Appendix C

Biological Resources Report for the Mulqueeney Ranch Wind Repowering Project

BIOLOGICAL RESOURCES REPORT FOR THE MULQUEENEY RANCH WIND REPOWERING PROJECT

FINAL

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Contents

Tables and Figures

Acronyms and Abbreviations

$/MW-hour	resulting cost of energy
APWRA	Altamont Pass Wind Resource Area
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
Brookfield	Brookfield Renewable
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CUP	conditional use permit
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
FAA	Federal Aviation Administration
FR	Federal Register
HDD	horizontal directional drilling
HMBP	Hazardous Materials Business Plan
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
Mulqueeney Wind	Mulqueeney Wind Energy, LLC
MW	megawatt
NPDES	Pollutant Discharge Elimination System
O&M	operations and maintenance
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas and Electric Company
PRD	Permit Registration Document
program EIR	*Altamont Pass Wind Resource Area Repowering Final Program Environmental Impact Report*
proposed project or project	Mulqueeney Ranch Wind Repowering Project
RWQCB	Regional Water Quality Control Board
SPCC	Spill Prevention Control and Countermeasures

State Water Board	State Water Resources Control Board
SWPPP	stormwater pollution prevention plan
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
waters of the state	waters of the State of California
WBWG	Western Bat Working Group

Chapter 1
Introduction

Mulqueeney Wind Energy, LLC (Mulqueeney Wind), a subsidiary of Brookfield Renewable (Brookfield), is proposing the Mulqueeney Ranch Wind Repowering Project (proposed project or project), which consists of installing new turbines and repowering an existing decommissioned wind facility. Located south of Interstate 580, the project roughly straddles Patterson Pass Road in Alameda County (Figure 1) and is within the Altamont Pass Wind Resource Area (APWRA), an approximately 50,000-acre area that extends across the northeastern hills of Alameda County and a smaller portion of Contra Costa County to the north. The APWRA sustains a strong and predictable wind resource due mainly to the funneling of cool marine winds from the Pacific Ocean east through the pass to replace the rising hot summer air of the Central Valley. As a result, the area is ideal for generating electrical power from wind.

The existing wind facility has been decommissioned by a previous owner under separate permits, and nearly all of the existing turbines and infrastructure (originally constructed in the 1980s or early 1990s) have been removed from the site. The project consists of the installation of large-scale modern wind turbines with an anticipated project generation capacity of approximately 80 megawatts (MW). Existing roads would be used to the extent feasible, although new access roads and widening of existing roads would be required.

An ICF team consisting of wildlife biologists and botanists/wetland ecologists conducted surveys of the project area in 2019 and 2020. The surveys consisted of an aquatic resources delineation, land cover type mapping, golden eagle (*Aquila chrysaetos*) surveys, general bird use count surveys, an assessment of ponds to provide habitat for California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*), a habitat assessment for special-status (defined below) animals, and a survey to map blue elderberry shrubs (*Sambucus nigra* ssp. *caerulea*). A survey for special-status plants will be conducted during the appropriate blooming periods in summer 2020 and spring 2021. The team also reviewed existing biological information for the project area. The methods and results of the aquatic resources delineation and golden eagle and other bird surveys are discussed in separate reports. The California tiger salamander and California red-legged frog site assessment report is included as Appendix A.

This report describes the methods and results of the land cover mapping, habitat assessment for special-status animals, and elderberry shrub mapping and provides an evaluation of the potential for special-status plants and animals to be present in the project area. Additionally, this report describes the potential effects associated with constructing and operating the project and identifies mitigation measures from the *Altamont Pass Wind Resource Area Repowering Final Program Environmental Impact Report* (PEIR) (Alameda County Community Development Agency 2014) that would reduce potentially significant impacts, as defined under the California Environmental Quality Act (CEQA).

This report also addresses potential construction impacts on roosting bats and nesting birds. Operational effects on birds and bats will be addressed in a separate report after a completion of a siting analysis, and other ongoing site-specific surveys, which will identify turbine locations to minimize potential impacts on birds and bats, as required by the PEIR. Accordingly, the potential operational effects on birds and bats are not discussed in this report.

Summary of Results

The 4,605-acre project area consists primarily of rolling hills supporting grasslands with scattered ponds and many ephemeral and intermittent l streams. The project area is the site of an older wind project that has been decommissioned; however, paved and gravel roads still remain. Based on a review of existing information and information collected during the aquatic resources delineation and habitat assessment, the project area provides habitat for many special-status plant and wildlife species including several state- and federally listed species—large-flowered fiddleneck (*Amsinckia grandiflora*), California tiger salamander, California red-legged frog, tricolored blackbird (*Agelaius tricolor*), and San Joaquin kit fox (*Vulpes macrotis mutica*). Each potentially occurring special-status species in the project area was addressed in the PEIR, which set forth appropriate avoidance, minimization, and mitigation measures that would be applied to the proposed project.

Project Description

The proposed project would entail the replacement of approximately 518 old generation wind turbines installed in the 1990s with up to 36 new wind turbines.[1] Located within the APWRA, the project is south of Interstate 580 and roughly straddles Patterson Pass Road in northeastern Alameda County (Figure 1).

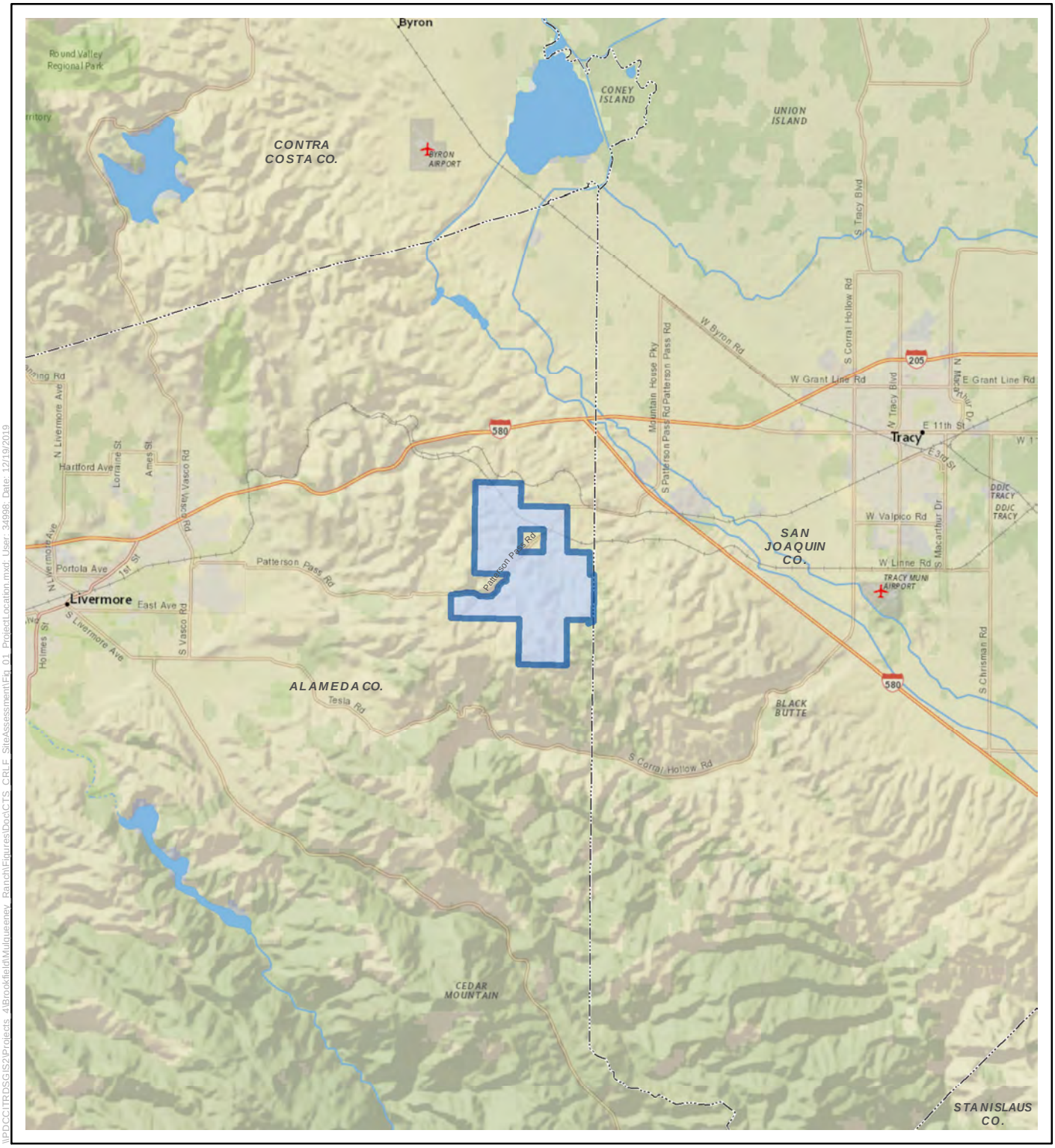
The proposed project is expected to use turbines with generating capacities between 2.2 and 4.2 MW to develop a maximum of 80 MW. The exact turbine model has not yet been selected. For purposes of environmental review, Brookfield has identified 36 possible turbine sites and a range of potential turbine specifications. The final configuration would be determined on the basis of site constraints, meteorological data, results of bird use surveys and avian micro-siting considerations, turbine availability, and resulting cost of energy ($/MW-hour). Existing roads would be used where possible, and temporary widening and construction of some new roads would be necessary. The project would also require a temporary construction area, three meteorological towers, and the installation of underground electrical lines connecting the turbines to a new substation that would be built adjacent to Pacific Gas and Electric Company's (PG&E's) Tesla substation.

Project Components

The project would consist of the following components listed below, illustrated in Figures 2 and 3, and discussed in greater detail in the following subsections.

- Up to 36 new wind turbine generators, towers, foundations, and pad-mounted transformers.
- Access roads (including the use of existing roads to the extent feasible).
- A temporary construction and staging area.
- Three permanent meteorological towers.
- A power collection system.
- A new substation.

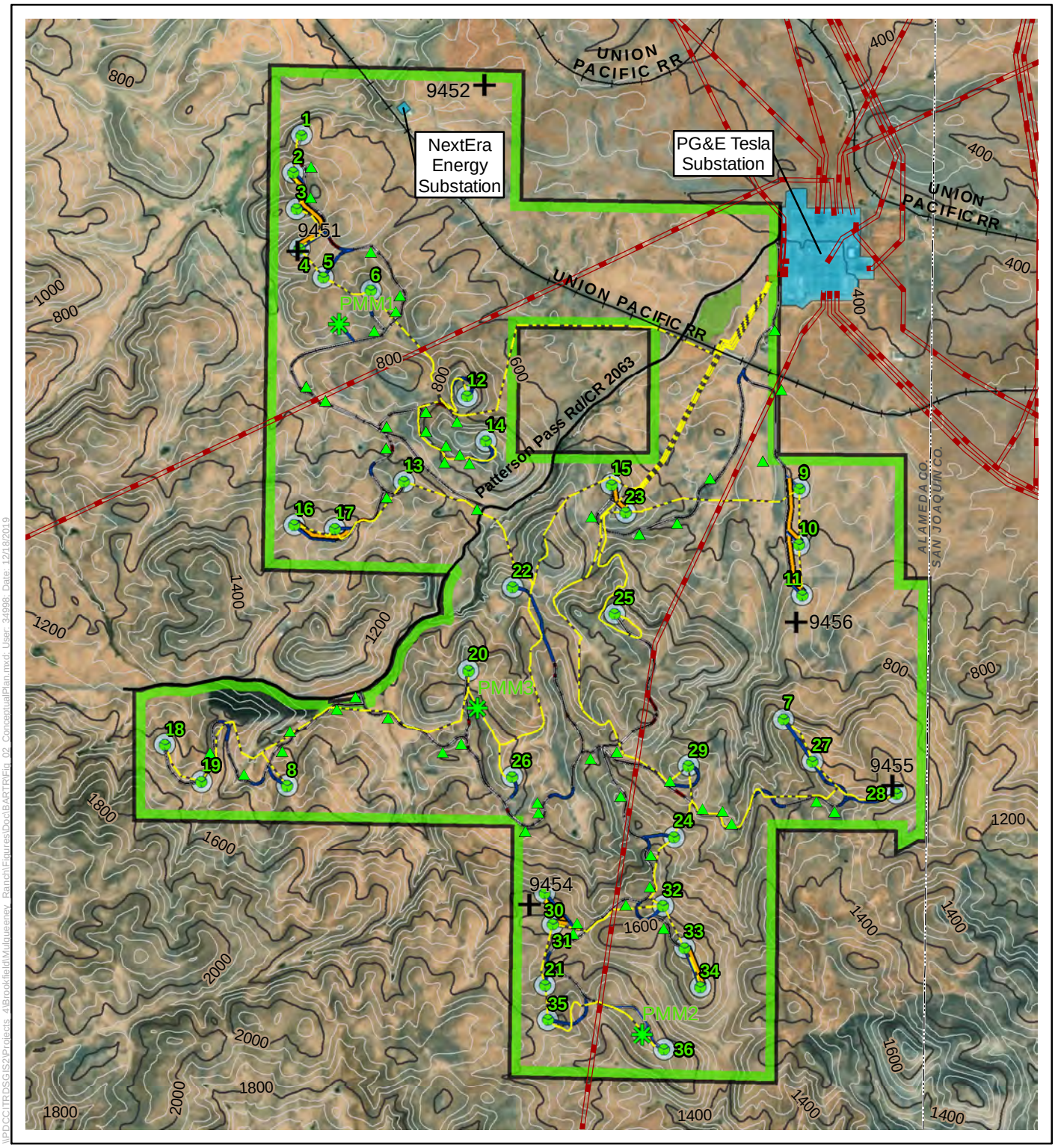
[1] The old generation turbines were removed from the Mulqueeney Ranch project area and the previous project was decommissioned in 2016 by Next Era Energy Resources, the previous project owner, in preparation for repowering.



Project Boundary
County Boundary

0 2 4 Miles
1:200,000

Figure 1
Location of the Mulqueeney Ranch Wind Repowering Project



Project Boundary

Project Components

- Wind Turbine Generator
- Turbine Pad
- Proposed MET Mast
- Radius Improvement
- Crane Path

Source:

- Electrical Collection System
- Existing Access Road-Widen and Resurface
- Existing Access Road-Regrade and Widen
- New Access Road
- Temporary Construction Facility

Existing Infrastructure

- Existing Temporary MET Mast (to be removed)
- Existing Transmission

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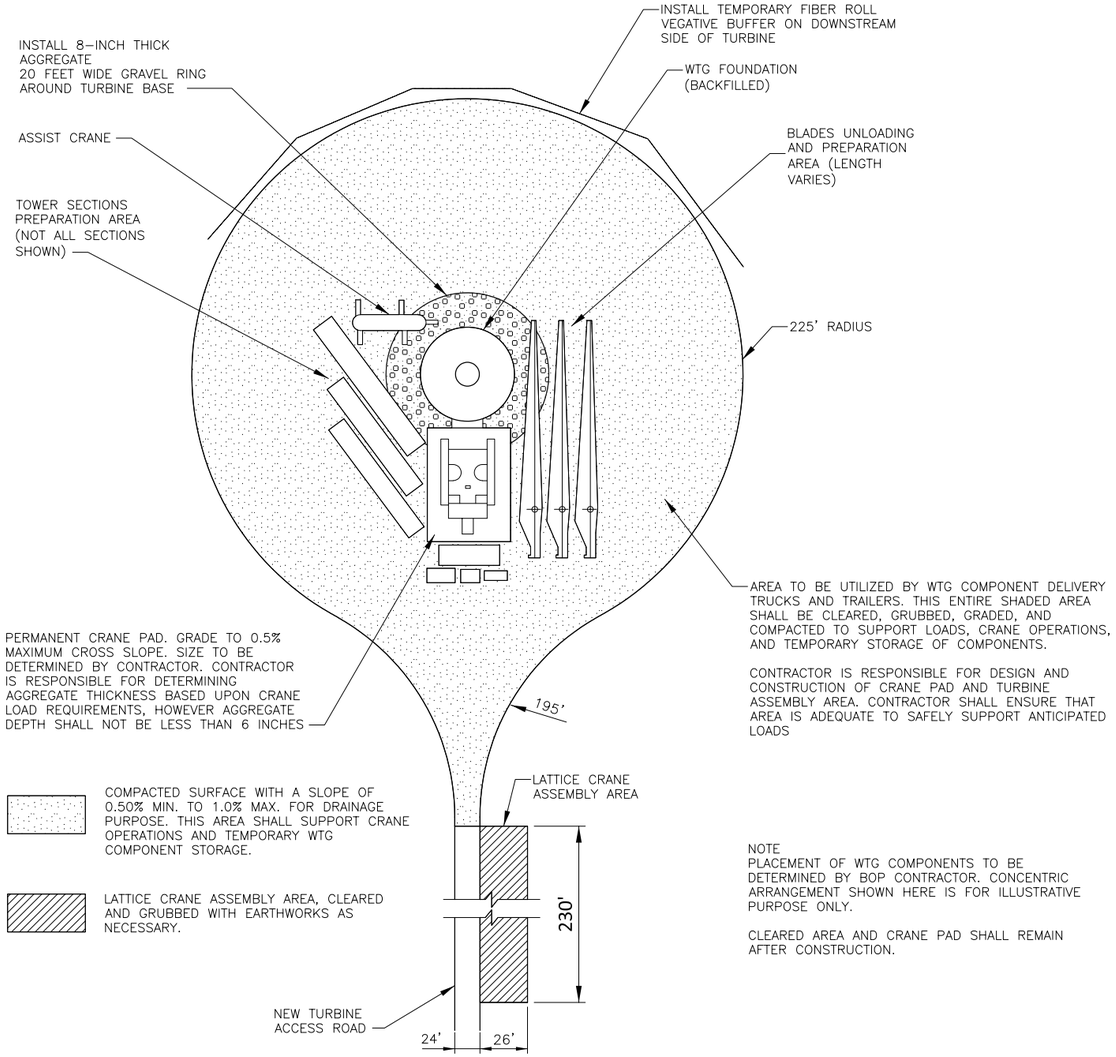
N

0 2,000 4,000 Feet

1:36,000

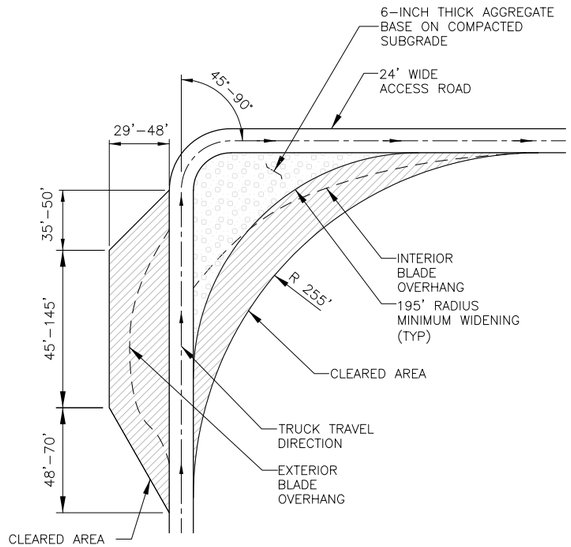
Figure 2
Mulqueeney Ranch Wind Repowering Project - Conceptual Plan

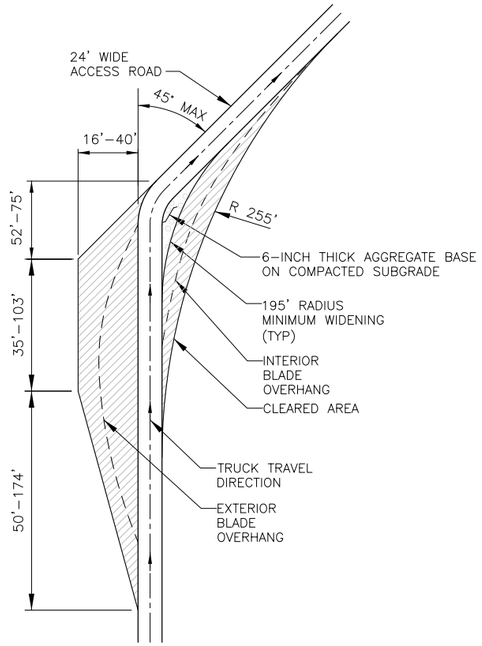


NOTE
PLACEMENT OF WTG COMPONENTS TO BE DETERMINED BY BOP CONTRACTOR. CONCENTRIC ARRANGEMENT SHOWN HERE IS FOR ILLUSTRATIVE PURPOSE ONLY.

CLEARED AREA AND CRANE PAD SHALL REMAIN AFTER CONSTRUCTION.

1 — PROPOSED TURBINE CONSTRUCTION LAYOUT DETAIL
NO SCALE





NOTE
ROAD WIDENING AND CLEARED AREAS SHALL REMAIN AFTER CONSTRUCTION.

