant. In the event that these species become established in the proposed project site prior to project implementation, the following mitigation measures will be implemented to protect these species from potential impacts:

Prior to the commencement of construction activities, but not more than two (2) days before ground clearance, a qualified biologist shall conduct pre-construction surveys of the project site. If individuals of these species are discovered, a qualified biologist shall capture and translocate individuals to similar habitat in the general vicinity of the project site. The translocation process shall be conducted until it is determined that all special-status animal species have been removed from the disturbance boundary. The candidate sites for relocation shall be identified before construction and shall be selected based on the size and type of habitat present, the potential for negative interactions with resident species, and the species' range. A final report identifying the number of animals moved and any mortality identified during the relocation event shall be completed at the end of construction. The disturbance zone shall be cleared of vegetation as soon

after clearance of these species as possible to ensure the species do not re-enter the disturbance area.

As part of the worker environmental training awareness program, project personnel shall be trained to identify this species, its natural history, its habitat, and protective measures.

The above procedures shall be conducted during the installation of the proposed pipeline as well.

### **Potential Impacts to Pond Turtles from Project Activities**

Implementation of the proposed project (specifically, ground disturbance activities within potential aestivation habitat) could potentially result in significant adverse impacts on pond turtles, including the crushing of individual turtles and their nest sites. These impacts could result in the direct mortality of individual northwestern pond turtles, and the degradation of upland nesting habitat. These impacts would be avoided or reduced through the implementation of the following mitigation measures:

- A qualified biologist will conduct pre-activity surveys for pond turtles within areas proposed for ground disturbance. If pond turtles are not found within the project disturbance zone, project activities may proceed without any further actions. If juvenile or adult turtles are found within the project disturbance zone, the individual turtles shall be moved out of the project disturbance zone by a qualified biologist. If a nest is found in the project area, CDFW shall be notified immediately to determine appropriate measures to protect or relocate the nest.
- If this species is observed within the project disturbance zone at any time during project activities, work shall cease within 150 feet of the area until the animal can be moved by a biological monitor to a safe location consistent with CDFW regulations.
- As part of the worker environmental training awareness program, project personnel shall be trained to identify this species, its natural history, its habitat, and protective measures.

### **Potential Impacts to Special-Status Plant Species from Project Activities**

Review of the USFWS (USFWS 2022), the CNPS (CNPS 2022), and the CNDDDB (CNDDDB 2022) revealed that 45 listed plant species and species of concern have potential to occur in the general project area. Potential habitat is present for 33 of these 45 plant species within the project site and buffer area. Botanical surveys were conducted on November 29, 2021. These surveys were conducted within the blooming period of five (5) of these 33 special-status plant species (see list below):

- Pappose tarplant
- Soft salty bird's-beak
- Carquinez goldenbush
- Mason's lilaeopsis
- Suisun Marsh aster

Survey findings for the five (5) targeted special-status species that had blooming periods during the surveys were negative. Therefore, no impacts to those species are expected due to project implementation.

Because botanical surveys were conducted outside of the blooming period of the remaining 28 special-status plant species that bloom outside of the survey dates, we cannot say with certainty that these species do not occur within the proposed project site or buffer area.

Implementation of the proposed project could potentially result in impacts on these 28 special-status plant species if they are located within the proposed project site during project activities. Direct impacts to these plant species could result from ground disturbance activities during project implementation within areas of potential habitat. Special-status plant species could be directly impacted by crushing of plants by construction equipment. These impacts could result in direct mortality of individuals or small populations of special-status plant species.