2 — HAUL ROAD WIDENING DETAIL
NO SCALE

Mulqueeney Wind farm
Vestas 2.2MW Layout
Brookfield Renewable
Preliminary, Subject to Change

BLACK & VEATCH
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DETAILS

Graphics ... 00311.19 (10/21/2019) tag

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Figure 3
Proposed Turbine Construction Layout Detail

Wind Turbines and Foundations

The proposed project would entail installation of up to 36 fourth-generation turbines in the project area[2]. Fourth-generation turbines are large, generally 1.6–4 MW turbines.

The type of turbine foundation used depends on terrain, wind speeds, and wind turbine type. The size of the concrete cylinder and pad is determined by wind turbine model and size and site-specific conditions (e.g., expected maximum wind speeds, soil characteristics). The foundation's weight must be sufficient to hold the wind turbine in place. Specific building plans, based on site-specific geotechnical and engineering requirements, would be submitted to the Alameda County Building Department prior to construction. The foundation type used would most likely be a gravity-type spread-footing foundation. The foundation will taper from the base upward to a pedestal of approximately 18 feet in diameter with a concrete top between 6 inches and 1 foot above the finished grade. The wind turbine is bolted to the center of the pedestal. Each foundation would contain steel reinforcement, and the concrete volume of each foundation is expected to be between 450 and 800 cubic yards. Each of the turbine models proposed would require a similarly sized foundation and similar engineering requirements. A small graveled area approximately 20 feet wide would encircle each foundation to facilitate maintenance access. The total diameter of the final footprint for each turbine, including the graveled area, would be approximately 58 feet.

Turbine construction entails placement of a foundation, new tower, nacelle (i.e., cover housing), rotor, and transformer. At each turbine site, a level turbine pad, approximately 450 feet in diameter, would be graded to support the construction of tower foundations, receive turbine component deliveries, and enable the use of large cranes to lift the turbine components into place. The extent and shape of grading at each turbine pad would depend on local topography; however, each turbine pad would require approximately 3 acres of graded area to support the construction of foundations and installation of turbines.

A crane pad would be leveled and graded within each turbine pad. The crane pad—a flat, level, and compacted area near the foundation—would provide the base from which the crane would work to place the turbine. The crane pads would be prepared in accordance with turbine manufacturer and contractor specifications, but each would be approximately 50 by 100 feet with a compacted and graveled surface. Wind turbine construction activities would take place within the turbine pad area. Following construction, the turbine pad would be reclaimed; however, the crane pad would remain in place.

Once the foundation, turbine pad, and crane pads are in place, the turbine towers, nacelles, and blades are delivered to each turbine location in the order of assembly. Cranes are brought to each site to lift and assemble the turbine components. First, the base section of the tower is secured to the foundation using large bolts. The remaining tower sections are then lifted with the crane and connected to the base section. After the nacelle and rotor are delivered to the turbine site, the turbine blades are bolted to the rotor hub, and the nacelle and rotor are lifted by a crane and connected to the main shaft. Alternatively, the contractor may lift the rotor hub and each blade separately and mount them on the tower.

For most turbine sites, the cranes are broken down into their smaller components, transported to the next turbine erection site, and reassembled. This process is repeated for each individual turbine

[2] The different turbine "generations" were described in the PEIR (Alameda County Community Development Agency 2014). Generally, "fourth-generation turbines" are those on the market as of the date of this report.

site. For several of the turbine sites, where topography is suitable, the cranes can be driven slowly between sites. In these cases, a 40-foot-wide temporary crane path is required. The crane paths are typically compacted native earth or a graveled surface, if necessary, and are restored following construction.

Excess rock generated by foundation construction would be spread on existing roads and maintenance areas surrounding the turbines. Cut and fill at each turbine pad would be balanced onsite. Old foundations from the previous wind project onsite may be removed if they are within proposed construction areas and if removal is necessary for the installation of new turbines; such removals would involve workers demolishing the foundations using jackhammers or similar tools. The material from old turbine foundations may be reused for road base or hauled offsite to the nearest landfill or disposal facility, likely the nearby Altamont Landfill.

Access Roads

Primary access to the project area would be from Patterson Pass Road. Three access points are proposed: one to access the turbines located north of Patterson Pass Road and two to access the southern turbines. Improvements to Patterson Pass Road are not proposed, although some improvements to the project area entrances may be required to accommodate the turning radii of equipment. These activities would be subject to Alameda County encroachment permits as appropriate.

Fourth-generation turbine towers and blades, such as those for the proposed project, are significantly longer than older turbine components and require larger and longer trucks and cranes for transport and installation. These vehicles need wider roads with shallower turns and gradients than are currently present in the project area. Consequently, the existing project area road infrastructure must be upgraded to accommodate construction of the turbines. Road infrastructure upgrades would include grading, widening, and resurfacing some of the existing roads on the project site, and some sections of new road would be constructed where no roads currently exist. Existing road widths vary from approximately 12 to 20 feet; the proposed roads are expected to be approximately 24 feet wide. To accommodate turbine deliveries, portions of some existing roads would require modifications and grading work, specifically where the road gradient exceeds 16% and where inside turning radii are less than 195 feet. The area disturbed by radius improvements would vary by location. Temporary and permanent (aggregate areas) impacts would result from radius improvements and were estimated for each location.

The existing onsite drainage pattern would be maintained. Drainage would sheet flow along the sides of roads. Existing culverts would be inspected and replaced if necessary to accommodate the wider roads and other grading work. Existing culverts may need to be replaced with larger culverts or reinforced to provide adequate size and strength for construction vehicles.

Temporary Construction and Staging Area

A single temporary construction and staging area would be used for construction trailers, employee parking, laydown, staging, and storage of materials, and potentially for a mobile concrete batch plant. The temporary construction and staging area would be located east of Patterson Pass Road near the proposed substation and adjacent to PG&E's Tesla substation, and it would encompass approximately 15.6 acres (Figure 3). As noted above, turbine components would be delivered directly to turbine pads and would not be stored at the temporary construction and staging area.

Mobile construction trailers would be used to support workforce needs and site security and would also house a first aid station, emergency shelter, and storage areas for the construction workforce. Parking areas would be located near the trailers. A mobile concrete batch plant may be utilized onsite to accommodate the large pour volumes. Sand, aggregate, water, and cement would be mixed to create concrete. Very small wash areas may be needed to clean equipment, but not enough water would be used to result in ponding. Water would be trucked in and would not be obtained from onsite water sources. The batch plant would encompass approximately 2.5 acres for operation within the temporary construction and staging area.

Vegetation would be cleared within the temporary construction and staging area, which would be graded level or mostly level. The surface of the temporary construction and staging area would use native material, supplemented with gravel or soil stabilizer, if needed, and appropriate erosion control devices (e.g., earth berm, silt fences, straw bales) would be installed to manage water runoff. Following completion of construction activities, the contractor would reclaim and restore the temporary construction and staging area. The gravel surface would be removed, and the area would be contour graded (if necessary and if environmentally beneficial) to conform with the natural topography. Stockpiled topsoil would be replaced, and the area would be stabilized and reseeded with an appropriate seed mix.

Meteorological Towers

The project would include construction of three new permanent, free-standing meteorological towers up to approximately 260 feet tall. The towers would be placed on small concrete foundations. The meteorological towers would be used for power performance tests and forecasting during windfarm operation. Each tower would be reached by a small access road and would be surrounded by a small graveled area to facilitate maintenance access. Construction of the meteorological towers would result in 0.11 acre of permanent impact and 1.70 acres of temporary impact.

Power Collection System

Each new wind turbine must be connected to the medium-voltage electrical collection system by means of a pad-mounted transformer. The power collection system carries electricity generated by the turbines to a project substation, where the voltage level of the collection system is stepped up to that of the power grid. From the project substation, electricity would be carried through a short aboveground line connected to PG&E's Tesla substation, where the electricity would be distributed to the power grid. Construction of the power collection system would result in 0.68 acre of permanent disturbance (from the new substation) and 36.05 acres of temporary disturbance. Each collection system component is discussed below.

Collection Lines

Medium-voltage collection lines would collect power from each turbine for conveyance to the substation. Medium-voltage lines are normally up to 35 kilovolts). The new medium-voltage collection lines would be installed underground.

Installation of underground medium-voltage lines is accomplished in most cases using a cut-and-cover method. A disturbance width of 20 feet is generally standard to allow for the trench excavation and equipment, but this width may vary depending on the topography and soil type. The

topsoil is frequently separated from the subsurface soil for later replacement. A 3-foot-wide trench is then plowed using a special bulldozer attachment that buries the line in the same pass in which it digs the trench. Once the collection lines are in place, the trench is partially backfilled with subsurface soil. Typically, communication lines are then placed in the trench. The trench is subsequently backfilled with the remaining subsurface soil, compacted, and covered with the reserved topsoil.

To minimize surface disturbance within wetlands and other waters (i.e., streams), collection lines may be installed under these features using horizontal directional drilling (HDD) techniques, where feasible. HDD involves the use of a steered drilling head, which allows the bore machine to sit at ground level, bore down along on the collection line route, and direct the bore back up to the surface at a distant point. The bore machine uses a drilling fluid, typically a mixture of fine clay (such as bentonite) and fresh water. The clay and water mixture coats the wall of the borehole to help hold it open and to provide lubrication for the drill stem and conduit being installed. Excess drilling fluid is typically captured using a vacuum truck.

Collection lines would terminate adjacent to the substation, at which point they would rise onto one or two poles for the aboveground connection to the substation. Overhead poles would be designed in compliance with the latest recommendations of the Avian Power Line Interaction Committee.

Transformers

Transformers boost the voltage of the electricity produced by the turbines to the voltage of the collection system. Each turbine would have its own transformer either mounted on a small pad adjacent to the turbine or within the tower.

Substation

The project would require construction of a new substation immediately adjacent to PG&E's Tesla substation. The new substation would be connected via an intermediate structure (a single 130- to 150-foot pole) that would be installed outside the Mulqueeney substation. A single span from the new pole into an open bay inside PG&E's Tesla substation would complete the connection. The main functions of a project substation are to step up the voltage from the turbine collection lines to the transmission level and to provide fault protection. The basic elements of the substation facilities would be a single main power transformer, a single outgoing high side circuit, and four medium voltage collection circuits. The substation would also include a control enclosure for all protective relaying and Supervisory Control and Data Acquisition equipment. The main outdoor electrical equipment and control enclosure are installed on a concrete foundation, and the remaining area is typically compacted and graveled. The entire facility would be fenced with 12-foot-high chain-link security fencing. The facility would be monitored remotely. Nighttime security lighting at the substation would include motion sensors and would be directed downward. The fenced footprint for the substation would occupy approximately 0.68 acre.

Safety Lighting

Lighting of the windfarm would be in compliance with the Federal Aviation Administration (FAA) *Obstruction Marking and Lighting Advisory Circular* (AC70/7460-1L). Permanent nighttime safety lighting would consist of FAA L-864 aviation red flashing, strobe, or pulsed obstruction lights, which would be placed as high as possible on the turbine nacelle to be visible from any direction.

Temporary lighting during construction may also be used if necessary to comply with FAA requirements.

Construction

Turbines would likely be delivered to the site from the Port of Stockton or other nearby port or rail transfer locations. From the port or transfer location, the turbine components would be loaded onto trucks and transported to the site. Tower assembly typically requires the use of one large track-mounted crane and two small cranes. The turbine towers, nacelles, and rotor blades would be delivered to each turbine pad and unloaded by crane. A large track-mounted crane would be used to hoist the base tower section vertically then lower it over the threaded foundation bolts. The large crane would then raise each additional tower section to be bolted through the attached flanges to the tower section below. The crane would then raise the nacelle, rotor hub, and blades to be installed atop the tower. Two smaller wheeled cranes would be used to offload turbine components from trucks and to assist in the precise alignment of the tower sections.

Schedule

Construction of the project is expected to begin in 2021 and would take approximately 6 months. Construction activities are anticipated to proceed according to the sequence described below. The final approved work hours would be specified in the project's conditional use permit (CUP) but would be consistent with the PEIR.

Workforce

Based on data provided for typical wind energy projects of similar size, an average of 50 workers would be employed during construction, with a peak workforce of 100 workers. Craft workers would include millwrights, iron workers, electricians, equipment operators, carpenters, laborers, and truck drivers. Local construction contractors and suppliers would be used to the extent feasible.

Construction Sequence

Typical construction steps are listed below.

- Demarcation of construction areas and any sensitive biological, cultural, or other resources needing protection.
- Construction of the temporary construction and staging area.
- Road infrastructure upgrades and construction.
- Erosion and sediment control.
- Wind turbine construction.
    - Final site preparation and turbine pad grading.
    - Crane pad construction.
    - Foundation excavation and construction.
    - Tower assembly.

    - Installation of nacelle and rotor.
- Power collection system and communication line installation.
- Permanent meteorological tower installation.
- Final cleanup and restoration.

The construction contractors would prepare the project area, deliver and install the project components, oversee construction, and complete final cleanup and restoration of the construction sites. Mulqueeney Wind would implement best management practices (BMPs) consistent with standard practice and the requirements of the PEIR as well as any state or federal permit requirements to minimize soil erosion, sedimentation of drainages downslope of the project area, and any other environmental impacts. Examples of likely erosion control measures are listed below.

- Use of straw wattles, silt fences/straw bale dikes, and straw bales to minimize erosion and collect sediment (to protect wildlife, no monofilament-covered sediment control measures would be used).
- Reseeding and restoration of the site.
- Maintenance of erosion control measures.
- Regular inspection and maintenance of erosion control measures.

The construction activities and the approximate duration of each are listed below (some activities would overlap chronologically).

- Staging areas: 2 weeks.
- Road construction: 8 weeks.
- Foundations/electrical: 8 weeks.
- Turbine delivery and installation: 12 weeks.
- Electrical trenching and substation upgrades: 12 weeks.
- Cleanup: 12 weeks.

Demarcation of Sensitive Resources

Sensitive resources in and adjacent to construction areas would be marked to ensure adequate avoidance. Sensitive areas identified through the environmental approval and permitting processes would be staked and flagged. Prior to construction, the construction contractor and any subcontractors would conduct a walk-through of areas to be affected, or potentially affected, by construction activities. The preconstruction walk-throughs would be conducted regularly to identify sensitive resources to be avoided, limits of clearing, location of drainage features, and the layout for sedimentation and erosion control measures. Following identification of these features, specific construction measures would be reviewed, and any modifications to construction methods or locations would be agreed upon before construction could begin.

Environmental Compliance

Orientation of construction staff would include education on the potential environmental impacts of project construction. The construction manager would establish procedures for staff to formally report any issues associated with the environmental impacts to keep management informed and to facilitate rapid response.

Best Management Practices

Construction of the wind turbines would incorporate BMPs that are standard practice and normally required by building permits for large projects. Listed below by category are BMPs that are mandated by mitigation measures in the final PEIR (Alameda County Community Development Agency 2014). These measures, or similar measures that achieve the same results, will be implemented as part of the project.

Construction Erosion Control Best Management Practices

Construction erosion control BMPs are required by a stormwater pollution prevention plan (SWPPP) (discussed below under *Water Quality Protection*). BMPs to control erosion that would be part of the SWPPP are listed below. Additional measures required by the SWPPP would also be implemented.

- Perform clearing and earth-moving activities only during dry weather.
- Limit construction access routes and stabilize designated access points.
- Prohibit cleaning, fueling, and maintaining vehicles onsite, except in a designated area where washwater is contained and treated.
- Properly store, handle, and dispose of construction materials/wastes to prevent contact with stormwater.
- Train and provide instruction to all employees/subcontractors on construction BMPs.
- Control and prevent discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, washwater or sediments, rinse water from architectural copper, and non-stormwater discharges to storm drains and watercourses.

Construction Water Quality Best Management Practices

BMPs to be implemented as part of the Storm Water Management Program and General Construction Permit (and SWPPP) would include the following practices.

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.
- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.

- Ensure that no earth or organic material will be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Prohibit the following types of materials from being rinsed or washed into streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Ensure that grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.

Hazardous Materials Storage

Hazardous materials would be stored at the temporary construction and staging area. The use of extremely hazardous materials is not anticipated, and materials stored onsite would typically be those needed to service and maintain equipment and vehicles (e.g., oils, hydraulic fluids). To minimize the potential for harmful releases of hazardous materials through spills or contaminated runoff, these substances would be stored within secondary containment areas in accordance with federal, state, and local requirements and permit conditions. Storage facilities for petroleum products would be constructed, operated, and maintained in accordance with the spill prevention control and countermeasures (SPCC) plan that would be prepared and implemented for the proposed project (Title 40 Code of Federal Regulations [CFR] Part 112). The SPCC plan would specify engineering standards (e.g., secondary containment), administrative standards (e.g., training with special emphasis on spill prevention, standard operating procedures, and inspections), and BMPs.

A hazardous materials business plan (HMBP) would also be developed for the proposed project. The HMBP would contain specific information regarding the types and quantities of hazardous materials that could be present, as well as their production, use, storage, spill response, transport, and disposal.

Water Quality Protection

Because the project would disturb more than 1 acre, it would require coverage under the state's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2010-0014-DWQ) (Construction General Permit). Permit coverage would be obtained by submitting permit registration documents (PRDs) to the State Water Resources Control Board (State Water Board) through its Stormwater Multiple Application and Report Tracking System website. The PRDs include a notice of intent, site maps, a SWPPP, a risk level assessment, and other materials. The SWPPP would include the elements described in Section A of the Construction General Permit and maps that show the location and type of erosion control, sediment control, and non-stormwater BMPs, all of which are intended to prevent significant water quality impacts on receiving waters. The SWPPP would also describe site inspection, monitoring, and BMP maintenance procedures and schedules.

Water Sources

Water for construction activities would be provided through an agreement with municipal or private suppliers. Temporary onsite water tanks and water trucks would be made available for fire water support, dust suppression, and construction needs. Daily water use would vary, depending on

the weather conditions and time of year, both of which affect the need for dust control. Hot, dry, and windy conditions would necessitate greater amounts of water. Tanker trucks would apply water to construction areas where needed to aid in road compaction and reduce construction-generated dust. No water would be taken from onsite water sources.

Restoration

Clearing and disposing of trash and other debris on those portions of the site where construction would occur would be performed at the end of each workday through all stages of construction. Existing vegetation would be cleared only where necessary. All excavations would be backfilled with compacted earth and aggregate as soon as cable infrastructure is tested. Disposal of debris would be at an approved landfill or other facility designed to handle the waste.

Before construction is complete, all remaining trash and debris would be removed from the site. Any debris would be properly disposed of offsite consistent with local, state, and federal restoration requirements as described in a restoration plan, which would be developed prior to construction as part of the construction planning and permitting process. Any material placed in the areas of the foundations or roads would be compacted as required for soil stability.

Operation and Maintenance Activities

Mulqueeney Wind is not proposing to construct an operations and maintenance (O&M) facility for the project. To facilitate O&M, existing commercial building space would be leased in nearby Tracy or Livermore.

Operation of the project would involve electrical generation from the wind turbines during periods of suitable wind. The wind speed necessary for the turbines to generate electricity varies depending on the turbine model, but is typically 3 meters/second or higher. The turbines would operate day and night, 365 days per year during periods with suitable winds. Monitoring of project operations would be computer-based; computers in the base of each turbine tower would be connected to the O&M facility through fiber-optic or wireless telecommunication links. Issues requiring maintenance of the turbines are typically evident from the remote monitoring. Red safety lighting and lighting at the new substation would also be part of project operations.

The O&M workforce would consist of turbine technicians, operations personnel, administrative personnel, and management staff. O&M staff would monitor turbine and system operation remotely, perform routine maintenance, shut down and restart turbines when necessary, and provide security. All O&M staff would be trained regularly to observe BMPs.

Maintenance of turbines and associated infrastructure includes a wide variety of activities. Routine maintenance involves activities such as checking torque on tower bolts and anchors; looking for cracks and other signs of stress on the turbine mainframe and other turbine components; inspecting for leakage of lubricants, hydraulic fluids, and other hazardous materials and replacing them as necessary; examining the grounding cables, wire ropes and clips, and surge arrestors; cleaning; and repainting. Weeds around the base of the turbines may be periodically sprayed with herbicide to control or eliminate them. No other herbicide or pesticide use would occur during O&M activities. Most routine maintenance activities occur in and around the tower and the nacelle. Cleanup from routine maintenance activities would be conducted at the time maintenance is performed by the

O&M staff. While performing most routine maintenance, O&M staff would travel by pickup or other light-duty trucks. In addition, nonroutine maintenance such as repair or replacement of rotors or other major components may be necessary if issues are identified through remote monitoring or site-specific inspections. Such maintenance would involve use of one or more cranes and equipment transport vehicles. Lastly, maintenance could involve repairing access roads, implementing erosion control measures, and other methods to keep the onsite roads in good working order.

The potential ground disturbance necessary to complete all O&M activities is difficult to estimate; however, based on similar projects with comparable turbine types, the replacement of one blade, nacelle, or entire turbine is expected to occur every 10 years (i.e., parts or the entirety of three turbines can be expected to be repaired or replaced over the life of the project). Replacement of blades or nacelles would require large cranes as well as deliveries of large replacement parts. Parts would be delivered to the project sites using the existing access roads that were widened for construction. Grading of the area around turbine replacement sites is not anticipated because the existing leveled area around each turbine can be used; however, temporary disturbance at the base of each turbine, similar to that required to construct and use the crane pads during construction (50 by 100 feet), would be necessary. This equates to ground disturbance of 0.1 acre every 10 years. The maintenance of access roads is also difficult to estimate. However, based on similar projects, minor grading of access roads and erosion repair typically occurs every 5 years. Mulqueeney Wind estimates that the area for this activity would encompass approximately 1 acre within the existing graveled road areas or immediately adjacent to them every 5 years. The amount of area disturbed adjacent to access roads is expected to be small, approximately 0.1 acre every 5 years.

Post-Project Decommissioning

The anticipated life of the windfarm is more than 30 years, as upgrading and replacing equipment could extend the operating life indefinitely with appropriate permit approvals. However, the life of the project for CUP purposes would be 35 years. The ultimate decommissioning and removal of the proposed project would be similar to the decommissioning and removal of the previous windfarm components, except that considerably fewer turbines would be removed. In addition, existing access roads would be used.

Decommissioning would involve removing the turbines, transformers, and related infrastructure in accordance with landowner agreements. Substations and meteorological towers would be removed and the sites reclaimed; alternatively, the sites could be retained for continued use. A single large crane would be used to disassemble the turbines, and smaller cranes would lift the parts onto trucks to be hauled away. Generally, turbines, electrical components, and towers would either be refurbished and resold or recycled for scrap. All unsalvageable materials would be disposed of at authorized sites in accordance with federal, state, and local laws, regulations, ordinances, and adopted policies in effect at the time of final decommissioning. Road reclamation would be accomplished using scrapers and gravel trucks. Site reclamation after decommissioning would be subject to a locally approved reclamation plan. Based on site-specific requirements, the reclamation plan would include regrading, spot replacement of topsoil, and revegetation of disturbed areas with an approved seed mix.

Applicable Regulations

This section provides an overview of the major laws and regulations that apply to biological resources that may be impacted by the project.

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species listed as threatened or endangered under Section 9 of the federal Endangered Species Act (ESA). ESA protects listed species from harm, or *take*, which is broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." For any project involving a federal agency in which a listed species could be affected, the federal agency must consult with USFWS in accordance with Section 7 of ESA. USFWS issues a biological opinion and, if the project does not jeopardize the continued existence of the listed species, issues an incidental take permit. When no federal context is present, proponents of a project affecting a listed species must consult with USFWS and apply for an incidental take permit under ESA Section 10. Section 10 requires an applicant to submit a habitat conservation plan that specifies project impacts and mitigation measures.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 United States Code [USC] 668) prohibits take and disturbance of individuals and nests. Take permits for birds or body parts are limited to religious, scientific, or falconry pursuits. However, the BGEPA was amended in 1978 to allow mining developers to apply to USFWS for permits to remove inactive golden eagle nests in the course of "resource development or recovery" operations.

In 2009, USFWS issued the 2009 Final Rule on new permit regulations that allows take "for the protection of… other interests in any particular locality" and where the take is "associated with and not the purpose of an otherwise lawful activity…" (74 Federal Register [FR] 46836–46879). The 2009 Final Rule authorized programmatic take (take that is recurring and not in a specific, identifiable timeframe or location) of eagles only if avoidance measures have been implemented to the maximum extent achievable such that take was no longer avoidable.

In 2016, USFWS issued revisions to the Final Rule pertaining to incidental take and take of eagle nests. The Final Rule changed the programmatic take standard to a new standard authorizing "incidental take" if all "practicable" measures to reduce impacts on eagles are implemented. An eagle incidental take permit under the 2016 Revisions to the Final Rule (50 CFR 22) is available for activities that may disturb or otherwise take eagles on an ongoing basis, such as operational activities. The eagle incidental take permit under the 2009 Final Rule was valid for up to 5 years. In 2012, USFWS proposed extending the maximum term for eagle incidental take permits from 5 to 30 years (77 FR 22267–22278). In 2013, USFWS issued a Final Rule to extend the maximum term for eagle incidental take permits to 30 years, subject to a recurring 5-year review process throughout the life of the permit. Although this rule was challenged in 2015, the final regulations under the 2016 Revisions to the Final Rule also include a maximum permit term of 30 years, subject to a recurring 5-year review process throughout the life of the permit (81 FR 91494–91554).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. Section 703, et seq.), enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA of 1918 provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. On December 22, 2017, the U.S. Department of the Interior's Office of the Solicitor issued a legal, revised interpretation (Opinion M-37050) of the MBTA's prohibition on the take of migratory bird species. Opinion M-37050 concludes that "consistent with the text, history, and purpose of the MBTA, the statute's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs." According to the Opinion M-37050, take of a migratory bird, its nest, or eggs that is incidental to another lawful activity does not violate the MBTA, and the MBTA's criminal provisions do not apply to those activities. Opinion M-37050 may affect how MBTA is interpreted but it does not legally change the regulation itself. The current list of species protected by the MBTA can be found in Title 50 CFR, Section 10.13. The list includes nearly all birds native to the United States.

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state's definition of *take*. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The California Department of Fish and Wildlife (CDFW) administers CESA and authorizes take through Section 2081 agreements.

California Fish and Game Code

Fully Protected Species

The California Fish and Game Code (CFGC) provides protection from take for a variety of species, referred to as *fully protected species*. Section 5050 lists fully protected amphibians and reptiles, Section 3515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals. The CFGC defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research or authorized pursuant to an approved Natural Community Conservation Plan, all take of fully protected species is prohibited.

Sections 3503 and 3503.5

Section 3503 of the CFGC prohibits the killing of birds and the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests.

Section 1600: Streambed Alteration Agreements

In addition to regulating listed and special-status species, CDFW regulates activities that would interfere with the natural flow—or substantially alter the channel, bed, or bank—of a lake, river, or stream. These activities are regulated under CFGC Sections 1600–1616 and require a streambed alteration agreement. Requirements to protect the integrity of biological resources and water

quality are often conditions of streambed alteration agreements. CDFW may require avoidance or minimization of vegetation removal, use of standard erosion control measures, limitations on the use of heavy equipment, limitations on work periods to avoid impacts on fish and wildlife, and restoration of degraded sites or compensation for permanent habitat losses, among other conditions.

Clean Water Act

The Clean Water Act (CWA) was passed by Congress in 1972 with a broad mandate "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The chief purpose of the CWA is to establish the basic structure for regulating discharges of pollutants into waters of the United States. The CWA authorizes the U.S. Environmental Protection Agency (EPA) to set national water quality standards and effluent limitations, and includes programs addressing both point-source and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

Section 402: Permits for Stormwater Discharge

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA. In California, the State Water Board is authorized by EPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs).

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent to discharge stormwater and to prepare and implement a SWPPP. The SWPPP must include a site map, a description of proposed construction activities, and the BMPs that will be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Section 404: Permits for Placement of Fill in Waters of the United States (Including Wetlands)

Waters of the United States (including wetlands) are protected under Section 404 of the CWA. Any activity that involves a discharge of dredged or fill material into waters of the United States, including wetlands, is subject to regulation by the U.S. Army Corps of Engineers. *Waters of the United States* is defined to encompass navigable waters of the United States; interstate waters; all other waters where their use, degradation, or destruction could affect interstate or foreign commerce; tributaries of any of these waters; and wetlands that meet any of these criteria or are adjacent to any of these waters or their tributaries. *Wetlands* are defined under Section 404 as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions. Jurisdictional wetlands must meet three wetland delineation criteria.

- They support hydrophytic vegetation (i.e., plants that grow in saturated soil).
- They have hydric soil types (i.e., soils that are wet or moist enough to develop anaerobic conditions).
- They have wetland hydrology.

Section 401: Water Quality Certification

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must apply for water quality certification from the state. Therefore, all projects with a federal component that may affect the quality of waters of the state (including projects that require federal approval, such as a CWA Section 404 permit) must comply with CWA Section 401.

In California, CWA Section 401 is administered by the State Water Board through the RWQCBs. All areas qualifying as waters of the United States under CWA Section 404 also qualify as waters of the State of California (waters of the state) under the jurisdiction of CWA Section 401 and the State Water Board and RWQCBs; however, some areas considered as waters of the state do not qualify as waters of the United States. State Water Board jurisdiction at streams, lakes, and ponds considered as waters of the United States extends beyond the ordinary high water mark (OHWM) to the top of bank or to the greatest lateral extent of riparian vegetation, whichever is greater. Isolated wetlands, nonnavigable waters, and intrastate waters may also qualify as waters of the state subject to State Water Board jurisdiction under CWA Section 401.

Chapter 2
Methods

The potential presence of biological resources in the project area was determined through a review of existing information and reconnaissance and focused field surveys. The project area consists of the approximately 4,605-acre area that would include up to 36 wind turbines, access roads, a temporary construction and staging area, meteorological towers, and a power collection system (Figure 2). The project area is located within the Midway, California U.S. Geological Survey (USGS) 7.5-minute quadrangle. The methods of the information review and surveys are described below.

Special-Status Species

For the purpose of this report, *special-status species* are plants and animals that are legally protected under ESA, CESA, or other regulations, or species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals are those species in any of the categories listed below.

- Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.11 [listed animals], 50 CFR 17.12 [listed plants], and various notices in the Federal Register [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (81 FR 87246, December 2, 2016).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380).
- Animals fully protected in California (CFGC Section 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Animal species of special concern to the CDFW (California Department of Fish and Wildlife 2019a).
- Bats identified as medium or high priority on the Western Bat Working Group (WBWG) regional priority species matrix (Western Bat Working Group 2017).
- Plants listed as rare under the California Native Plant Protection Act (CFGC 1900 et seq.).
- Plants considered by CDFW and the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Rare Plant Ranks 1B and 2) (California Department of Fish and Wildlife 2019b; California Native Plant Society 2019).
- Plants identified by CDFW and CNPS about which more information is needed to determine their status, and plants of limited distribution (Rare Plant Ranks 3 and 4), (California Department of Fish and Wildlife 2019b; California Native Plant Society 2019), which may be included as special-status species on the basis of local significance or recent biological information.

Review of Existing Information

The sources of information listed below were reviewed to identify special-status species with potential to be present in the project area.

- A search of CDFW's California Natural Diversity Database (CNDDB) for records of special-status species occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b).
- CNPS's online *Inventory of Rare and Endangered Plants of California* records search for special-status plants within 5 miles of the project area (California Native Plant Society 2019).
- USFWS Information for Planning and Consultation (IPaC) resource list for the project area (U.S. Fish and Wildlife Service 2019a).
- The PEIR (Alameda County Community Development Agency 2014).

The ICF team also reviewed aerial photographs of the project area in Google Earth Pro to map land cover types and obtain information on historical habitat conditions.

Field Surveys

Field surveys conducted for biological resources in the project area consisted of a delineation of aquatic resources, land cover mapping, and a habitat assessment for special-status animals. Each of these surveys is described below.

Aquatic Resources Delineation

ICF botanists/wetland ecologists Kate Carpenter and Devin Jokerst conducted fieldwork for the delineation June 26–28 and July 8–11, 2019. The delineation was conducted in accordance with the guidance provided in the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Arid West Region* (U.S. Army Corps of Engineers 2008), and 33 CFR 328.3(e) and 329.11(a)(1). The OHWM was identified according to U.S. Army Corps of Engineers' Regulatory Guidance Letter No. 05-05 (U.S. Army Corps of Engineers 2005) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008).

Land Cover Mapping

Land cover mapping was conducted through a desktop review of aerial photography in Google Earth Pro and during the aquatic resources delineation. A survey to ground truth the scrub land cover type was conducted in October in coordination with the California tiger salamander and California red-legged frog habitat assessment.

Special-Status Plants

Surveys for special-status plants will be conducted during the appropriate blooming periods in spring and summer of 2020. The results of those surveys will be reported in a separate botanical survey report.

Special-Status Animals

Valley Elderberry Longhorn Beetle

ICF wildlife biologists Jennifer Haire and Stephen Barlow conducted focused surveys to map blue elderberry shrubs, which provide suitable habitat for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), in June 2020. Ms. Haire conducted surveys on June 11 and 18, and Mr. Barlow conducted surveys on June 30, 2020. Botanists also mapped several elderberry shrubs during the aquatic resources delineation. Ms. Haire surveyed the project area by vehicle and identified areas to survey on foot. Ms. Haire and Mr. Barlow then walked these areas and mapped the locations of individual and groups of elderberry shrubs in the Collector application using iPads. The purpose of the survey was to locate and map elderberry shrubs to determine if any were located within construction areas or could be affected by construction. Elderberry shrubs were not searched for elderberry beetles, and some elderberry shrubs were mapped from a distance due to steep terrain and/or presence of poison oak.

California Tiger Salamander and California Red-Legged Frog Habitat Assessment

ICF wildlife biologist Jennifer Haire conducted an assessment of the suitability of 24 ponds in the project area to provide habitat for California tiger salamander and California red-legged frog on June 26 and 27, August 12, and October 28 and 29, 2019. Datasheets were completed for each of the 24 ponds assessed. With the exception of evaluating habitat within 1.24 miles of the project boundary, the habitat assessment was conducted in accordance with the methods described in USFWS's (2005) *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog* and the California Department of Fish and Game's (now CDFW's) (2003) *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*. In view of the abundance of potentially suitable habitat in the project area, an assessment of habitat within 1.24 miles was not conducted; however, this area contains habitat similar to that of the project area (i.e., grazed grassland).

For each pond, information on ponding duration, area, water depth, vegetation, bank description, substrate, and amphibians present was recorded on datasheets. Information on upland habitat was also recorded and photographs were taken. For California red-legged frog, nonbreeding habitat is defined as aquatic habitat that may not stay inundated long enough for completion of metamorphosis but which could be used for cover, foraging, or dispersal.

Information from the CNDDB, Google Earth aerial photo images, the Midway 7.5-minute USGS topographic quadrangle, and the aquatic resources delineation was also used to inform decisions about the suitability of habitat for California tiger salamander and California red-legged frog. A site assessment report was completed and can be found in Appendix A.

Other Special-Status Species

While driving throughout the project area when conducting the California tiger salamander and California red-legged frog habitat assessment, Ms. Haire assessed the potential for the remainder of the project area to provide suitable habitat for other special-status animals. The reconnaissance survey focused on evaluating land cover types within the project area for their suitability to support special-status animals. Locations of special-status animals that were observed during the surveys were mapped. Information on the suitability of ponds, wetlands, and streams to provide suitable habitat for other special-status amphibians (western spadefoot [*Spea hammondii*] and foothill yellow-legged frog [*Rana boylii*]) and listed large branchiopods (i.e., fairy shrimp and tadpole shrimp) was also collected during the California tiger salamander and California red-legged frog habitat assessment. A list of animal species observed during the habitat assessment, reconnaissance survey, and elderberry shrub mapping surveys can be found in Appendix B.

Information from the CNDDB, Google Earth aerial photo images, the Midway 7.5-minute USGS topographic quadrangle, and the aquatic resources delineation was also used to inform decisions about the suitability of habitat for special-status animals.

Chapter 3
Results

The 4,605-acre project area is located in the rural, unincorporated eastern Alameda County and western San Joaquin County portion of the APWRA (Figure 1). This area is within the Midway 7.5-minute USGS quadrangle in Township 2 south, Range 3 east, Sections 35, and 36; Township 2 south, Range 4 east, Section 31; Township 3 south, Range 3 east, Sections 1, 2, 11, 12; and Township 3 south, Range 4 east, Sections 5, 6, 7, 8, 17, and 18 (37°41'33"N, 121°34'47"W is the approximate center of the project area).

Generally characterized by annual grassland and rolling foothills, the mostly treeless project area is steeper on the west and south and gradually flatter to the east where it slopes toward the floor of the Central Valley. Elevations in the project area range from approximately 380 to 1,879 feet above mean sea level. Land uses in the project area and surrounding area consist largely of cattle grazing and operating wind turbines and ancillary facilities. Historic land ownership appears to have altered the topography and hydrology in the project area; indicators of such alterations include historic roads and several turbine-powered water pump and storage facilities.

Land Cover Types

A *land cover type* is defined as the dominant character of the land surface discernible from aerial photographs, as determined by vegetation, water, or human uses. Land cover types are the most widely used units in analyzing ecosystem function, habitat diversity, natural communities, wetlands, streams, and plant and animal habitats.

The 12 land cover types in the project area and their approximate acreages are listed in Table 1. Global Information System (GIS) software was used to calculate land cover acreages using the land cover map that was created from the desktop review of aerial photography. Land cover types in the project area are shown in Figure 4.

Table 1. Approximate Acreages of Land Cover Types in the Project Area

Land Cover Type	Acres
Nonnative annual grassland	4,371.03
Alkali wetland	15.52
Freshwater marsh	1.15
Riparian	7.34
Scrub-shrub wetland	1.68
Vernal pool	1.62
Pond	3.71
Intermittent stream	2.43
Ephemeral stream	2.30
Scrub	3.81
Rock outcrop	47.72
Developed	147.10
Total	**4,605.41**

Wetlands (alkali wetland, freshwater marsh, riparian, scrub-shrub wetland, and vernal pool) and nonwetland waters (pond, intermittent stream, ephemeral stream,) mapped within the project area are considered potential waters of the United States and waters of the state that would be subject to federal regulations under CWA Sections 401 and 404 and to state regulation under the Porter-Cologne Water Quality Control Act. In addition, the wetland and nonwetland waters exhibiting a bed and bank would be regulated under CFGC Section 1602.

Nonnative Annual Grassland

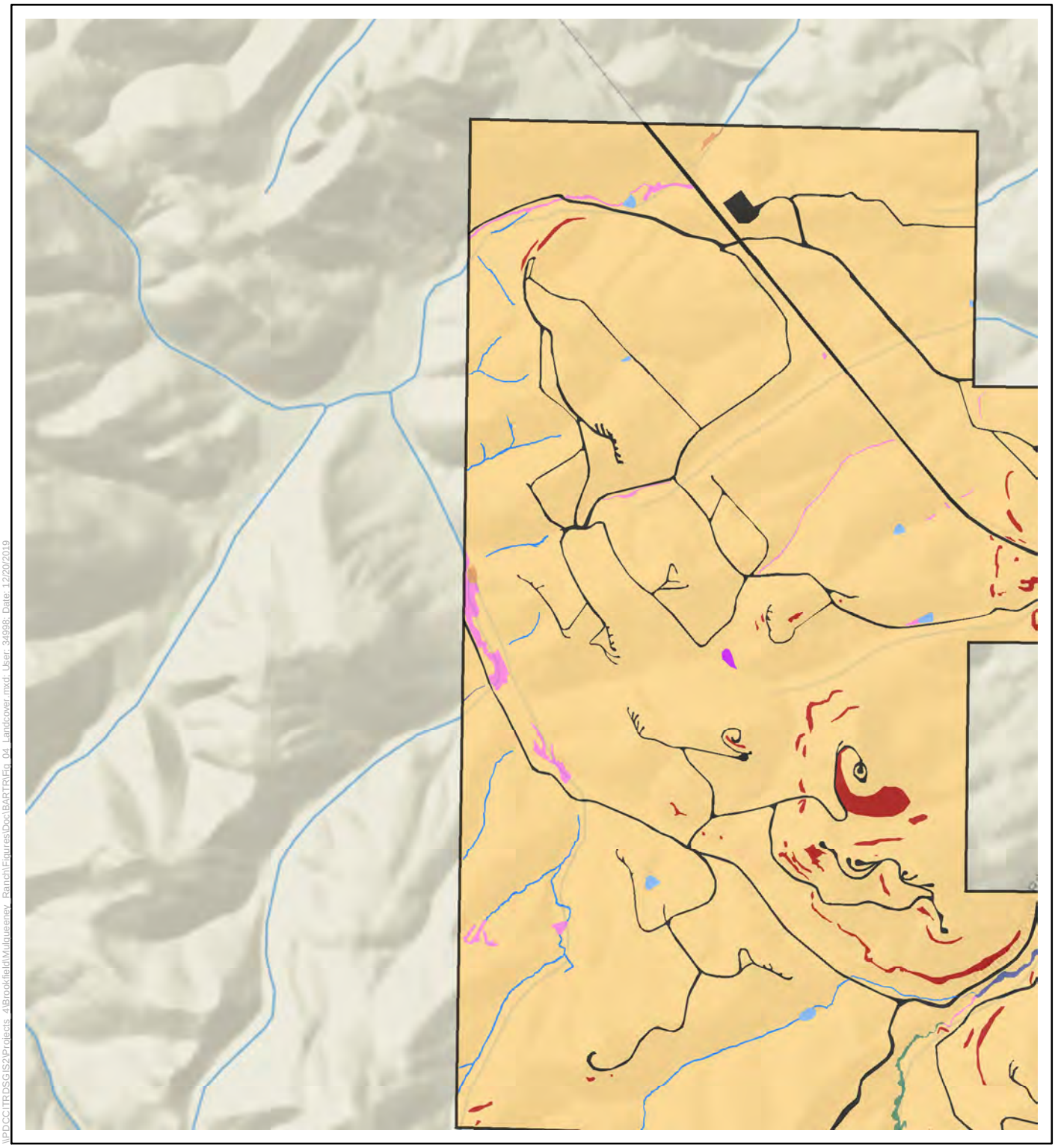
Nonnative annual grassland, the most common vegetation community in the project area, is an herbaceous community dominated by naturalized annual grasses intermixed with perennial and annual forbs. Annual grassland in the project area commonly exhibits low levels of diversity and is dominated by ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Festuca perennis*), wild oat (*Avena fatua*), and yellow star-thistle (*Centaurea solstitialis*).