A qualified botanist will conduct pre-construction field surveys to identify any populations of special-status plant species within the proposed project site that will be disturbed during project activities. These surveys shall be conducted prior to the initiation of any construction activities and coincide with the appropriate flowering period of the special-status plant species with the potential to occur in the project area. If any special-status plant species populations are identified within or adjacent to the proposed disturbance areas, the project proponent shall implement the following measures to avoid impacts to these species:

- If any population(s) of special-status plant species is identified directly adjacent to the proposed project site, a qualified biologist retained by project proponent will clearly delineate the location of the plant population, and install protective fencing between the disturbance zone and the plant population to ensure that the plant population is adequately protected.
- If a special-status plant population is identified within the proposed disturbance zone, the project proponent will consult with CDFW and USFWS to determine the appropriate measures to avoid or mitigate for impacts to the species or population. The project proponent will adjust the boundaries of the disturbance zone, where feasible, to avoid impacts to the plant species/population. Where avoidance is not feasible, the project proponent will implement one or more of the following measures: (1) transplant potentially affected plants to areas not planned for disturbance. If a plant is transplanted, two more plants shall be planted. Plantings shall be managed and monitored by the applicant and shall survive to 5 years after planting; (2) seed or purchase plants and place them in an area adjacent to the disturbance zone; (3) purchase credits at an approved mitigation bank at a ratio approved by CDFW, USFWS, and the project proponent.

### **General Project Measures to be Incorporated**

Implementation of the following avoidance/minimization measures is recommended to avoid or reduce potential impacts to special-status wildlife and plant species:

2. Worker Environmental Awareness Training shall be presented to all personnel working in the field on the proposed project site. Training shall consist of a brief presentation in which biologists knowledgeable of endangered species biology and legislative protection shall explain endangered species concerns. Training shall include a discussion of special-status plants and sensitive wildlife species. Species biology, habitat needs, status under the Endangered Species Acts, and measures being incorporated for the protection of these species and their habitats shall also be discussed.
3. As close to the beginning of project activities as possible, but not more than 14 days prior, a qualified biologist shall conduct a final pre-construction survey of the proposed project site and buffer area to verify that no special-status wildlife species have become established in the project site or buffer area. A qualified biologist shall be present immediately prior to project activities that have potential to impact sensitive species to identify and protect potentially sensitive resources.
4. Project site boundaries shall be clearly delineated by stakes and /or flagging to minimize inadvertent degradation or loss of adjacent habitat during project operations. Staff and/or its contractors shall post signs and/or place fence around the project site to restrict access of vehicles and equipment unrelated to drilling operations.
5. A project representative shall establish restrictions on project-related traffic to approved project areas, storage areas, staging and parking areas via signage. Off-road traffic outside of designated project site shall be prohibited.
6. Project-related traffic shall observe a 10 mph speed limit in the project site except on County roads and State and federal highways to avoid impacts to special-status and common wildlife species.
7. Hazardous materials, fuels, lubricants, and solvents that spill accidentally during project-related activities shall be cleaned up and removed from the project as soon as possible according to applicable federal, state and local regulations.
8. All equipment storage and parking during site development and operation shall be confined to the proposed project site or other offsite previously disturbed areas.
9. All excavated steep-walled holes or trenches in excess of three (3) feet in depth shall be provided with one or more escape ramps constructed of earth fill to prevent entrapment of endangered species or other animals. Ramps shall not be less than 45-degree angles. Trenches shall be inspected for entrapped wildlife each morning prior to onset of project activities and immediately prior to the end of each working day. Before such holes or trenches are filled they shall be inspected thoroughly for entrapped animals. Any animals discovered shall be allowed to escape voluntarily without harassment before project activities related to the trench resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

10. All food-related trash items such as wrappers, cans, bottles or food scraps generated during project activities shall be disposed of only in closed containers and regularly removed from the proposed project site. Food items may attract wildlife species onto the proposed project site, consequently exposing such animals to increased risk of injury or mortality. No deliberate feeding of wildlife shall be allowed.
11. To prevent harassment or mortality of wildlife species via predation, or destruction of their dens or nests, no domestic pets shall be permitted on-site.



## **6.0 CONCLUSIONS AND DETERMINATIONS**

This project will incorporate reasonable and prudent measures for avoidance and minimization, described in Section 1.0, and species-specific avoidance and minimization measures. As a result, the project is not anticipated to result in take of any of the listed species or habitats described in this biological assessment.

Provided the precautions outlined above are followed, it has been concluded by Synthesis that the proposed project would: [s] ]

- Have less than significant impacts upon federal and California endangered, threatened, proposed or candidate species;
- Not result in destruction or adverse modification of a critical habitat area of a federal or California endangered or threatened species; and
- Not result in "take" of migratory birds protected under the Migratory Bird Treaty Act and other state, local or federal laws.

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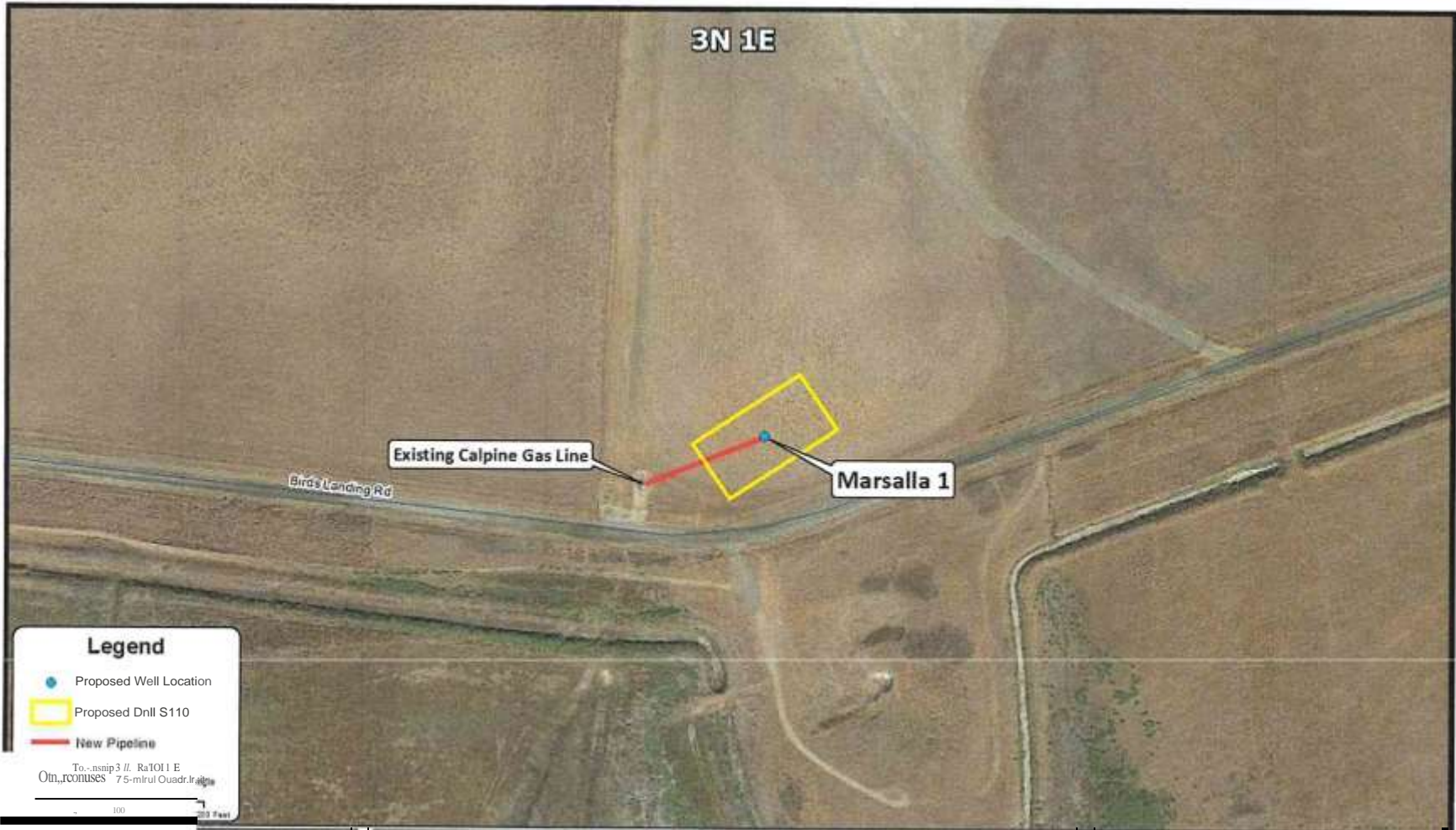
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# **Appendix A**