Alkali Wetland

This vegetation type is relatively common in the project area, occurring in low-lying areas and valleys as both basin-shaped features and linear drainages. Portions of alkali wetland are intermittently flooded and saturated by alkaline water and are dominated by Italian ryegrass, rabbitsfoot grass (*Polypogon monspeliensis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), salt grass (*Distichlis spicata*), Baltic rush (*Juncus balticus*), and soft chess. Grasses are typically of short stature, growing less than about 3 feet high.

Riparian

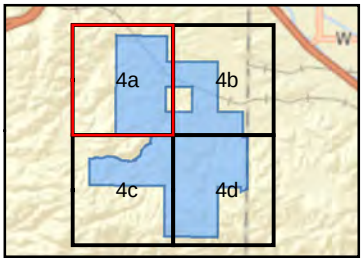
Riparian vegetation is primarily located below the OHWM of Patterson Creek. Riparian areas were dominated by Fremont's cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), and California bay (*Umbellularia californica*).



Project Boundary

Land Cover

- Alkali Wetland
- Non-Native Annual Grassland
- Developed
- Ephemeral Stream
- Freshwater Marsh
- Intermittent Stream
- Pond
- Riparian
- Rock Outcrop
- Scrub
- Scrub Shrub Wetland
- Vernal Pool



Source: ICF 2019

0 1,000 2,000 Feet

1:18,000

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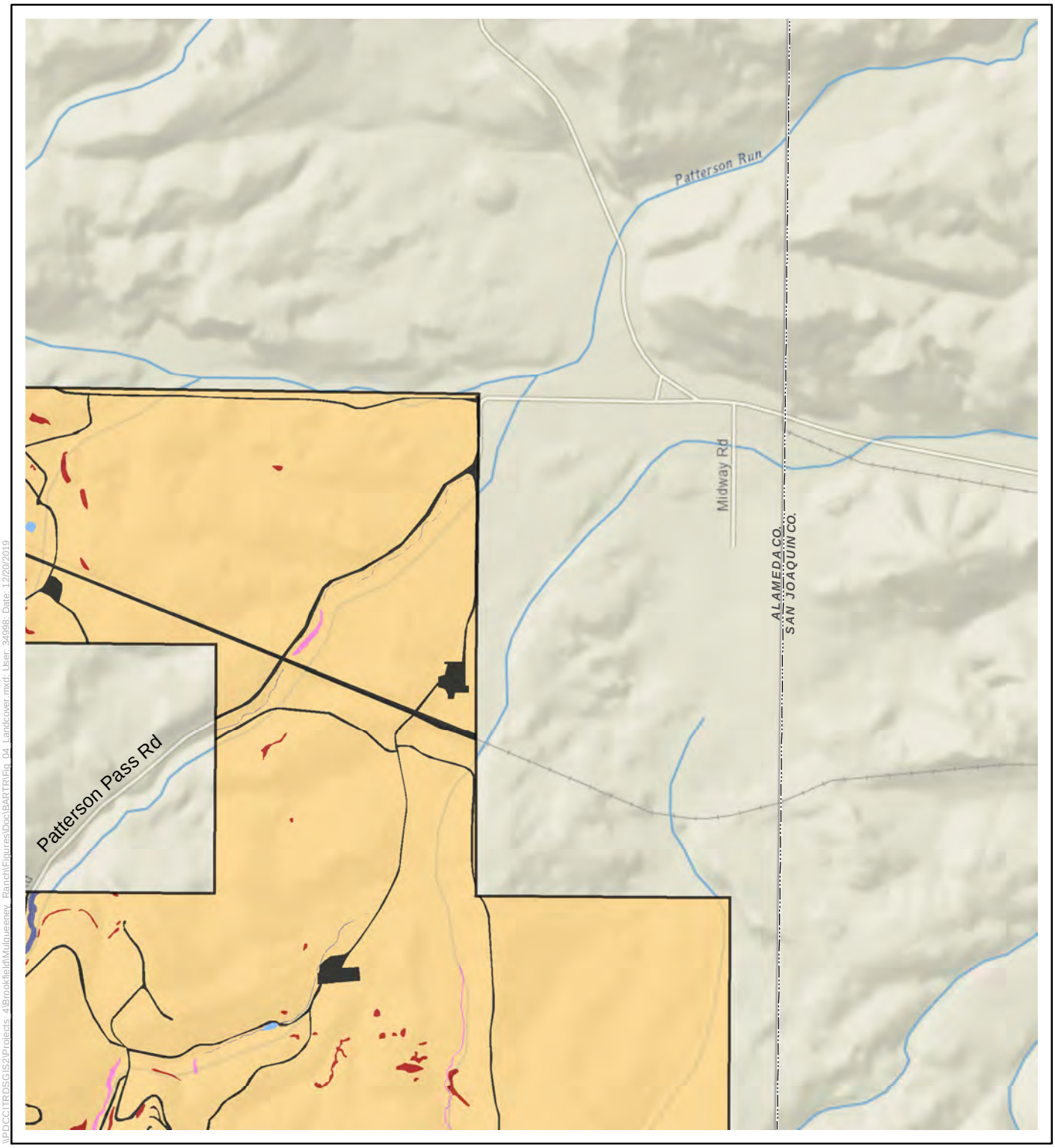
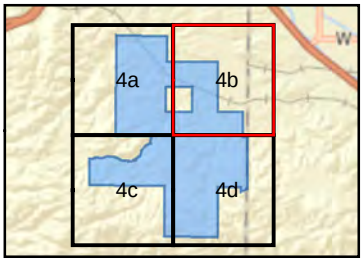
Figure 4a
Land Cover Types in the Project Area



Project Boundary

Land Cover

- Alkali Wetland
- Non-Native Annual Grassland
- Developed
- Ephemeral Stream
- Freshwater Marsh
- Intermittent Stream
- Pond
- Riparian
- Rock Outcrop
- Scrub
- Scrub Shrub Wetland
- Vernal Pool

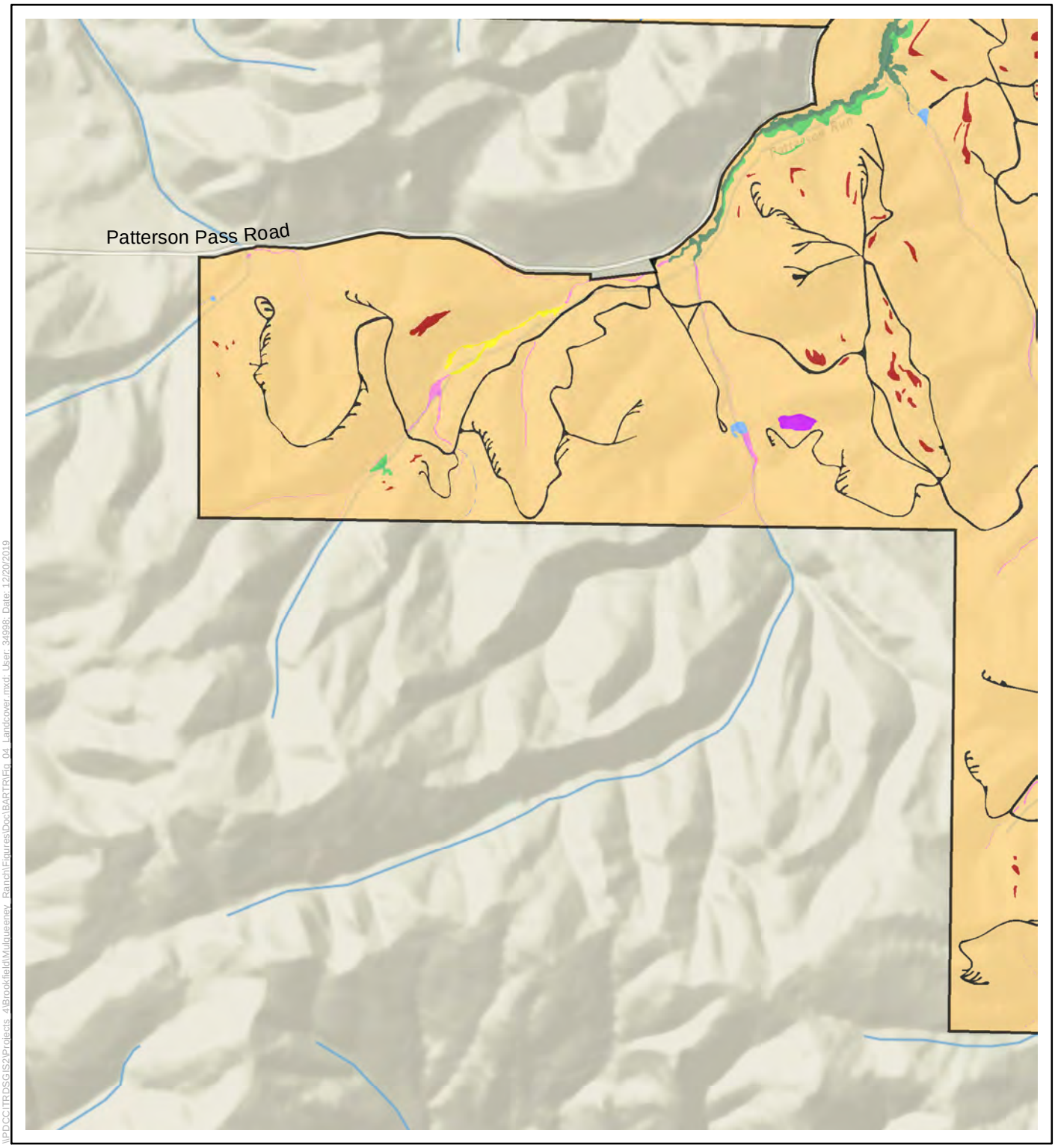


Source: ICF 2019

0 1,000 2,000 Feet

1:18,000

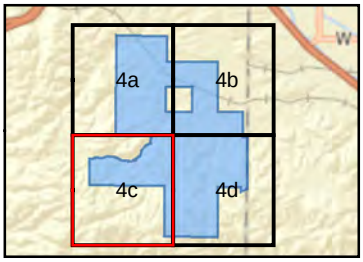
Figure 4b
Land Cover Types in the Project Area



Project Boundary

Land Cover

- Alkali Wetland
- Non-Native Annual Grassland
- Developed
- Ephemeral Stream
- Freshwater Marsh
- Intermittent Stream
- Pond
- Riparian
- Rock Outcrop
- Scrub
- Scrub Shrub Wetland
- Vernal Pool



Source: ICF 2019

0 1,000 2,000 Feet

1:18,000

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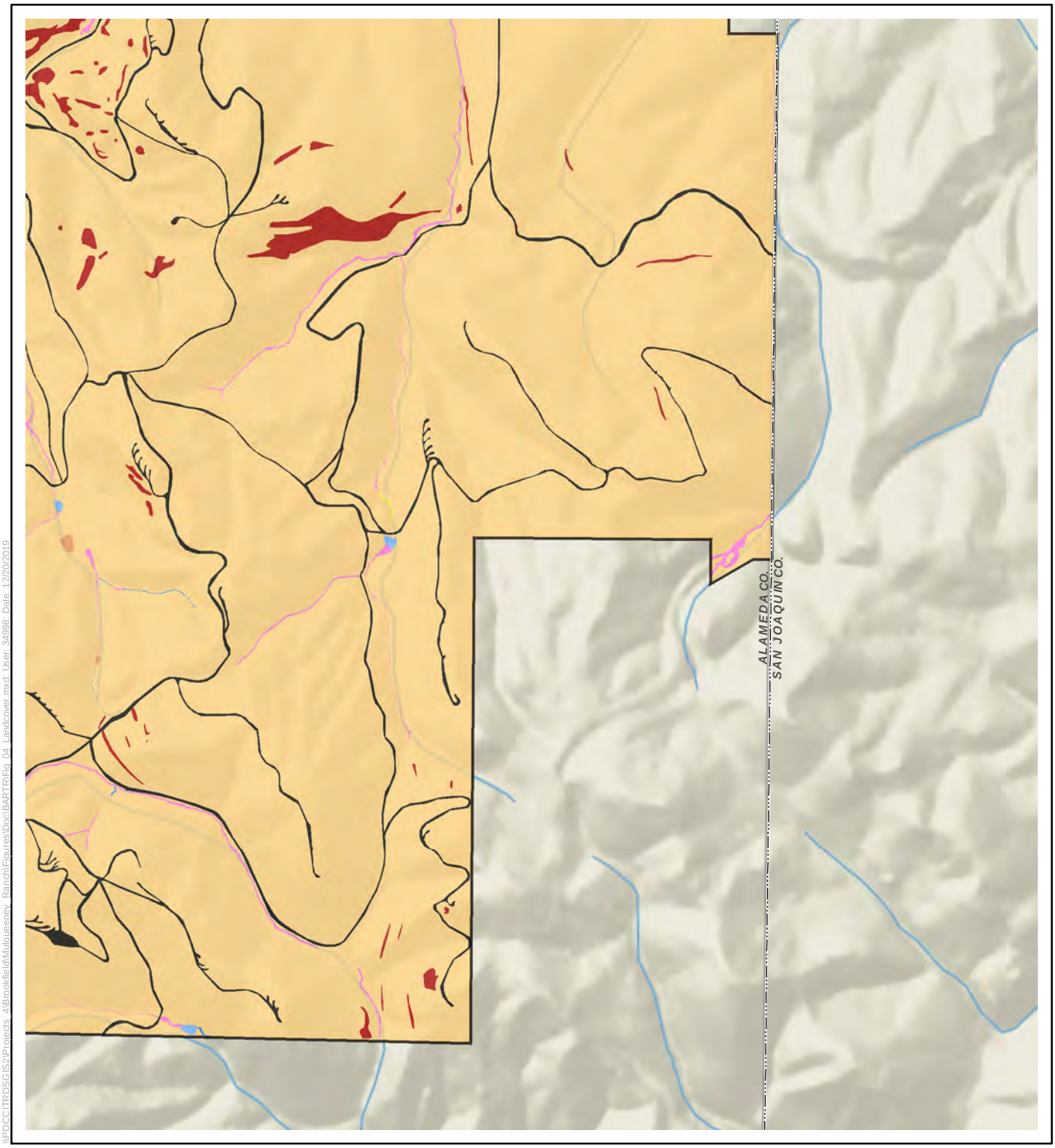
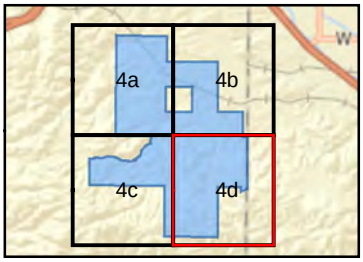
Figure 4c
Land Cover Types in the Project Area



Project Boundary

Land Cover

- Alkali Wetland
- Non-Native Annual Grassland
- Developed
- Ephemeral Stream
- Freshwater Marsh
- Intermittent Stream
- Pond
- Riparian
- Rock Outcrop
- Scrub
- Scrub Shrub Wetland
- Vernal Pool



Source: ICF 2019

0 1,000 2,000 Feet

1:18,000

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Figure 4d
Land Cover Types in the Project Area

Freshwater Marsh

Freshwater marshes are located in a range of elevations, but the vegetation types are restricted to topographic lows with standing or flowing water. The freshwater marshes were dominated by broadleaved cattail (*Typha latifolia*), hard-stem bulrush (*Schoenoplectus acutus* var*. acutus*) and common three square (*Schoenoplectus pungens*).

Scrub-Shrub Wetland

Scrub-shrub wetlands are present below the OHWM of Patterson Creek. The scrub-shrub wetlands are dominated by red willow.

Vernal Pool

Two vernal pools were delineated in the project area; one was pristine and the other was degraded, as indicated by the dominance of nonnative vegetation. Remnant vegetation observed during the late summer was dominated by vernal pool allocarya (*Plagiobothrys stipitatus*), willowherb (*Epilobium densiflorum*) and Mediterranean barley.

Pond

Ponds in the project area are small permanent or seasonal bodies of water that have been constructed for the purposes of retaining runoff water for livestock use. The surface area of these features fluctuates widely throughout the year. In the project area, these features are located in low-lying drainages and valley bottoms, and the vegetation surrounding them is typically dominated by saltgrass and nonnative annual grassland species. Some of the ponds contained bulrush and cattails lining the water.

Intermittent Stream

Intermittent streams are located in low-lying areas and valley bottoms in the project area. All intermittent streams are unvegetated, or sparsely vegetated with wetland vegetation. The only named intermittent stream in the project area is Patterson Creek.

Ephemeral Stream

Ephemeral streams occur in low-lying areas and valley bottoms in the project area. Some ephemeral streams are unvegetated, while others are dominated by nonnative annual grassland species as described above for nonnative annual grassland.

Scrub

Scrub areas are scattered along the Patterson Creek canyon. Three types of scrub are present and described below.

California Sagebrush Scrub

California sagebrush scrub is the dominant scrub type in the project area. It is located in several patches along Patterson Creek. The dominant species is California sagebrush (*Artemisia californica*). Other species present are California fuchsia (*Epilobium canum*), buckwheat (*Eriogonum* sp.), and hairy gumweed (*Grindelia hirsutula*).

Prunus Scrub

Prunus scrub is located in one area on a northeast facing slope along a tributary of Patterson Creek. The dominant species is likely cherry plum (*Prunus cerasifera*); however, it was not in flower during the October field survey to assess habitat suitability for California tiger salamander and California red-legged frog. The species will be identified during the spring botanical surveys. Other shrub species present are California mugwort (*Artemisia douglasiana*), California fuchsia, coyote brush (*Baccharis pilularis*), and white horehound (*Marrubium vulgare*). Further upslope, the dominant species transition to silver bush lupine (*Lupinus albifrons*) and gooseberry/currant (*Ribes* sp.).

California Rose Shrubland

California rose shrubland is located in one area on a northeast facing slope along Patterson Creek. It is dominated by California rose (*Rosa californica*) and blue elderberry (*Sambucus nigra*). Other species present are hairy gumweed and California sagebrush.

Rock Outcrop

Rock outcrops are scattered along ridges and hills in the project area. With lower density of nonnative annual grasses, the rock outcrops could provide refuge for native plant species. Buckwheat species observed in association with rock outcrops were annual angled stem buckwheat (*Eriogonum angulosum*) and Wright's buckwheat (*Eriogonum wrightii*).

Developed

Developed areas within the delineation area include Patterson Pass Road, gravel roads, an electric facility, and an abandoned cattle ranch with several structures.

Special-Status Species

Special-status species with moderate or high potential to occur in the project area are discussed in this section. For each species, suitable habitat in the project area and information on known occurrences in and near the project area are described. Chapter 3.4 of the PEIR includes descriptions of life history traits and habitat requirements of the plant and wildlife species discussed below; accordingly, that information is omitted from this report.

Special-Status Plants

Based on a review of the CNDDB and CNPS Inventory, 20 special-status plant species were identified as having the potential to occur in the project area vicinity (Table 2). Nonnative annual grassland and aquatic habitats in the project area have a moderate potential to support the following 17 special-status plants. The remaining species in Table 2 are not expected to occur in the project area based on the specific microhabitat conditions and geographic range.