## **Project Figures**







**FIGURE 2**  
**Project Location Map**

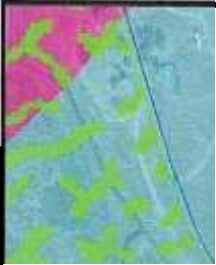
Booher Consulting LLC  
 Environmental & Management  
 3069 Allmoort Pt. 11307  
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 Telephone (707) 290-0900

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**Legend**

- Proposed Well Location
- Proposed Dnll Site
- New Pipeline

**CNDDDB Special-Status Species**

**Animals**

- longfin smelt
- ) saltmarsh harvest mouse
- D Incolored blackbird

Source: Connecticut Department of Environmental Protection  
 Connecticut Department of Environmental Protection, 2022  
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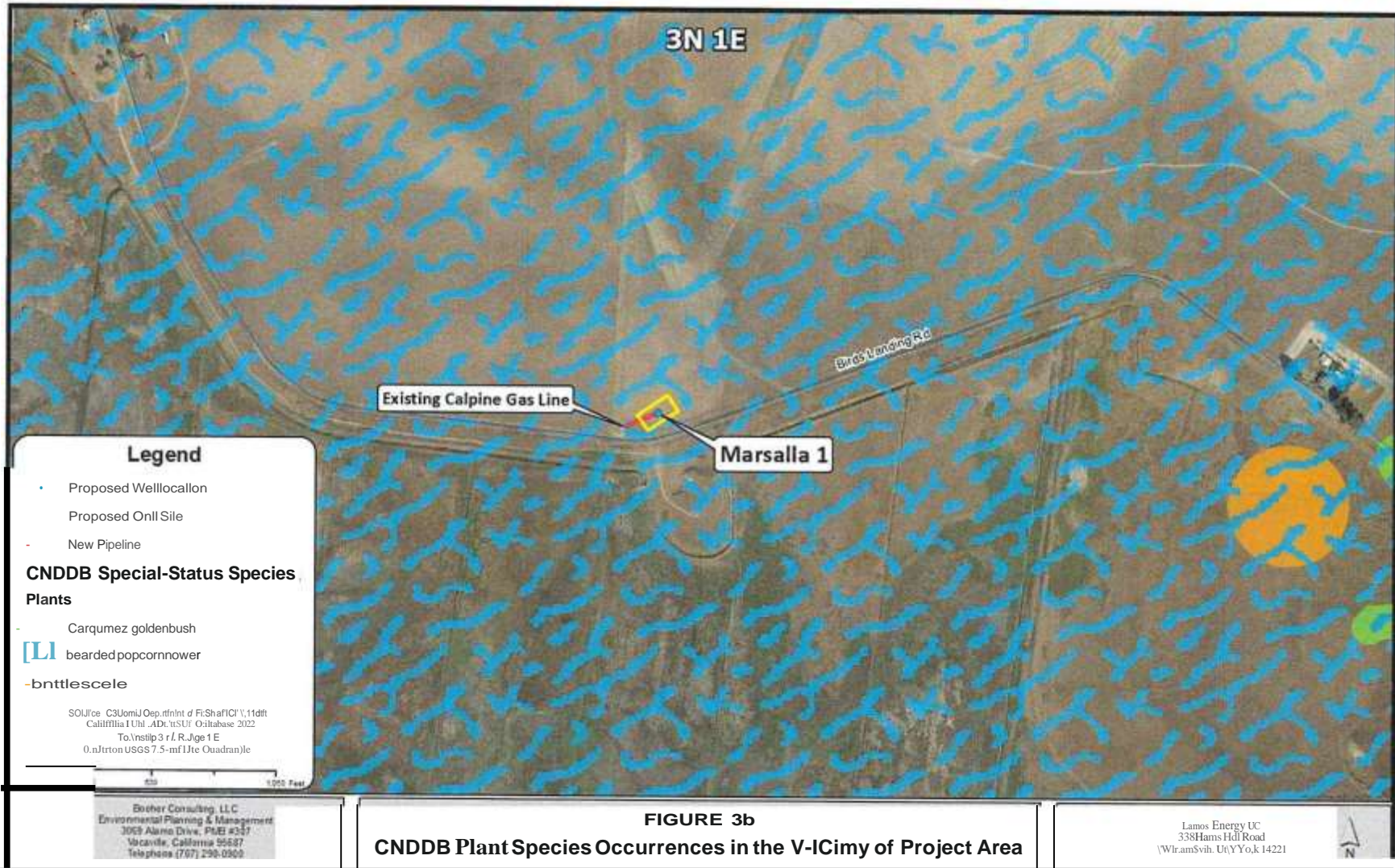
Boollor C., w-b-ng, LLC  
 Environmental Planning & Management  
 3069 Altmo Drive, P.O. Box 307  
 V. cavile, Ct 06061-0307  
 Telephone (107) 290-0900