- Large-flowered fiddleneck —federally and state listed as endangered, California Rare Plant Rank (CRPR) 1B.1
- Alkali milk-vetch (*Astragalus tener* var. *tener*)—CRPR 1B.2
- Brittlescale (*Atriplex depressa*)—CRPR 1B.2

- Lesser saltscale (*Atriplex minuscula*)—CRPR 1B.2
- Big-scale balsamroot (*Balsamorhiza macrolepis*)—CRPR 1B.2
- Big tarplant (*Blepharizonia plumosa*)—CRPR 1B.1
- Lemmon's jewelflower (*Caulanthus lemmonii*)—CRPR 1B.2
- Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)—CRPR 1B.2
- Livermore tarplant (*Deinandra bacigalupii*)—state listed as endangered, CRPR 1B.1
- Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*)—CRPR 1B.2
- Diamond-petaled California poppy (*Eschscholzia rhombipetala*)—CRPR 1B.1
- San Joaquin spearscale (*Extriplex joaquiniana*)—CRPR 1B.2
- Showy golden madia (*Madia radiata*)—CRPR 1B.1
- Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)—CRPR 1B.2
- California alkali grass (*Puccinellia simplex*)—CRPR 1B.2
- Long-styled sand spurrey (*Spergularia macrotheca* var. *longistyla*)—CRPR 1B.2
- Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)—CRPR 1B.1

Table 2. Special-Status Plants Known to Occur or with Potential to Occur in or within 5 Miles of the Mulqueeney Ranch Wind Repowering Project Area

Species	Status[a] Federal/State/CRPR	California Distribution	Habitats	Blooming Period	Likelihood to Occur in Project Area
Amsinckia grandiflora Large-flowered fiddleneck	E/E/1B.1	Foothills of Mount Diablo in Alameda, Contra Costa, and San Joaquin Counties; currently known from only three natural occurrences	Open grassy slopes in annual grasslands and cismontane woodlands	April–May	Moderate—potentially suitable annual grassland habitat is present throughout the project area. Designated critical habitat for the species occurs approximately 1.7 miles southeast of the project area, where an extant occurrence is also present.
Astragalus tener var. *tener* Alkali milk-vetch	–/–/1B.2	Historically found in western San Joaquin Valley, San Francisco Bay Area, and Monterey County; likely extirpated from all historical occurrences except those in Merced, Solano, and Yolo Counties	Playas and grasslands with adobe clay soils and alkaline vernal pools	March–June	Moderate—potentially suitable annual grassland with alkaline soils are present throughout the project area
Atriplex depressa Brittlescale	–/–/1B.2	Western Central Valley and valleys in foothills on west side of Central Valley	Mesic areas in alkali grassland, alkali meadow, and alkali scrub	May–October	Moderate—potential habitat occurs in the alkaline wetlands and grasslands in the project area
Atriplex minuscula Lesser saltscale	–/–/1B.1	Sacramento and San Joaquin Valley, Butte County to Kern County	Alkali sink and sandy alkaline soils in grasslands	May–October	Moderate—potential habitat occurs in the alkaline wetlands and grasslands in the project area
Balsamorhiza macrolepis Big-scale balsamroot	–/–/1B.2	Scattered occurrences in Coast Ranges and Sierra Nevada foothills.	Fields and rocky hillsides, below 5,100 feet; grassland, foothill woodland, at 295–4,593 feet.	March–June	Moderate—potential annual grassland habitat occurs within project area
Blepharizonia plumosa Big tarplant	–/–/1B.1	Interior Coast Range foothills from Contra Costa County to Stanislaus County	Dry hills and plains in annual grasslands	July–October	Moderate—potential annual grassland habitat occurs in the project area

Species	Status[a] Federal/State/CRPR	California Distribution	Habitats	Blooming Period	Likelihood to Occur in Project Area
Campanula exigua Chaparral harebell	–/–/1B.2	San Francisco Bay region; northern inner south Coast Ranges; Alameda, Contra Costa, San Benito, Santa Clara, and Stanislaus Counties	Rocky areas in chaparral, usually on serpentinite	May–June	Low—some scrub in the project area, but no serpentine soils are present.
Caulanthus lemmonii Lemmon's jewel-flower	–/–/1B.2	Southeast San Francisco Bay Area, south through the South Coast Ranges and adjacent San Joaquin Valley to Ventura County	Dry, exposed slopes in grasslands and pinyon-juniper woodland	March–May	Moderate—potential habitat is present in the rolling hills dominated by nonnative annual grassland.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	–/–/1B.2	Eastern San Francisco Bay Area, Salinas Valley, and Los Osos Valley	Lower slopes, flats, and swales in annual grasslands; locally on alkaline or saline soils	June–November	Moderate—potentially suitable annual grassland habitat and alkaline soils are present in the project area; species is known to occur along Altamont Pass Road near the project area.
Deinandra bacigalupii Livermore tarplant	–/E/1B.1	Endemic to Alameda County (Livermore Valley)	Alkali grassland	June–October	Moderate—alkali soils are present in the project area's nonnative annual grassland
Delphinium californicum ssp. interius Hospital Canyon larkspur	–/–/1B.2	Eastern San Francisco Bay Area, northern South Coast Range; Carmel Valley	Moist ravines and slopes in woodlands	March–May	Moderate—wooded moist ravines and slopes directed down towards Patterson Creek are in the project area
Eschscholzia rhombipetala Diamond-petaled poppy	–/–/1B.1	Interior foothills of south Coast Ranges from Contra Costa County to Stanislaus County, Carrizo Plain in San Luis Obispo County	Grassland, chenopod scrub, on clay soils, where grass cover is sparse enough to allow growth of low annuals	March–April	Moderate—potentially suitable annual grassland habitat within project area
Extriplex joaquiniana San Joaquin spearscale	–/–/1B.2	Eastern San Francisco Bay Area, west edge of Central Valley from Glenn County to Fresno County	Alkali grasslands, alkali scrublands, alkali meadows, saltbush scrublands	April–September	Moderate—potentially suitable annual grassland and alkali habitats are present throughout the project area.
Hesperolinon breweri Brewer's dwarf flax	–/–/1B.2	Known only from Alameda, Contra Costa, Napa, and Solano Counties	Generally serpentine slopes in chaparral and grasslands	May–July	Low—serpentine soils are not present in the project area

Species	Status[a] Federal/State/CRPR	California Distribution	Habitats	Blooming Period	Likelihood to Occur in Project Area
Madia radiata Showy golden madia	–/–/1B.1	Scattered populations in the interior foothills of the South Coast Ranges: Contra Costa[b], Fresno, Kings[b], Kern, Monterey[b], Santa Barbara[b], San Benito, Santa Clara, San Joaquin[b], San Luis Obispo, and Stanislaus Counties	Oak woodland, valley and foothill grassland, slopes	March–May	Moderate—potentially suitable annual grassland habitat within project area
Navarretia nigelliformis ssp. *radian* Shining navarretia	–/–/1B.2	Interior foothills of South Coast Ranges from Merced County to San Luis Obispo County	Mesic areas with heavy clay soils, in swales and clay flats; in oak woodland, grassland	May–June	Moderate— potentially suitable mesic flats and swales with clay soils occur in project area
Puccinellia simplex California alkali grass	–/–/1B.2	Scattered locations in the San Francisco Bay Area, Great Valley, Tehachapi Mountains, western Mojave Desert	Seasonally wet alkaline wetlands, sinks, flats, vernal pools, and lake margins	March–May	Moderate— potentially suitable habitat occurs in the wetlands delineated in the project area
Senecio aphanactis Chaparral ragwort	–/–/2B.2	Scattered locations in Central Western California and Southwestern California, from Alameda County to San Diego County	Oak woodland, coastal scrub; open sandy or rocky areas	January–April	Low—scrub habitat is isolated and of very limited distribution in survey area
Spergularia macrotheca var. longistyla Long-styled sand-spurrey	–/–/1B.2	Interior North Coast Ranges, Great Valley	Alkaline grassland, meadows, marshes, mud flats, hot springs	February–May	Moderate—potentially suitable habitat occurs in the nonnative annual grassland and wetlands delineated in the project area.
Tropidocarpum capparideum Caper-fruited tropidocarpum	–/–/1B.1	Historically known from the northwest San Joaquin Valley and adjacent Coast Range foothills	Grasslands in alkaline hills	March–April	Moderate—potentially suitable grassland and alkaline soils in the project area; species was known to occur along Grant Line Road adjacent to the project area

Species	Status[a] Federal/State/CRPR	California Distribution	Habitats	Blooming Period	Likelihood to Occur in Project Area

[a] Status explanations:

Federal

E = listed as endangered under ESA.

– = no listing.

State

E = listed as endangered under CESA.

– = no listing.

California Rare Plant Rank (CRPR)

1A = List 1A species: presumed extinct in California.

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

CRPR Code Extensions:

0.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat.

0.2 = fairly endangered in California (20–80% of occurrences threatened).

[b] Populations uncertain or extirpated in the county.

Large-Flowered Fiddleneck

Potential habitat for large-flowered fiddleneck occurs in the sloping grasslands throughout the project area. There is an extant CNDDB occurrence approximately 1.7 miles southeast of the project area and an extirpated occurrence approximately 1 mile south of the project area (California Department of Fish and Wildlife 2019b). The extant occurrence is in the large-flowered fiddleneck's critical habitat (50 FR 19374–19378). According to the amendment to the species' recovery plan, the naturally occurring population was absent in 2017, but two introduced populations had a combined total of 132 plants in 2017 at the site (U.S. Fish and Wildlife Service 2019b). Based on the presence of potential habitat in the project area, the potential for large-flowered fiddleneck to be present in the project area is moderate.

Alkali Milk-Vetch

Potential habitat for alkali milk-vetch occurs in wetlands and drainages in the project area. There is a single CNDDB record for an alkali milk-vetch occurrence approximately 5 miles west of the project area. The occurrence is considered possibly extirpated (California Department of Fish and Wildlife 2019b). The location of the occurrence is the "east end of Livermore Valley" and the occurrence was mapped in an area where soil survey maps have alkaline soils. Collections were made at this locale in 1891, 1892, 1938, and 1958. In 2002, no habitat or alkali milk-vetch was observed in 2002 along Greenville Road in eastern Livermore; however, more fieldwork is needed to determine the status of the occurrence (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for alkali milk-vetch to be present in the project area is moderate.

Brittlescale

Potential habitat for brittlescale is located in alkaline soils of the nonnative annual grassland in the project area. Two CNDDB records for occurrences of brittlescale, both considered exact and within the last 20 years, are located 4.6 miles west and 3.3 miles northwest of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for brittlescale to be present in the project area is moderate.

Lesser Saltscale

Potential habitat for lesser saltscale in the project area is located in mesic areas with alkaline soils in wetlands and nonnative annual grassland. Four CNDDB records for lesser saltscale occur within 5 miles of the project area; the closest occurrence is approximately 3.6 miles northwest of the project area. All four of the CNDDB occurrences are presumed extant and less than 29 years old. Based on the presence of potential habitat in the project area, the potential for lesser saltscale to be present in the project area is moderate.

Big-Scale Balsamroot

Potential habitat for big-scale balsamroot in the project area is located on rocky hillsides with nonnative annual grassland. There is one occurrence for a big-scale balsamroot approximately 4.3 miles southwest of the project area, but it is considered extirpated because of golf course development at the occurrence (California Department of Fish and Wildlife 2019b). Based on the

presence of potential habitat in the project area, the potential for big-scale balsamroot to be present in the project area is moderate.

Big Tarplant

Nonnative annual grassland in the project area provides potential habitat for big tarplant. There are 17 big tarplant CNNDB occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). All of the CNDDB occurrences are considered extant, but one occurrence is from 1932, and more field work is needed. The closest occurrence is 0.4 mile east of the project area on the other side of PG&E's Tesla substation. Based on the presence of potential habitat in the project area and nearby known occurrences, the potential for big tarplant to be present in the project area is moderate.

Lemmon's Jewelflower

Potential habitat for Lemmon's jewelflower in the project area is located in the rolling hills on dry exposed slopes. There are two CNDDB records for occurrences that are 0.7 mile southeast and 1.4 miles south of the project area. Both occurrences are considered extant, but were mapped as a best guess from collections made from 1930s through 1950s (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for Lemmon's jewelflower to be present in the project area is moderate.

Congdon's Tarplant

Potential habitat for Congdon's tarplant in the project area consists of lower slopes, flats, and swales with alkaline or saline substrates in nonnative annual grassland. There is one record for an occurrence of Congdon's tarplant approximately 3.7 miles west of the project area (California Department of Fish and Wildlife 2019b). The record is from 2004 and is presumed extant. Based on the presence of potential habitat in the project area, the potential for Congdon's tarplant to be present the project area is moderate.

Livermore Tarplant

Potential habitat for Livermore tarplant in the project area consists of the alkaline soils in nonnative annual grassland. There are two records for occurrences of Livermore tarplant that are approximately 4.5 and 4.9 miles west of the project area (California Department of Fish and Wildlife 2019b). The occurrences are considered extant and are less than 16 years old; a brittlescale occurrence overlaps with one of the Livermore tarplant occurrences. Based on the presence of potential habitat in the project area, the potential for Livermore tarplant to be present in the project area is moderate.

Hospital Canyon Larkspur

The riparian on the slopes above Patterson Creek provide suitable habitat for Hospital Canyon larkspur. There is one record for an occurrence of Hospital Canyon larkspur from 2009 that is located 2.4 miles south of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for Hospital Canyon larkspur to be present in the project area is moderate.

Diamond-Petaled Poppy

Potential habitat for diamond-petaled poppy in the project area is located in areas with clay soils and sparse vegetation coverage in nonnative annual grassland. There are four records for diamond-petaled poppy occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). The closest occurrence is approximately 0.5 mile southeast of the project area. Based on the presence of potential habitat in the project area, the potential for diamond-petaled poppy to be present in the project area is moderate.

San Joaquin Spearscale

Potential habitat for San Joaquin spearscale in the project area is located in areas with alkaline soils in nonnative annual grassland. Seven records for occurrences of San Joaquin spearscale are located within 5 miles of the project area; the closest occurrence is 2.3 miles northwest of the project area (California Department of Fish and Wildlife 2019b). All of the occurrences are considered extant and are less than 30 years old, Based on the presence of potential habitat in the project area, the potential for San Joaquin spearscale to be present in the project area is moderate.

Showy Golden Madia

Potential habitat for showy golden madia in the project area is located on the rolling hills of nonnative annual grassland. There is one record for a showy golden madia occurrence approximately 4.5 miles southeast of the project area (California Department of Fish and Wildlife 2019b). While the occurrence is considered extant, it is based on a 1922 collection, and the exact location is unknown. Based on the presence of potential habitat in the project area, the potential for showy golden madia to be present in the project area is moderate.

Shining Navarretia

Wetlands and mesic areas consisting of clay soils provide potential habitat for shining navarretia in the project area. There are two occurrences for shining navarretia within 5 miles of the project area; one occurrence is 3.2 miles north and the other is southeast adjacent to the project area (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for shining navarretia to be present in the project area is moderate.

California Alkali Grass

Wetlands and drainages in the project area provide potential habitat for California alkali grass. There is one record for a California alkali grass occurrence from 1958 that is approximately 2.5 miles northwest of the project area (California Department of Fish and Wildlife 2019b). The location is not exact and is recorded as being in the vicinity of Altamont and Altamont Pass. Based on the presence of potential habitat in the project area, the potential for California alkali grass to be present in the project area is moderate.

Long-Styled Sand-Spurrey

Nonnative annual grassland and aquatic features in the project area provide potential habitat for long-styled sand-spurrey. There are three historic (from the 1930s) records for long-styled sand-spurrey occurrences within 5 miles of the project area; all three occurrences are presumed extant (California Department of Fish and Wildlife 2019b). The closest occurrence is approximately 1.7

miles northeast of the project area. Based on the presence of potential habitat in the project area, the potential for long-styled sand-spurrey to be present in the project area is moderate.

Caper-Fruited Tropidocarpum

Nonnative grassland in the project area provides potential habitat for caper-fruited tropidocarpum. There are five records for caper-fruited tropidocarpum occurrences within 5 miles of the project area; all of these occurrences are historic and the species has not been detected during recent surveys (California Department of Fish and Wildlife 2019b). Based on the presence of potential habitat in the project area, the potential for caper-fruited tropidocarpum to be present in the project area is moderate.

Special-Status Wildlife

Based on the unofficial USFWS species list (U.S. Fish and Wildlife Service 2019a) and the CNDDB (California Department of Fish and Wildlife 2019b) records search for occurrences within 5 miles of the project area, 33 special-status wildlife species were identified as having potential to occur in the project area; these are shown in Table 3. Additionally, four wildlife species—bald eagle (*Haliaeetus leucocephalus*), little brown bat *(Myotis lucifugus*), western red bat *(Lasiurus blossevillii*), and hoary bat (*L. cinereus*)—identified in the PEIR as having a high potential to occur in the APWRA were added to Table 3. Of the 37 species identified and included in Table 3, 10 were determined to have low or no potential to occur in the project area because the project area is outside of the species' known geographic range or there is no suitable habitat in the project area (Table 3). These 10 species are not discussed further. The remaining 27 species have moderate to high potential to occur in the project area. Descriptions of suitable habitat and likelihood of occurrence in the project area for species with a moderate or high potential to be present in the project area are discussed in the subsections below.

Other special-status birds may migrate through or forage in the project area but would not nest in the project area. As such, these species are not addressed in this report because they would only be potentially affected by operation of wind turbines, and the potential effects of wind turbine operation on birds will be addressed in a separate report. Discussions of potential construction impacts on nesting special-status birds below include potential construction impacts on non-special-status nesting migratory birds as well.

Special-status species known to occur or with moderate to high potential to occur in the project area are listed below and discussed in greater detail in the following subsections.

- Vernal pool fairy shrimp (*Branchinecta lynchi*)—federally listed as threatened
- Vernal pool tadpole shrimp (*Lepidurus packardi*)—federally listed as endangered
- Valley elderberry longhorn beetle—federally listed as threatened
- Curved-foot hygrotus diving beetle (*Hygrotus curvipes*)—considered rare under CEQA
- Western bumble bee (*Bombus occidentalis occidentalis*)—state candidate endangered
- California tiger salamander—state- and federally listed as threatened
- Western spadefoot—CDFW species of special concern
- California red-legged frog—federally listed as threatened

- Western pond turtle (*Actinemys marmorata*)—CDFW species of special concern
- Blainville's horned lizard (*Phyrnosoma blainvillii*)—CDFW species of special concern
- San Joaquin coachwhip (*Masticophis flagellum ruddocki*)—CDFW species of special concern
- California glossy snake (*Arizona elegans occidentalis*) —CDFW species of special concern
- White-tailed kite (*Elanus leucurus*)—California fully protected
- Northern harrier (*Circus cyaneus*)—CDFW species of special concern
- Swainson's hawk (*Buteo swainsoni*)—state-listed as threatened
- Golden eagle—California fully protected; federally protected under the Bald and Golden Eagle Protection Act
- Western burrowing owl (*Athene cunicularia hypugaea*) —CDFW species of special concern
- Short-eared owl (*Asio flammeus*) —CDFW species of special concern
- Loggerhead shrike (*Lanius ludovicianus*)—CDFW species of special concern
- Grasshopper sparrow (*Ammodramus savannarum*) —CDFW species of special concern
- Tricolored blackbird—state-listed as threatened
- Little brown bat— medium priority on the WBWG regional priority species matrix
- Western red bat—CDFW species of special concern; high priority on the WBWG regional priority species matrix
- Hoary bat— medium priority on the WBWG regional priority species matrix
- Pallid bat (*Antrozous pallidus*)—CDFW species of special concern; high priority on the WBWG regional priority species matrix
- American badger (*Taxidea taxus*)—CDFW species of special concern
- San Joaquin kit fox—state-listed as threatened; federally listed as endangered

Table 3. Special-Status Animals Known to Occur or with Potential to Occur in or within 5 Miles of the Mulqueeney Ranch Wind Repowering Project Area

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Invertebrates				
Branchinecta longiantenna Longhorn fairy shrimp	E/–/–	Eastern margin of central Coast Ranges from Contra Costa County to San Luis Obispo County; disjunct population in Madera County	Small, clear pools in sandstone rock outcrops and clear to moderately turbid clay- or grass-bottomed pools	Low—outside of species known range; CNDDB occurrences within 5 miles west and southwest of project area; no pools in rock outcrops that were surveyed; not known to occur in grassland pools in this portion of the species range
Branchinecta lynchi Vernal pool fairy shrimp	T/–/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Common in vernal pools; also found in sandstone rock outcrop pools	Moderate—two vernal pools, several alkali wetlands, and small ephemeral ponds in the project area provide suitable habitat
Lepidurus packardi Vernal pool tadpole shrimp	T/–/–	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds	Moderate—two vernal pools, several alkali wetlands, and small ephemeral ponds in the project area provide suitable habitat
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	T/–/–	Streamside habitats below 3,000 feet above sea level throughout the Central Valley	Riparian and oak savanna habitats with elderberry shrubs and streamside habitats below 3,000 feet above sea level. Elderberry shrub is the host plant.	High—Elderberry host plants in the project area and two CNDDB occurrences within 5 miles
Hygrotus curvipes Curved-foot hygrotus diving beetle	–/–/–	Kellogg Creek watershed and one site near Oakley, Contra Costa County and Alameda County	Aquatic; small seasonal pools and wetlands and small pools left in dry creek beds, associated with alkaline-tolerant vegetation	Moderate—suitable habitat in project area; eight CNDDB records for occurrences that are 4–5 miles from the project area
Callophrys mossii bayensis San Bruno elfin butterfly	E/–/–	Three remaining populations occur at Milagra Ridge, San Bruno Mountain, Montara Mountain in San Mateo County	North-facing slopes and ridges facing Pacific Ocean from 600 to 1,100 feet; rocky outcrops and cliffs in coastal scrub	None—project area is outside of species known range

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Bombus occidentalis occidentalis Western bumble bee	–/CE/–	Historically occurred throughout much of northern California but currently appears to be absent from much of this area. Current known locations are high elevation sites in northern California and a few sites on the northern California coast	Nests underground in squirrel burrows, in mouse nests, and in open west-southwest facing slopes bordered by trees. Visits a wide variety of wildflowers. Plant genera it is most commonly associated with are *Cirsium*, *Erigonum*, *Solidago*, "Aster", *Ceonothus*, *Centaurea*, and *Penstemon*.	Moderate—suitable habitat is present but only one historic CNDDB record for an occurrence within 5 miles of the project area
Fish				
Hypomesus transpacificus Delta smelt	T/T/–	Primarily in the Sacramento–San Joaquin Estuary, but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002)	None—No suitable habitat (estuary) in the project area
Amphibians				
Ambystoma californiense California tiger salamander	T/T/–	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Sonoma County south to Santa Barbara County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy	High—many ponds in the project area provide suitable breeding habitat, and there are two CNDDB records for occurrences in the project area
Spea hammondii Western spadefoot	–/SSC/–	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in southern California	Shallow streams with riffles; seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands	High—seasonal ponds provide suitable breeding habitat in the project area; 10 CNDDB records for occurrences within 5 miles of the project area
Rana draytonii California red-legged frog	T/SSC/–	Found along the coast and coastal mountain ranges of California from Mendocino County to San Diego County and	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may	High—species observed during field surveys in the project area; many ponds in the project area provide suitable breeding habitat and there are three CNDDB records for occurrences in the project area

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
		in the Sierra Nevada from Butte County to Stanislaus County	estivate in rodent burrows or cracks during dry periods	
Rana boylii Foothill yellow-legged frog (Northern/Central Sierra Nevada Population)	–/T, SSC/–	Occurs in the Klamath, Cascade, north Coast, south Coast, Transverse, and Sierra Nevada Ranges up to approximately 6,000 feet (1,800 meters)	Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge. Usually found near riffles with rocks and sunny banks nearby.	None—no streams with rock and gravel substrate are present within the project area; four CNDDB records for occurrences that are 2.5 to 5 miles south of the project area (two of these occurrences are considered extirpated)
Reptiles				
Actinemys marmorata Western pond turtle	–/SSC/–	Uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests. Nests are typically constructed in upland habitat within 0.25 mile of aquatic habitat.	High—many ponds in the project area provide suitable habitat; there are eight CNDDB records for occurrences within 5 miles of the project area
Phyrnosoma blainvillii Blainville's (Coast) horned lizard	–/SSC/–	Sacramento Valley, including foothills, south to southern California; Coast Ranges south of Sonoma County; below 4,000 feet (1,200 meters) in northern California	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil; requires abundant ant colonies for foraging	High—annual grassland and scrub areas in the project area provide suitable habitat for the species where loose soils are present; one CNDDB record for an occurrence 700 feet from the project area; 11 additional CNDDB records for occurrences within 5 miles of the project area
Anniella pulchra Northern California legless lizard	–/SSC/–	Along the Coast, Transverse, and Peninsular Ranges from Contra Costa County to San Diego County with spotty occurrences in the San Joaquin Valley; elevation range extends from sea level to about 5,100 feet.	Occurs in moist warm loose soil with plant cover. Moisture is essential. Habitat consist of sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	Low—limited suitable habitat in the project area along Patterson Creek; three CNDDB records for occurrences within 2 miles of the project area

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
			Leaf litter under trees and bushes in sunny areas, and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Use surface objects such as rocks, boards, driftwood, and logs for cover.	
Masticophis flagellum ruddocki San Joaquin coachwhip	–/SSC/–	From Colusa County in the Sacramento Valley southward to the grapevine in the San Joaquin Valley and westward into the inner coast ranges. An isolated population occurs at Sutter Buttes. Known elevation range of 66–2,953 feet (20–900 meters).	Occurs in open, dry, vegetative associations with little or no tree cover; in valley grassland and saltbush scrub associations; and often occurs in association with mammal burrows	High—suitable grassland habitat is present within the project area; four CNDDB records for occurrences within 5 miles of the project area
Masticophis lateralis euryxanthus Alameda whipsnake	T/T/–	Restricted to Alameda and Contra Costa Counties; fragmented into five disjunct populations throughout its range	Valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat; requires rock outcrops for cover and foraging. Also occurs in grassland areas near scrub and chaparral.	Low—no chaparral and very limited scrub in the project area; grassland habitat is present throughout the project area but nearest abundant scrub habitat is approximately 1 mile south of the project area; there are eight CNDDB occurrences of the subspecies that are 0.8 to 3 miles south of the project area (all records are prior to 2003); southern portion of project area is within critical habitat
Arizona elegans occidentalis California glossy snake	–/SSC/–	Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California; absent along the central coast. There are also old reports of this snake from the Santa Monica Mountains.	Occurs in arid scrub, grassland, and chaparral habitats, and rocky washes	High—suitable grassland and scrub habitat is present within the project area; two CNDDB records for occurrences in the project area and 10 additional records within 5 miles of the project area
Thamnophis gigas Giant gartersnake	T/T/–	Central Valley from the vicinity of Burrel in Fresno County to near Chico in Butte County;	Sloughs, canals, low-gradient streams, and freshwater marshes where there is a prey base of small fish and amphibians. Also irrigation	None—no suitable habitat is present in the project area and no CNDDB occurrences within 5 miles

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
		extirpated from areas south of Fresno	ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	
Birds				
Elanus leucurus White-tailed kite	–/FP/–	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	High—species observed during eagle surveys; likely to forage in the project area but limited trees are available for nesting; three CNDDB records for nests within 5 miles of the project (the closest record is 0.65 mile from the project area)
Haliaeetus leucocephalus Bald eagle	P/E, FP/–	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into central coast; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, or stream, or the ocean	Low—one eagle observed during eagle surveys; no suitable nesting or foraging habitat (large lakes, reservoirs, or rivers) in or near the project area; no CNDDB records for occurrences within 5 miles
Circus cyaneus Northern harrier	–/SSC/–	Throughout lowland California; has been recorded in fall at high elevations	Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover	High—species observed during field surveys and eagle surveys; suitable nesting and foraging habitat is present in the project area; one record for a nest within 5 miles of the project area
Buteo swainsoni Swainson's hawk	–/T/–	Lower Sacramento and San Joaquin Valleys, Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland in Yolo County	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields	High—species observed frequently during eagle surveys; suitable foraging habitat is present but limited trees are available for nesting; six CNDDB records for nest locations 4–5 miles northeast of the project area in lowland areas

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Aquila chrysaetos Golden eagle	P/FP/–	Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley	Nests in cliffs and escarpments or tall trees; forages in annual grasslands, chaparral, or oak woodlands that provide abundant medium and large-sized mammals for prey	High—observed in the project area during surveys and suitable foraging habitat is present within the project area; could nest on large rock outcrops, transmission towers, in large isolated trees, or suboptimal breeding habitat onsite
Athene cunicularia hypugaea Western burrowing owl	–/SSC/–	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	High—species observed at several locations during summer surveys in the project area; suitable nesting, wintering, and foraging habitat present; seven CNDDB records for occurrences in the project area and numerous additional records within 5 miles of the project area
Asio flammeus Short-eared owl	–/SSC/–	Klamath Basin, Modoc Plateau, and Great Basin in northeastern California; Sacramento Valley and Sierra foothills; Suisun Marsh and the Sacramento–San Joaquin Delta; the San Joaquin Valley and adjacent Coast Range valleys south of Merced County; Mojave Desert; and limited locations along the central and southern coast	Requires open country with abundant rodents (particularly voles) and areas of tall and dense herbaceous cover to conceal nests; habitats include saline and freshwater marshes, ungrazed grasslands, old pastures, and irrigated alfalfa or grain fields	High—suitable nesting and foraging habitat in the project area; one CNDDB record from 1995 for a nest site approximately 500 feet from the project area
Lanius ludovicianus Loggerhead shrike	–/SSC/–	Resident and winter visitor in lowlands and foothills throughout California; rare on coastal slope north of Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches; nests in densely foliaged trees or shrubs	High—species observed during eagle surveys; suitable foraging habitat is present throughout the project area; nesting habitat is limited to shrubs and trees; nine CNDDB records for occurrences within 5 miles of the project area

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Vireo bellii pusillus Least Bell's vireo	E/E/–	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties. Found at the San Joaquin River National Wildlife Refuge (San Joaquin and Stanislaus Counties) in 2005.	Riparian thickets/dense willows with a well-developed understory either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons	Low—outside of species current known range; limited suitable nesting habitat along Patterson Creek; one historic (1932) CNDDB record for an occurrence approximately 4 miles from the project area
Ammodramus savannarum Grasshopper sparrow	–/SSC/–	Central Valley and foothills, west slope of Sierra Nevada, Coast Ranges, and coastal areas from Del Norte County south to San Diego County; rare breeder in the Shasta Valley area of Siskiyou County.	Occurs in short to medium height dry grasslands with scattered shrubs in the Central Valley, Sierra foothills, and south coast; found in prairies and pastures scattered in largely forested areas along north coast; nests on ground in grass or at base of shrub	High—suitable nesting and foraging habitat in the project area; one CNDDB record for an occurrence within 5 miles of the project area
Agelaius tricolor Tricolored blackbird	–/T/–	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony	High—small flock observed during the October 2019 field surveys; larger areas of freshwater marsh in the project area provide suitable nesting habitat; foraging habitat present throughout the project area; there are nine CNDDB records for nesting locations within 5 miles of the project area
Mammals				
Myotis lucifugus Little brown bat	–/–/WBWG Medium	Found throughout the northern portion of California, primarily at higher elevations	Often associated with coniferous forest; requires nearby water; roosts in hollow trees, rock outcrops, buildings, and occasionally mines and caves	High—may roost in rock outcrops in the project area; may forage or drink in the project area; documented during fatality surveys at other wind facilities in the APWRA

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Lasiurus blossevillii Western red bat	–/SSC/ WBWG High	Found from Shasta County south to the Mexican border and west of the Sierra/Cascade crest and deserts; the winter range includes western lowlands and coastal regions south of San Francisco Bay	Found primarily in riparian and wooded habitats; occurs at least seasonally in urban areas; day roosts within foliage of trees; found in fruit orchards and sycamore riparian habitats in the Central Valley	High—may roost in riparian habitat and other groups of trees in the project area; may forage or drink in the project area; documented during fatality surveys at other wind facilities in the APWRA
Lasiurus cinereus Hoary bat	–/–/WBWG Medium	Occurs throughout California from sea level to 13,200 feet; winters in southern California	Primarily roosts in forested habitats; also found in riparian areas and in park and garden settings in urban areas; day roosts within foliage of trees	High—may roost in riparian habitat and other groups of trees in the project area; may forage or drink in the project area; documented during fatality surveys at other wind facilities in the APWRA
Antrozous pallidus Pallid bat	–/SSC/ WBWG High	Low elevations throughout California	Occurs in a variety of habitats including desert, shrub-steppe grassland, and higher (>7,000 feet) coniferous forest; most abundant in arid areas; day and night roosts in crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of coast redwoods and giant sequoias, bole cavities of oaks, exfoliating Ponderosa pine and valley oak bark, deciduous trees in riparian areas, and fruit trees in orchards), bridges, and buildings	High—may roost in rock outcrops with larger crevices in the project area; may forage or drink in the project area; there is one CNDDB record for an occurrence approximately 4.5 miles from the project area; documented during fatality surveys at other wind facilities in the APWRA
Corynorhinus townsendii Townsend's big-eared bat	–/SSC/ WBWG High	Widespread throughout California, from low desert to mid-elevation montane habitats	Roosts in caves, tunnels, mines, buildings, and other cave-like spaces. Will night roost in more open settings, including under bridges.	Low—may forage in the project area but limited roosting habitat (buildings) is present; one CNDDB record for an occurrence within 5 miles of the project area

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area
Taxidea taxus American badger	–/SSC/–	In California, badgers occur throughout the state except in humid coastal forests of northwestern California in Del Norte and Humboldt Counties	Badgers occur in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub; the principal habitat requirements for the species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground	High—suitable habitat is present throughout the project area; three CNDDB records for occurrences in the project area and 14 additional occurrences within 5 miles of the project area
Vulpes macrotis mutica San Joaquin kit fox	E/T/–	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County	Saltbush scrub, grassland, oak, savanna, and freshwater scrub	Moderate—suitable habitat is present throughout the project area; one CNDDB record for an occurrence in the project area and 17 additional occurrences within 5 miles of the project area, although all records are more than 20 years old; there is a potential for incidental use of the project area by foxes dispersing from the central San Joaquin Valley

Status explanations:

Federal

E = listed as endangered under ESA.
T = listed as threatened under ESA.
P = protected under the Bald and Golden Eagle Protection Act.
– = no listing.

State

E = listed as endangered under CESA.
T = listed as threatened under CESA.
CT = candidate for threatened status under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
– = no listing.

Scientific Name Common Name	Status Federal/State/ Other	Geographic Distribution	Habitat Requirements	Likelihood to Occur in the Project Area

Other

Western Bat Working Group (WBWG) Priority

High Species are imperiled or at high risk of imperilment.

Medium This designation indicates a level of concern that should warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.

Potential Occurrence in the Project Area

High: Known occurrences of the species within the project area, or CNDDB, or other documents, records the occurrence of the species within a 5-mile radius of the project area and suitable habitat is present within the project area.

Moderate: CNDDB, or other documents, records the known occurrence of the species within a 5-mile radius of the project area and lower quality or limited habitat is present or no known occurrences within 5 miles but higher quality suitable habitat is present within the project area.

Low: CNDDB, or other documents, does not record the occurrence of the species within a 5-mile radius of the project area and poor quality suitable habitat is present within the project area.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp (collectively referred to as *vernal pool branchiopods*) in the project area consists of two vernal pools, small ephemeral ponds, and seasonal alkali wetlands. There are no CNDDB records for occurrences of vernal pool fairy shrimp or vernal pool tadpole shrimp within the project area (California Department of Fish and Wildlife 2019b), and the project area is not located within designated critical habitat for these species (71 FR 7171–7182; 7195–7210). There are two records for occurrences of vernal pool fairy shrimp approximately 5 miles from the project area; there are no vernal pool tadpole shrimp occurrences within 5 miles (California Department of Fish and Wildlife 2019b). Based on the presence of suitable habitat in the project area, the potential for vernal pool branchiopods to be present in the project area is moderate.

Valley Elderberry Longhorn Beetle

Several blue elderberry shrubs are present in the project area and provide suitable habitat for valley elderberry longhorn beetle. There are two CNDDB records for occurrences of valley elderberry longhorn beetle that are approximately 2 and 4 miles southeast of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable habitat in the project area and known presence of the species within the project vicinity, the potential for valley elderberry longhorn beetle to be present in the project area is high.

Curved-Foot Hygrotus Diving Beetle

Suitable habitat for curved-foot hygrotus diving beetle in the project area consists of two vernal pools, small ephemeral ponds, and seasonal alkali wetlands. There are eight CNDDB records for occurrences of curved-foot hygrotus diving beetle within 5 miles of the project area (California Department of Fish and Wildlife 2019b). All of the occurrences are located 4 to 5 miles north and northwest of the project area. Based on the presence of suitable habitat in the project area, the potential for curved-foot hygrotus diving beetle to be present in the project area is moderate.

Western Bumble Bee

Nonnative annual grassland with flowering plants in the project area provide suitable habitat for western bumble bee. There is one CNDDB record for an occurrence of western bumble approximately 2 miles south of the project area (California Department of Fish and Wildlife 2019b). A western bumble bee was collected from this location between 1946 and 1951. Based on the presence of suitable habitat in the project area and nearby known occurrence, the potential for western bumble bee to be present in the project area is moderate.

California Tiger Salamander

Eighteen ponds in the project area provide suitable breeding habitat for California tiger salamander (Appendix A). Nonnative annual grassland throughout the project area provides suitable upland (dispersal and estivation) habitat for California tiger salamander. There are two CNDDB records for occurrences of California tiger salamander in the project area and numerous additional occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). The project area is not located within designated critical habitat for California tiger salamander (70 FR 49418–

49458). Based on the presence of suitable habitat and known occupancy in the project area, there is a high potential for California tiger salamander to be present in the project area.

Western Spadefoot

Eight ephemeral ponds (Ponds F, O, P-1, S, U, W, X, and Y—see Appendix A for a figure showing pond locations) in the project area provide suitable breeding habitat for western spadefoot. Nonnative annual grassland throughout the project area provides suitable upland (dispersal and estivation) habitat for western spadefoot. There are 10 CNDDB records for occurrences of western spadefoot within 5 miles of the project area (California Department of Fish and Wildlife 2019b). The closest occurrence is from 2017 and is approximately 0.5 mile southwest of the project area. Based on the presence of suitable habitat and known occupancy near the project area, there is a high potential for western spadefoot to be present in the project area.

California Red-Legged Frog

Fourteen ponds in the project area provide suitable breeding habitat for California red-legged frog (Appendix A). Freshwater marsh, riparian, scrub-shrub wetland, and intermittent stream provide suitable nonbreeding aquatic habitat for California red-legged frog. Ephemeral streams and some alkali wetlands only flow during rain events and do not provide suitable nonbreeding habitat for California red-legged frog. Nonnative annual grassland throughout the project area provides suitable upland (dispersal and estivation) habitat for California red-legged frog. California red-legged frogs may also use alkali wetlands and intermittent streams throughout the project area for dispersal and foraging. California red-legged frog was detected (observed or heard) at Ponds A, D, and G during the California tiger salamander and California red-legged frog habitat assessment (Appendix A). There are three CNDDB records for occurrences of California red-legged frog in the project area and numerous additional occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). California red-legged frog is present in the project area. Based on the presence of suitable habitat and known occupancy in the project area, there is a high potential for California red-legged frog to be present in the project area.

The entire project area is within critical habitat unit ALA-2 for California red-legged frog (75 FR 12912). Primary constituent elements of designated critical habitat for this species are listed below.

- Aquatic breeding habitat (ponds, streams, wetlands).
- Aquatic nonbreeding (e.g., freshwater features not suitable for breeding) and riparian habitat.
- Upland habitats associated with riparian and aquatic habitat that provide food and shelter.
- Dispersal habitat (i.e., accessible upland or riparian habitat within and between occupied or previously occupied sites that are located within 1 mile of each other, and that do not contain barriers to dispersal such as heavily traveled roads without bridges or culverts).

The project area contains all four of the primary constituent elements of designated critical habitat.

Western Pond Turtle

Perennial ponds and seasonal ponds (when they contain water) in the project area provide suitable aquatic habitat for western pond turtle. Nonnative annual grassland adjacent to ponds provides potential nesting habitat for pond turtles. If pond turtles are present, they could deposit eggs in the nearby grassland habitat. There are eight CNDDB records for occurrence of western pond turtle

within 5 miles of the project area (California Department of Fish and Wildlife 2019b). The closest occurrence is approximately 1.6 miles south of the project area. Based on the presence of suitable habitat in the project area and known occupancy in the project vicinity, there is a moderate potential for western pond turtle to be present in the project area.

Blainville's Horned Lizard and California Glossy Snake

Nonnative annual grassland and scrub in the project area provide suitable habitat for Blainville's horned lizard and California glossy snake. Blainville's horned lizard is associated with areas where there is loose or sandy soil. There is one CNDDB record for an occurrence of Blainville's horned lizard that is 700 feet from the project area and 11 additional records for occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). There are two CNDDB records for occurrences of California glossy snake in the project area and 10 additional records within 5 miles of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable habitat in the project area and known occupancy in and immediately adjacent to the project area, there is high potential for Blainville's horned lizard and California glossy snake to be present in the project area.

San Joaquin Coachwhip

Nonnative annual grassland in the project area provides suitable habitat for San Joaquin coachwhip. The species is often associated with small mammal burrows, which are abundant in the project area. There are four CNDDB records for occurrences of San Joaquin coachwhip within 5 miles of the project area (California Department of Fish and Wildlife 2019b). The closest record is 0.5 mile northeast of the project area; there is also an imprecisely mapped occurrence southeast of the project area that could be immediately adjacent to or within 2 miles of the project area. Based on the presence of suitable habitat in the project area and known occupancy in the project vicinity, there is a high potential for San Joaquin coachwhip to be present in the project area.

White-Tailed Kite, Swainson's Hawk, and Golden Eagle

Suitable nesting habitat for white-tailed kite and Swainson's hawk in the project area is limited to willows and oaks along Patterson Creek, Peruvian pepper trees (*Schinus mole*) associated with a small house and cattle holding area, and a few scattered trees in the northeastern portion of the project area. Large rock outcrops, transmission towers, and large isolated trees in the project area provide suitable nesting habitat for golden eagle. Golden eagles could also nest in suboptimal habitat such as small trees and on the ground. Nonnative annual grassland in the project area is densely populated with small rodents (e.g., ground squirrels, voles and mice) that provide abundant prey for raptors including white-tailed kite, Swainson's hawk, and golden eagle.

All three of these species were observed during golden eagle surveys. There are three CNDDB records for white-tailed kite nests within 5 miles of the project, with the closest nest being 0.65 mile from the project area (California Department of Fish and Wildlife 2019b). There are six CNDDB records for Swainson's hawk nest locations that are 4–5 miles northeast of the project area in lowland areas (California Department of Fish and Wildlife 2019b). There are no CNDDB records for golden eagle nests within 5 miles of the project area. Based on the limited amount of suitable nesting habitat, there is a lower potential for white-tailed kite, Swainson's hawk, and golden eagle to nest in the project area; however, there is a high potential for all species to forage in the project area, and all three species have been observed in the project area.

Northern Harrier and Short-Eared Owl

Areas of tall, dense grasses in nonnative annual grassland and freshwater marsh provide suitable nesting habitat for northern harrier in the project area. Short-eared owl could nest in nonnative annual grassland in areas with taller, dense vegetation, especially on small knolls, ridges, or hummocks. Nonnative grassland throughout the project area that is populated with small rodents provides suitable foraging habitat for northern harrier and short-eared owl. There is one CNDDB record for a northern harrier nest approximately 2 miles northeast of the project area (California Department of Fish and Wildlife 2019b). There is one CNDDB record from 1995 for a short-eared owl nest site approximately 500 feet from the project area (California Department of Fish and Wildlife 2019b). Northern harrier was observed during the October field surveys and golden eagle surveys, but short-eared owl was not observed. Based on the presence of suitable nesting and foraging habitats in the project area and known occupancy in and near the project, there is a high potential for northern harrier and short-eared owl to be present in the project area.