FIGURE 3a

CNDDDB Animal Species Occurrences in the Vicinity Project Area

Lallos Entgty LLC  
 338 Hamlet Road  
 York, NY 12221





# Appendix B

## List of Plant Species Observed During Biological Surveys

<u>Common Name</u> (Scientific Name)
Slender wild oat ( <i>Avena barbata</i> )
Black mustard ( <i>Brassica nigra</i> )
California brome ( <i>Bromus carinatus carinatus</i> )
Ripgut grass ( <i>Bromus diandrus</i> )
Soft chess ( <i>Bromus hordeaceus</i> )
Smooth brome ( <i>Bromus inermis</i> )
Purple star-thistle ( <i>Centaurea ca/citraba</i> )
Yellow star-thistle ( <i>Centaurea solstitialis</i> )
Creeping thistle ( <i>Cirsium arvense</i> )
Field bindweed ( <i>Convolvulus arvensis</i> )
Artichoke thistle ( <i>Cynara cardunculus</i> )
Salt grass ( <i>Distichlis spicata</i> )
Common willow herb ( <i>Epilobium ciliatum</i> ssp. <i>ciliatum</i> )
Broadleaffilaree ( <i>Erodium botlys</i> )
Red-stem filaree ( <i>Erodium cicutarium</i> )
Fennel ( <i>Foeniculum vu/gore</i> )
Alkali heath ( <i>Frankenia salina</i> )
Cow parsnip ( <i>Heracleum /anatum</i> )
Mediterranean barley ( <i>Hordeum marinum</i> )
Prickly lettuce ( <i>Lactuca serriola</i> L.)
Perennial peppergrass ( <i>Lepidium latifolium</i> )
Perennial rye grass ( <i>Lolium perenne</i> )
Common mallow ( <i>Malva neglecta</i> Wallr.)
Cheeseweed ( <i>Malva parvijlora</i> )
Bristly ox tongue ( <i>Picris echioides</i> )
English plantain ( <i>Plantago lanceolata</i> )
Common plantain ( <i>Plantago major</i> )
Rabbitsfoot grass ( <i>Polypogon monspe/iensis</i> [L.] Desf.)
Radish ( <i>Raphanus sativus</i> )
Sheep sorrel ( <i>Rumex acetosel/a</i> )
Curly dock ( <i>Rumex crispus</i> )
Pickleweed ( <i>Salicornia virginica</i> )
Blessed milk thistle ( <i>Silybum marianum</i> )
Perennial sowthistle ( <i>Sonchus arvensis</i> L.)
Annual sowthistle ( <i>Sonchus oleraceus</i> )
<u>Dandelion</u> ( <i>Taraxacum officinale</i> )

# Appendix C

## Site Photos





Proposed well site and pipeline alignment. View looking west from center of project site.



Proposed well site and access road. View looking south from center of project site.



Proposed well site. View looking east from project site.



Proposed well site. View looking north from center of project site.





Proposed pipeline tie-in point. View looking west from east side of pipeline tie-in point.



Freshwater wetland located east of the proposed well site, View looking west from east side of wetland.