Western Burrowing Owl

Nonnative annual grassland throughout the project area provides suitable nesting, wintering, and foraging habitat for western burrowing owl. During the California tiger salamander and California red-legged frog habitat assessment on June 27, burrowing owls were observed near Ponds O and R and are presumed to be using the project area for breeding. Several burrows near these ponds had signs of burrowing owl use (white wash, feathers, and pellets). Burrowing owls were also observed numerous times during eagle surveys and during the October field surveys. There are seven CNDDB records for burrowing owl occurrences in the project area and numerous additional records within 5 miles of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable nesting, wintering, and foraging habitats in the project area and known occupancy in the project area, there is a high potential for western burrowing owl to be present in the project area.

Loggerhead Shrike

Suitable nesting habitat for loggerhead shrike in the project area is limited to shrubs and trees along Patterson Creek, Peruvian pepper trees (*Schinus mole*) associated with a small house and cattle holding area, and a few scattered trees in the northeastern portion of the project area. Nonnative annual grassland throughout the project area provides suitable foraging habitat for loggerhead shrike. Loggerhead shrikes were observed numerous times during eagle surveys. There are nine CNDDB records for loggerhead shrike occurrences within 5 miles of the project area; the closest occurrence is approximately 1 mile from the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable nesting and foraging habitat in the project area and known occupancy in and near the project area, there is a high potential for loggerhead shrike to be present in the project area.

Grasshopper Sparrow

Nonnative annual grassland throughout the project area provides suitable nesting and foraging habitat for grasshopper sparrow. There is one CNDDB record for a grasshopper sparrow occurrence approximately 3.25 miles south of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable nesting and foraging habitat in the project area and

known occupancy in the vicinity of the project area, there is a high potential for grasshopper sparrow to be present in the project area.

Tricolored Blackbird

Larger patches of freshwater marsh in the project area provide suitable nesting habitat for tricolored blackbirds. Nonnative annual grassland and aquatic habitats throughout the project area provide suitable tricolored blackbird foraging habitat. A small flock of tricolored blackbirds was observed near the cattle holding area near Pond K during the October field surveys. There are nine CNDDB records for tricolored blackbird nesting locations within 5 miles of the project area; the closest occurrence is approximately 1.7 miles east of the project area (California Department of Fish and Wildlife 2019b). Based on the presence of suitable nesting and foraging habitats in the project area and known occupancy in the project area, there is a high potential for tricolored blackbird to be present in the project area.

Little Brown Bat and Pallid Bat

Some of the rock outcrops in the project area have crevices that may provide suitable roosting habitat for little brown bat or pallid bat. Pallid bats would require larger crevices due to their larger size. Little brown bat and pallid bat could forage throughout the project area and drink over ponds and Patterson Creek. There are no CNDDB records for little brown bat within 5 miles of the project area, and there is one pallid bat CNDDB record for an occurrence approximately 4.5 miles from the project area (California Department of Fish and Wildlife 2019b). Little brown bat has been documented during fatality surveys at other wind facilities in the APWRA (H.T. Harvey & Associates 2020; ICF International 2016). Pallid bat has not been documented during fatality surveys at other wind facilities in the APWRA. Based on the presence of suitable roosting and foraging/drinking habitat in the project area and known occurrence in the APWRA/project vicinity; there is a high potential for little brown bat and pallid bat to be present in the project area.

Western Red Bat and Hoary Bat

Western red bat and hoary bat could roost in riparian habitat along Patterson Creek or in other groups of trees in the project area. Western red bat and hoary bat could forage throughout the project area and drink over ponds and Patterson Creek. There are no CNDDB records for western red bat or hoary bat within 5 miles of the project area. Western red bat has been documented during fatality surveys at other wind facilities in the APWRA (H.T. Harvey & Associates 2020; Great Basin Bird Observatory and H.T. Harvey & Associates 2020; ICF International 2016; Ventus Environmental Solutions 2016). Hoary bat has also been documented during fatality surveys at other wind facilities in the APWRA (H.T. Harvey & Associates 2020, Great Basin Bird Observatory and H.T. Harvey & Associates 2020, ICF International 2016, Ventus Environmental Solutions 2016, Insignia Environmental 2012). Based on the presence of suitable roosting and foraging/drinking habitat in the project area and known occurrence in the APWRA; there is a high potential for western red bat and hoary bat to be present in the project area.

American Badger

Nonnative annual grassland in the project area provides suitable habitat for American badger. Numerous burrows are present in the project area that provide suitable denning habitat. There are three CNDDB records for occurrences of American badger in the project area and 14 additional occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b).

Based on the presence of suitable habitat in the project area and records for past occurrences in the project area, there is a high potential for American badger to be present in the project area.

San Joaquin Kit Fox

The project area is within the northern range of San Joaquin kit fox. The northern range of San Joaquin kit fox includes a narrow band of habitat along the western edge of the San Joaquin Valley from San Luis Reservoir in western Merced County north to central Alameda and Contra Costa Counties (linkage corridor) that is generally characterized by highly fragmented habitat of low suitability. Based on current habitat conditions, the northern range is unlikely to support a population of San Joaquin kit foxes (Cypher et al. 2013). Evidence indicates that kit foxes north of Santa Nella either occur at extremely low densities or, more likely, are only intermittently present (Constable et al. 2009).

Suitable denning, foraging, and dispersal habitat for San Joaquin kit fox is present in nonnative annual grassland throughout the project area. Numerous burrows of sufficient size for kit fox use are present in the project area. There is one CNDDB record from 1975 for an occurrence within the project area; there are 17 additional historical (1973–1998) records for occurrences of San Joaquin kit fox within 5 miles of the project area (California Department of Fish and Wildlife 2019b). Since 1998, the population structure of San Joaquin kit fox has become more fragmented, with some resident satellite populations (particularly in the northern range) having been locally extirpated (U.S. Fish and Wildlife 2010:15). Although there is suitable habitat in the project area and known occurrences in and near the project area, the lack of recent sightings in the region and the extent of habitat fragmentation in the northern portion of the species' range reduce the potential for San Joaquin kit fox to be present in the project area to moderate.

Non-Special-Status Wildlife

Migratory Birds

Non-special-status ground-nesting migratory birds have the potential to nest and forage in the project area. Although more limited, trees and shrubs in the project area provide suitable habitat for tree- and shrub-nesting birds. Electrical towers in the project area also provide suitable nesting habitat for raptors, and some other birds such as American raven. The breeding season for migratory birds generally extends from February through August, although nesting periods vary by species.

Other Bats Documented in the APWRA

Other special-status (not discussed above) and non-special-status bats have been documented during fatality surveys at other wind energy facilities in the APWRA. Special-status species that have been documented are western mastiff bat (*Eumops perotis*; considered high priority by the WBWG) and silver-haired bat (*Lasionycteris noctivagans*; considered medium priority by the WBWG), and non-special-status species that have been documented are Mexican free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), and California myotis (*Myotis californicus*).

Western mastiff bat could roost in crevices and cracks in the rock outcrops in the project area. Western mastiff bat could forage throughout the project area and drink over ponds and Patterson Creek. While there are no CNDDB records for western mastiff bats within 5 miles of the project area, one western mastiff bat was recorded during fatality surveys in 2018 at the Golden Hills Wind

Energy Center in the APWRA (H.T. Harvey & Associates 2020). Based on the presence of suitable roosting and foraging/drinking habitat in the project area and known occurrence in the APWRA, there is a high potential for western mastiff bat to be present in the project area.

Silver-haired bat occurs primarily in the northernmost portion of California and at higher elevations in the southern and coastal mountain ranges (Brown and Pierson 1996) but may occur anywhere in California during their spring and fall migrations. As such, silver-haired bat would not establish maternity or winter roosts in the project area. Silver-haired bat could forage, drink, or night roost in the project area during spring and fall migrations. Although there are no CNDDB records for silver-haired bat within 5 miles of the project area, silver-haired bat has been recorded in the APWRA during fatality surveys (H.T. Harvey & Associates 2020; Great Basin Bird Observatory and H.T. Harvey & Associates 2020). Based on the presence of foraging/drinking habitat in the project area and known occurrence in the APWRA, there is a high potential for silver-haired bat to be present in the project area.

Mexican free-tailed bat roosts in a variety of structures including caves, rock crevices on cliff faces, abandoned mines and tunnels, bridges, and large culverts (Western Bat Working Group 2017). Mexican free-tailed bats could roost in crevices and cracks in the rock outcrops in the project area. They could also forage throughout the project area and drink over ponds and Patterson Creek. Mexican free-tailed bat has been documented during fatality surveys at other wind facilities in the APWRA (H.T. Harvey & Associates 2020; Great Basin Bird Observatory and H.T. Harvey & Associates 2020; ICF International 2016; Ventus Environmental Solutions 2016; Insignia Environmental 2012). Based on the presence of suitable roosting and foraging/drinking habitat in the project area and known occurrence in the APWRA, there is a high potential for Mexican free-tailed bat to be present in the project area.

Big brown bat is commonly found roosting in buildings, mines, and bridges, but it has also been found in caves and crevices in cliff faces. Big brown bat has also been documented roosting in large snags (Western Bat Working Group 2017). Big brown bats could roost in crevices and cracks in the rock outcrops in the project area. They could also forage throughout the project area and drink over ponds and Patterson Creek. Big brown bats have been recorded during fatality surveys in the APWRA (H.T. Harvey & Associates 2020, Great Basin Bird Observatory and H.T. Harvey & Associates 2020). Based on the presence of suitable roosting and foraging/drinking habitat in the project area, there is a high potential for big brown bat to be present in the project area.

California myotis has been found roosting alone or in small groups in caves, mines, buildings, rocky hillsides, and under tree bark during the summer. Individuals and small groups roost in caves, mines, and buildings in the winter (Western Bat Working Group 2017). Crevices in some rock outcrops in the project area may provide suitable roosting habitat for California myotis. This bat could also forage throughout the project area and drink over ponds and Patterson Creek. California myotis has been recorded during fatality surveys at other wind facilities in the APWRA (H.T. Harvey & Associates 2020; Ventus Environmental Solutions 2016; Insignia Environmental 2012). Based on the presence of suitable roosting and foraging/drinking habitat in the project area, there is a high potential for California myotis to be present in the project area.

Chapter 4
Effects Analysis

This section assesses the effects on biological resources that could result from construction, maintenance, and non-turbine-related operations (i.e., new substation lights) of the proposed project. Impacts from decommissioning are also qualitatively assessed. Determinations about the potential for the project to have significant impacts on special-status species will be made by Alameda County, the lead agency under CEQA.

Impacts on Land Cover

GIS software was used to calculate land cover impacts by overlaying the project footprint on the land cover layer and adding the acres of overlap for each land cover type. The proposed project would primarily affect nonnative annual grassland habitat in the project area. Proposed project activities would result in a small amount of permanent and temporary impacts on state- and federally regulated aquatic resources (i.e., alkali wetland, intermittent stream, and ephemeral stream). Land cover that provides habitat for special-status plant and wildlife species could be directly or indirectly affected by construction and maintenance activities.

Table 4 shows the permanent and temporary impacts of project construction by land cover type and Table 5 shows the impacts on nonnative annual grassland by construction component and maintenance. Overall, a small portion of the site—approximately 6% of the total area—would be disturbed during the construction phase of the proposed project. Less than 1% of the property would be disturbed during maintenance activities over the life of the project. In 35 years, there would be some temporary disturbance associated with decommissioning activities, and some of the permanently impacted nonnative annual grassland would be restored.

Table 4. Impacts on Land Cover Types (acres) from Construction

Land Cover/Habitat Type	Permanent	Temporary	Total
Nonnative annual grassland	26.03	263.66	274.77
Alkali wetland	0.03	0.53	0.56
Freshwater marsh	0	0	0
Riparian	0	0.007	0.007
Scrub-shrub wetland	0	0	0
Vernal pool	0	0	0
Pond	0.02	0.1	0.12
Intermittent stream	0.01	0.11	0.12
Ephemeral stream	0	0.01	0.01
Scrub	0	0	0
Rock outcrop	0.04	1.93	1.97
Developed[a]	N/A	N/A	N/A
Total	**26.12**	**251.47**	**277.56**

[a] The acreage of impacts on the developed land cover type was not calculated because it is not a biological resource.

Table 5. Impacts on Nonnative Annual Grassland from Construction and Maintenance (acres)

Activity	Permanent Impact	Temporary Impact
Construction		
Wind turbines and foundations	1.98	106.26
New access roads	11.48	32.60
Access road widening	9.266	52.96
Road radius improvements	2.56	5.04
Crane path	0	14.88
Temporary construction and staging area	0	15.19
Meteorological towers	0.06	1.50
Power collecting system	0	33.33
New substation	0.68	1.92
Total	**26.02***	**263.66**
*The annual grassland permanent impact acreage does not exactly match that shown in Table 4 due to rounding.		
Maintenance[a]		
Turbine repair or replacement (0.1 acre every 10 years)	0	0.3
Access road maintenance (0.1 acre every 5 years)[b]	0	0.6
Total	**0**	**0.9**

[a] Although the operational period of the project is expected to be up to 35 years, ground-disturbing maintenance activities would only occur in operational years 5–30.

[b] Access road maintenance would primarily occur on existing graveled access roads, but some adjacent annual grassland habitat could be disturbed, estimated as 0.1 acre every 5 years.

Impacts on Aquatic Resources

Construction and maintenance activities would not result in any permanent impacts on vernal pools in the project area. Construction of turbines, the power collection system, the temporary construction area, and access road widening have the potential to affect (permanent and temporary) up to 0.56 acre of alkali wetland, 0.12 acre of pond, 0.12 acre of intermittent stream, and 0.01 acre of ephemeral stream. As noted in the project description, HDD may be used to avoid the surface disturbance of some aquatic habitats; however, the exact locations where HDD may be used are not currently known. Consequently, impacts on aquatic habitats are assumed to occur but may ultimately be less than those described.

Additionally, some activities could have direct or indirect effects (not quantified) on some aquatic habitats such the introduction of contaminants during construction (direct) or changes in hydrology as a result of changes in topography, increased impervious surface, or soil compaction (indirect). Further study would be required to determine the extent of indirect effects from changes in hydrology. A qualitative discussion of potential indirect effects on aquatic habitats for special-status species is presented in the following sections.

Impacts on Special-Status Plants

The proposed project has the potential to affect special-status plants that could occur in grassland and aquatic habitats in the project area. Chapter 3 lists 17 special-status plants with a moderate potential to occur in the project area. Shining navarretia was documented adjacent to the project area. Botanical surveys will be conducted in spring and summer 2020. Once these surveys have been completed, potential impacts on special-status plants can be assessed.

Impacts on Special-Status Wildlife

Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Curved-Foot Hygrotus Diving Beetle

Suitable habitats for vernal pool branchiopods and curved-foot hygrotus diving beetle in the project area (two vernal pools, small ephemeral ponds, and seasonal alkali wetlands) are located in lowland areas that would not be filled or directly disturbed by the installation of turbines and foundations. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) associated with constructing turbine foundations, building new and altering existing access roads, replacing culverts, installing the power collection system, and performing decommissioning activities near or upslope of suitable habitat could result in the runoff of sediment, gasoline, oil, or other contaminants into suitable habitat, which could cause illness or mortality of vernal pool branchiopods and curved-foot hygrotus diving beetle or their food resources. A spill of drilling fluid containing bentonite near suitable habitat could also cause mortality of vernal pool branchiopods and curved-foot hygrotus diving beetle or contaminate habitat.

New facilities or improvements to existing roads that impede or alter the flow of stormwater across the project area once the project has been constructed could reduce the suitability of vernal pool

branchiopod and curved-foot hygrotus diving beetle habitat by altering the hydroperiod of those aquatic features.

Effects associated with potential sediment and chemical runoff during construction would be avoided and minimized through implementation of construction BMPs requiring installation of sediment control devices and implementation of a spill response plan. Implementation of mitigation measures from the PEIR would also avoid, minimize, and compensate for potential effects on vernal pool branchiopods and curved-foot hygrotus diving beetle.

Valley Elderberry Longhorn Beetle

Blue elderberry shrubs provide habitat for valley elderberry longhorn beetle. Thirty-six individual blue elderberry shrubs and shrub clusters are present in the project area (Figure 5). All of the elderberry shrubs are located in the southern portion of the project area and most of them are found along Patterson Pass Creek. The rest of the elderberry shrubs are adjacent to unnamed intermittent streams and linear alkali wetlands. Two elderberry shrubs are located along power collection system routes and could be affected by activities associated with installing power collection system infrastructure. Potential effects could include breaking or trimming branches, disturbance of roots, or removal of shrubs. Potential effects on valley elderberry longhorn beetle habitat would be avoided, minimized, and compensated for through the implementation of mitigation measures from the PEIR.

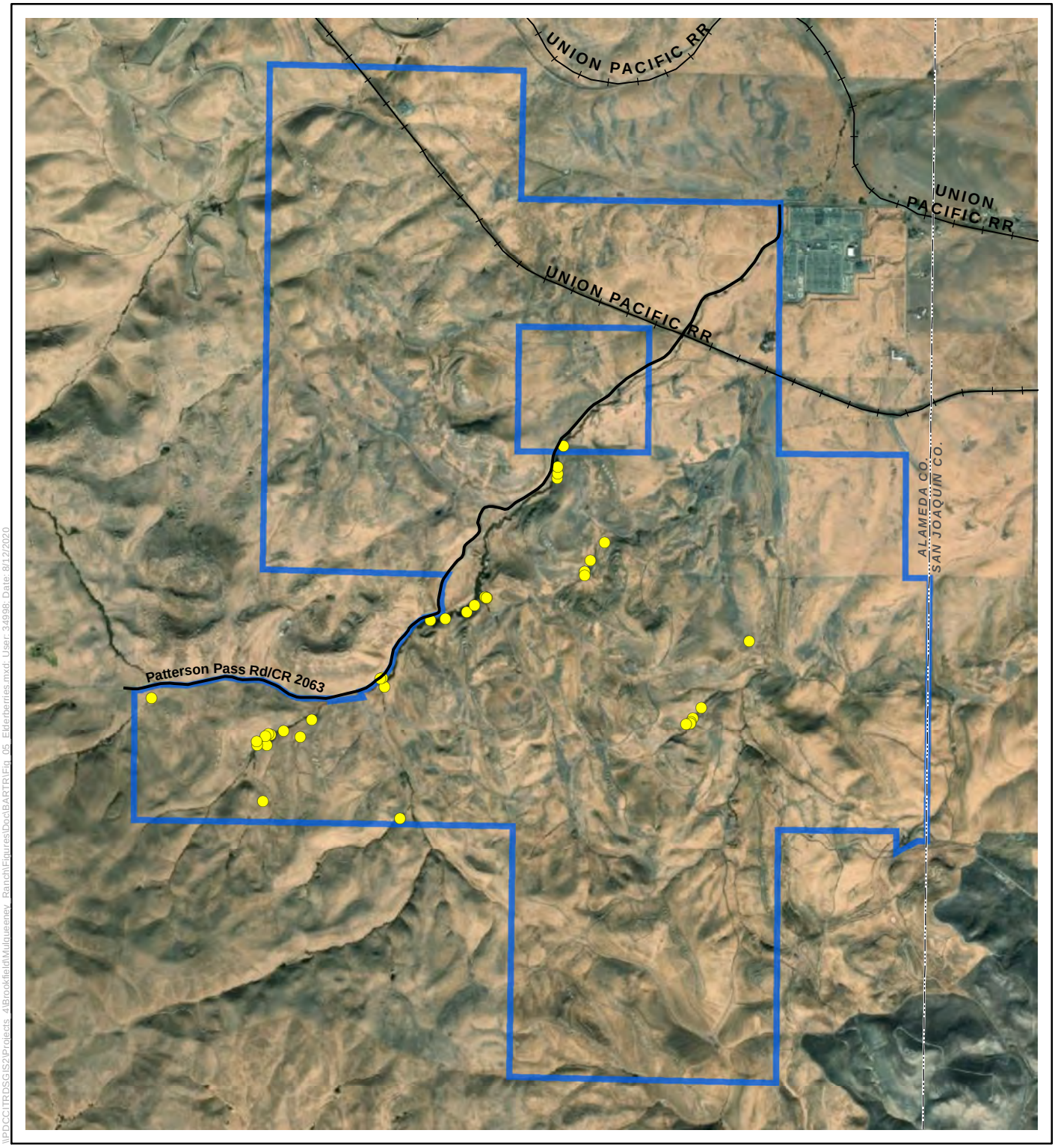
Western Bumble Bee

Western bumble bee has the potential to be present in areas of flowering plants in nonnative grassland. The extent of flowering plants within nonnative annual grassland in the project area has not been determined. When special-status plant surveys are conducted in spring 2020, botanists will identify areas with higher densities and varieties of flowering plants that have greater potential to support western bumble bee. If possible, these areas should be avoided. If high-potential areas cannot be avoided, an invertebrate biologist with experience evaluating habitat and identifying bees will conduct surveys of the higher-potential sites to further assess the potential for presence of western bumble bee.

Potential effects on western bumble bee were not addressed in the PEIR because information on known locations had not been published at that time, and it was not a candidate for state listing. The CEQA document for the project should address potential effects on western bumble bee if survey results indicate that the bee is present or has a high potential to be present. Measures to minimize potential impacts on western bumble bee that should be included in the CEQA document are avoiding soil disturbance at nest sites, limiting soil disturbance to the minimum amount required to conduct work, and avoiding the use of pesticides.

California Tiger Salamander, Western Spadefoot, and California Red-Legged Frog

One pond that provides suitable aquatic habitat for California tiger salamander, western spadefoot, and California red-legged frog would be permanently (0.01 acre) and temporarily (0.07 acre) affected by road widening (Table 4). Other suitable aquatic habitats for California tiger salamander and western spadefoot (ponds) and California red-legged frog (ponds, freshwater marsh, riparian,



Project Boundary
Elderberry Shrub/Cluster

Source:

ICF

N

0 2,000 4,000 Feet

1:36,000

Figure 5
Mulqueeney Ranch Wind
Locations of Elderberry Shrubs in the Project Area

scrub-shrub wetland, and intermittent stream) are located in lowland areas that would not be filled or directly disturbed by the installation of turbines and foundations. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) associated with constructing turbine foundations, building new and altering existing access roads, replacing culverts, installing the power collection system, and performing decommissioning activities near or upslope of suitable habitat could result in the runoff of sediment, gasoline, oil, or other contaminants into suitable habitat, which could cause illness or mortality of California tiger salamander, western spadefoot, and California red-legged frog or their food resources. A spill of drilling fluid containing bentonite near suitable habitat could also cause mortality of California tiger salamander, western spadefoot, and California red-legged frog or contaminate habitat.

Ground-disturbing activities associated with constructing new access roads, widening existing access roads, installing the power collection system, and performing decommissioning activities would affect small areas of intermittent stream and alkali wetland that provide aquatic nonbreeding and dispersal habitat for California red-legged frog. While work in or near suitable aquatic nonbreeding and dispersal habitat could result in injury or mortality of individual California red-legged frog, the majority of individuals would be at suitable breeding ponds where there would be no disturbance.

Construction of turbines and foundations, access roads, the temporary construction area, meteorological towers, and the power collection system would be located within suitable California tiger salamander, western spadefoot, and California red-legged frog upland habitat (nonnative annual grassland). Construction of these facilities, as well as maintenance and decommissioning activities, would result in permanent and temporary losses of habitat. Impacts on nonnative annual grassland from construction and maintenance activities are summarized in Tables 4 and 5.

California tiger salamanders, western spadefoot toads, and California red-legged frogs in active work areas could be killed or injured by being crushed by equipment, entrapped in open trenches or other project facilities, or entombed in burrows that are covered or filled. California tiger salamander, western spadefoot, and California red-legged frog could be run over by vehicles traveling in the project area or to the project area on Patterson Pass Road during construction, maintenance, and decommissioning activities. The potential for such injury or mortality would increase at night and during periods of wet weather or high humidity. The potential for increased injury or mortality from being run over would be higher during construction when up to 100 workers could be traveling to the construction area.

New facilities or improvements to existing roads that impede or alter the flow of stormwater across the project area once the project has been constructed could reduce the suitability of California tiger salamander, western spadefoot, and California red-legged frog aquatic habitats by altering the hydroperiod of those aquatic features. Because of the limited extent of impacts in relation to the size of the watershed, the project is not expected to significantly increase the amount of impervious surface or to alter local hydrology. Soil surfaces left unvegetated have the potential to lead to sedimentation of suitable aquatic breeding, foraging, and dispersal habitats. Project maintenance has the potential to result in degradation of water quality in aquatic habitats from runoff of petroleum-based products associated with equipment and vehicles used during maintenance activities.

Lighting around the new substation would introduce light in the project area. Light can disrupt nighttime foraging and migration activities of California tiger salamander, western spadefoot, and

California red-legged frog. Because no ponds are located within 0.75 mile of the new substation and new lighting would be restricted to this area, would operate with motion sensors, and would be directed downward, the effect of new lighting on these amphibians is expected to be minor or negligible.

Potential effects on California tiger salamander, western spadefoot, and California red-legged frog would be avoided, minimized, and compensated for through the implementation of construction BMPs and mitigation measures from the PEIR.

Western Pond Turtle

Suitable aquatic habitat for western pond turtle (ponds) is located in lowland areas that would not be filled or directly disturbed by the installation of turbines and foundations. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) associated with constructing turbine foundations, new access roads, widening existing access roads, installing the power collection system, and decommissioning activities near or upslope of suitable aquatic habitat could result in the runoff of sediment, gasoline, oil, or other contaminants into suitable aquatic habitat, which could cause illness or mortality of western pond turtle or its food resources. A spill of drilling fluid containing bentonite near suitable habitat could also cause mortality of western pond turtle or contaminate habitat.

Widening of two access roads would be conducted near one pond (Pond H) that provide suitable habitat for western pond turtle. Disturbance of nonnative annual grassland near this pond would result in temporary and permanent impacts on suitable western pond turtle upland habitat and potential injury or mortality of individuals. Nests containing pond turtle eggs could be crushed or individuals could be injured or killed during movement of equipment or grading activities. Potential effects on western pond turtle would be avoided, minimized, and compensated for through the implementation of construction BMPs and mitigation measures from the PEIR.

Blainville's Horned Lizard, California Glossy Snake, and San Joaquin Coachwhip

Nonnative annual grassland and scrub in the project area provide suitable habitat for Blainville's horned lizard and California glossy snake. Nonnative annual grassland in the project area provides suitable habitat for San Joaquin coachwhip. Ground-disturbing activities (i.e., excavation, grading, and stockpiling of soil) that occur in these habitats could result in injury or mortality of Blainville's horned lizard, California glossy snake, and San Joaquin coachwhip if these species are present. Individuals could be run over by vehicles or equipment during construction, maintenance, and decommissioning activities, or be entrapped in pits or trenches if these features are left open overnight. Individuals seeking shade or refuge under vehicles or equipment could be crushed when vehicles or equipment are moved. Construction activities would also permanently and temporarily disturb suitable habitat. Potential effects on Blainville's horned lizard, California glossy snake, and San Joaquin coachwhip would be avoided, minimized, and compensated for through the implementation of construction BMPs and mitigation measures from the PEIR.

White-Tailed Kite, Swainson's Hawk, Golden Eagle, Loggerhead Shrike, and Non-Special-Status Tree- and Shrub-Nesting Migratory Birds

White-tailed kite and Swainson's hawk could nest in trees in the project area. Golden eagles could nest on large rock outcrops, transmission towers, or large isolated trees in the project area. Golden eagles could also nest in suboptimal habitat such as small trees and on the ground. Loggerhead shrike could nest in trees and shrubs in the project area. Loggerhead shrikes have also been found to construct nests on structures or construction equipment. A small amount of riparian habitat vegetation (0.007 acre) would be temporarily disturbed during installation of power collection lines across Patterson Creek. No riparian vegetation along Patterson Creek or other groups of trees in the project area would be removed during construction. Further surveys will be conducted at locations where rock outcrops would be disturbed or removed to determine if potential nesting habitat is present. Loggerhead shrikes and other migratory shrub-nesting birds could be disturbed if shrubby vegetation is removed or disturbed. Destruction or disturbance of active nests could result in the incidental loss of fertile eggs or nestlings. Noise and visual disturbance from construction near active nests in trees, shrubs, on rock outcrops, transmission towers, or other structures could result in nest abandonment, disruption of feeding patterns, or forced fledging of young. Because white-tailed kite is a fully protected species, such effects on this species must be avoided. Loss of migratory bird eggs, young, or adults that results from construction activities would violate the MBTA and provisions of the CFGC. Potential effects on white-tailed kite, Swainson's hawk, golden eagle, loggerhead shrike, and non-special-status tree- and shrub-nesting migratory birds would be avoided or minimized through the implementation of mitigation measures from the PEIR.

Northern Harrier, Short-Eared Owl, Western Burrowing Owl, Grasshopper Sparrow, Tricolored Blackbird, and Non-Special-Status Ground-Nesting Migratory Birds

Northern harrier and short-eared owl could nest in areas of tall, dense vegetation in nonnative annual grassland. Northern harrier and tricolored blackbird could nest in larger areas of freshwater marsh in the project area. Western burrowing owl and grasshopper sparrow could nest in nonnative annual grassland throughout the project area. Western burrowing owl could also winter in nonnative grassland in the project area. Other ground-nesting migratory birds could also nest in nonnative annual grassland in the project area. The project would result in the removal of 29.22 acres and the temporary disturbance of 241.08 acres of nonnative annual grassland that may provide suitable nesting habitat for ground-nesting birds. There would be no permanent or temporary losses of freshwater marsh as a result of the project.

Ground disturbing activities have the potential to destroy or disturb active nests of ground-nesting birds. Destruction or disturbance of active bird nests could result in the incidental loss of fertile eggs or nestlings. Noise and visual disturbance from construction near active nests could result in nest abandonment, disruption of feeding patterns, or forced fledging of young. Loss of migratory bird eggs, young, or adults that results from construction activities would violate the MBTA and provisions of the CFGC. Western burrowing owl could also be injured or killed during the wintering season if occupied burrows are disturbed or destroyed during the winter. Potential effects on northern harrier, short-eared owl, western burrowing owl, grasshopper sparrow, tricolored

blackbird, and other ground-nesting birds would be avoided or minimized through the implementation of mitigation measures from the PEIR.

Little Brown Bat, Pallid Bat, Western Red Bat, Hoary Bat, and Other Special-Status and Non-Special Status Bats

Some of the rock outcrops in the project area have crevices that may provide suitable roosting habitat for little brown bat, pallid bat, and other bats species that have been documented in the APWRA (western mastiff bat, silver-haired bat [night roosting only], Mexican free-tailed bat, big brown bat, or California myotis). Western red bat and hoary bat could roost in riparian habitat along Patterson Creek or in other groups of trees in the project area. The project would result in the removal of 0.03 acre and temporary disturbance of 1.83 acres of rock outcrop. Further surveys will be conducted at locations where rock outcrops would be disturbed or removed to determine if potential bat roosting habitat could be affected. A small amount of riparian (0.007 acre) would be temporarily disturbed during installation of power collection lines across Patterson Creek. No riparian vegetation along Patterson Creek or other groups of trees in the project area would be removed during construction. Potential effects on bat roosting habitat would be avoided or minimized through the implementation of mitigation measures from the PEIR.

American Badger and San Joaquin Kit Fox

Nonnative annual grassland in the project area provides suitable denning, foraging, and dispersal habitat for American badger and San Joaquin kit fox. Numerous burrows are present in the project area that provide suitable denning habitat for these species. Construction of turbine foundations, access roads, the temporary construction area, meteorological towers, and the power collection system would be located within suitable denning, foraging, and dispersal habitat (nonnative annual grassland) for American badger and San Joaquin kit fox. Construction of these facilities, as well as maintenance and decommissioning activities, would result in permanent and temporary losses of habitat. Impacts on nonnative annual grassland from construction, maintenance, and decommissioning activities are summarized in Tables 4, 5, and 6.

American badgers and San Joaquin kit foxes denning in active work areas could be killed or injured during excavation or grading activities from being crushed by equipment or entombed in burrows that are covered or filled. They could also become entrapped in pits or trenches if they are left open overnight. American badgers and San Joaquin kit foxes could be struck by vehicles traveling in the project area or to the project area on Patterson Pass Road during construction, maintenance, and decommissioning activities, especially if travel is occurring in darkness. The potential for increased injury or mortality from vehicle strikes would be higher during construction when up to 100 workers could be traveling to the construction area.

Lighting around the new substation would introduce light in the project area. Light can disrupt activities of nocturnal species such as American badger and San Joaquin kit fox. Because new lighting would be restricted to this area, would operate with motion sensors, and would be directed downward, the effect of new lighting on American badger and San Joaquin kit fox is expected to be minor since a minimum amount of natural area would be illuminated.

Avoidance and Minimization Measures

Mitigation measures from the PEIR (Alameda County Community Development Agency 2014) that are listed in Table 6 would be implemented prior to, during, and after construction, maintenance, and decommissioning activities to avoid and minimize potential direct and indirect impacts on special-status species. As discussed above, additional mitigation measures may be required for western bumble bee, which was not addressed in the PEIR. These measures would be included in the CEQA document prepared by the County for the project.

Most of the mitigation measures identified in the PEIR would be applicable to the biological resources present in the project area and would be implemented to avoid, minimize, or compensate for impacts on sensitive biological resources (waters of the United States and state, and special-status plants and animals) from the proposed project. The full text of the measures is available in the PEIR. The applicability of each measure is indicated in Table 6. Although operational impacts of the turbines are not addressed in this document, it is assumed that all turbine operations-related mitigation would be applicable; accordingly, those measures are included in Table 6.

Table 6. Applicability of Mitigation Measures Presented in the PEIR

Mitigation Measure	Applicable	Not Applicable
BIO-1a: Conduct surveys to determine the presence or absence of special-status plant species	✓	
BIO-1b: Implement best management practices to avoid and minimize impacts on special-status species	✓	
BIO-1c: Avoid and minimize impacts on special-status plant species by establishing activity exclusion zones	✓	
BIO-1d: Compensate for impacts on special-status plant species	✓	
BIO-1e: Retain a biological monitor during ground-disturbing activities in environmentally sensitive areas	✓	
BIO-2: Prevent introduction, spread, and establishment of invasive plant species	✓	
BIO-3a: Conduct preconstruction surveys for habitat for special-status wildlife species	✓	
BIO-3b: Implement measures to avoid, minimize, and mitigate impacts on vernal pool branchiopods and curved-foot hygrotus diving beetle	✓	
BIO-4a: Implement measures to avoid or protect habitat for valley elderberry longhorn beetle	✓	
BIO-4b: Compensate for direct and indirect effects on valley elderberry longhorn beetle	✓	
BIO-5a: Implement best management practices to avoid and minimize effects on special-status amphibians	✓	
BIO-5b: Compensate for loss of habitat for special-status amphibians	✓	
BIO-5c: Restore disturbed annual grasslands	✓	
BIO-6: Conduct preconstruction surveys for western pond turtle and monitor construction activities if turtles are observed	✓	
BIO-7a: Implement best management practices to avoid and minimize effects on special-status reptiles	✓	

Mitigation Measure	Applicable	Not Applicable
BIO-7b: Compensate for loss of habitat for special-status reptiles	✓	
BIO-8a: Implement measures to avoid and minimize potential impacts on special-status and non-special-status nesting birds	✓	
BIO-8b: Implement measures to avoid and minimize potential impacts on western burrowing owl	✓	
BIO-9: Compensate for the permanent loss of occupied habitat for western burrowing owl	✓	
BIO-10a: Implement measures to avoid and minimize potential impacts on San Joaquin kit fox and American badger	✓	
BIO-10b: Compensate for loss of suitable habitat for San Joaquin kit fox and American badger	✓	
BIO-11a: Prepare a project-specific avian protection plan	✓	
BIO-11b: Site turbines to minimize potential mortality of birds	✓	
BIO-11c: Use turbine designs that reduce avian impacts	✓	
BIO-11d: Incorporate avian-safe practices into design of turbine-related infrastructure	✓	
BIO-11e: Retrofit existing infrastructure to minimize risk to raptors	✓	
BIO-11f: Discourage prey for raptors	✓	
BIO-11g: Implement postconstruction avian fatality monitoring for all repowering projects and implement adaptive management measures as necessary	✓	
BIO-11h: Compensate for the loss of raptors and other avian species, including golden eagles, by contributing to conservation efforts	✓	
BIO-11i: Implement an avian adaptive management program	✓	
BIO-12a: Conduct bat roost surveys	✓	
BIO-12b: Avoid removing or disturbing bat roosts	✓	
BIO-14a: Site and select turbines to minimize potential mortality of bats	✓	
BIO-14b: Implement postconstruction bat fatality monitoring program for all repowering projects	✓	
BIO-14c: Prepare and publish annual monitoring reports on the findings of bat use of the project area and fatality monitoring results	✓	
BIO-14d: Develop and implement a bat adaptive management plan	✓	
BIO-14e: Compensate for expenses incurred by rehabilitating injured bats	✓	
BIO-15: Compensate for the loss of alkali meadow habitat		✓
BIO-16: Compensate for the loss of riparian habitat	✓	
BIO-18: Compensate for the loss of wetlands	✓	

Chapter 5
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Appendix A

Site Assessment for California Tiger Salamander and California Red-Legged Frog for the Mulqueeney Ranch Wind Repowering Project

MULQUEENEY RANCH WIND REPOWERING PROJECT

SITE ASSESSMENT FOR CALIFORNIA TIGER SALAMANDER AND CALIFORNIA RED-LEGGED FROG

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ICF. 2019. *Mulqueeney Ranch Wind Repowering Project—Site Assessment for California Tiger Salamander and California Red-Legged Frog*. December. (ICF 00311.19) Sacramento, CA. Prepared for Mulqueeney Wind Energy, LLC, New York, NY.

Contents

Table

Figures

Acronyms and Abbreviations

APWRA	Altamont Pass Wind Resource Area
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
Mulqueeney Wind	Mulqueeney Wind Energy, LLC
MW	megawatt
project, proposed project	Mulqueeney Ranch Wind Repowering Project
USFWS	U.S. Fish and Wildlife Service

Mulqueeney Ranch Wind Repowering Project

Site Assessment for California Tiger Salamander and California Red-Legged Frog

Introduction

Mulqueeney Wind Energy, LLC (Mulqueeney Wind), a subsidiary of Brookfield Renewable, is proposing the Mulqueeney Ranch Wind Repowering Project (proposed project or project) in northeastern Alameda County (Figure 1). The project consists of installing new turbines and repowering an existing decommissioned wind facility in an approximately 4,605-acre area. This report presents the methods and results of a site assessment that was conducted to evaluate habitat suitability in the project area for California tiger salamander (*Ambystoma californiense*), a species both state- and federally listed as threatened, and California red-legged frog (*Rana draytonii*), federally listed as threatened. In addition, the site assessment was conducted to provide information to assist Mulqueeney Wind in avoiding and minimizing impacts on California tiger salamander and California red-legged frog and their habitats during design and construction of the project.

The proposed project is located within the current and historical ranges of California tiger salamander (Jennings and Hayes 1994:13) and California red-legged frog (U.S. Fish and Wildlife Service 2002). Information about the suitability of habitat in the project area and vicinity, as well California tiger salamander and California red-legged frog locality information, are important for determining the potential for these species to be present in the project area and the necessity of conducting focused surveys (U.S. Fish and Wildlife Service and California Department of Fish and Game 2003; U.S. Fish and Wildlife Service 2005).

Project Description

The proposed project would entail the replacement of approximately 518 old generation wind turbines installed in the 1990s with up to 36 new wind turbines.[1] The project is located south of I-580 and roughly straddles Patterson Pass Road in Alameda County (Figure 1). The project area is in the Altamont Pass Wind Resource Area (APWRA), an approximately 50,000-acre area that extends across the northeastern hills of Alameda County and a smaller portion of Contra Costa County to the north. The APWRA sustains a strong and predictable wind resource due mainly to the funneling of cool marine winds from the Pacific Ocean east through the pass to replace the rising hot summer air of the Central Valley. Consequently, the area is ideal for generating electrical power from wind.

The proposed project is expected to use turbines with generating capacities between 2.2 and 4.2 megawatts (MW) to develop a maximum of 80 MW. The exact turbine model has not yet been selected. For purposes of environmental review, Mulqueeney Wind has identified 36 possible turbine sites and a range of potential turbine specifications. The final configuration would be

[1] The old generation turbines were removed from the Mulqueeney Ranch project area in 2016 in preparation for repowering.

determined on the basis of site constraints, data obtained from meteorological monitoring of the wind resources, results of bird use surveys and avian micrositing considerations, turbine availability, and resulting cost of energy ($/MW-hour). Each turbine location would have a turbine pad within which the foundation, new tower, nacelle, rotor, and transformer would be constructed. Each turbine pad would require approximately 3.7 acres of graded area to support the construction of foundations and installation of turbines. A 50- by 100-foot crane pad would be leveled and graded within each turbine pad.

Existing roads would be used where possible, and temporary widening of existing roads as well as construction of some new roads would be necessary. Existing road widths vary from approximately 12 to 20 feet; the proposed roads are expected to be approximately 24 feet wide. A single 15.6-acre temporary construction area would be used for construction trailers, employee parking, laydown, staging, and storage of materials, and potentially for a mobile concrete batch plant. Three new permanent free-standing meteorological towers up to 260 feet tall would be placed on small concrete foundations. The project would require the installation of underground electrical lines connecting the turbines to a new substation that would be built adjacent to Pacific Gas and Electric Company's Tesla substation.

Construction of the project is expected to begin in 2021 and would take approximately 6 months.

Species Descriptions

California Tiger Salamander

Legal Status and Distribution

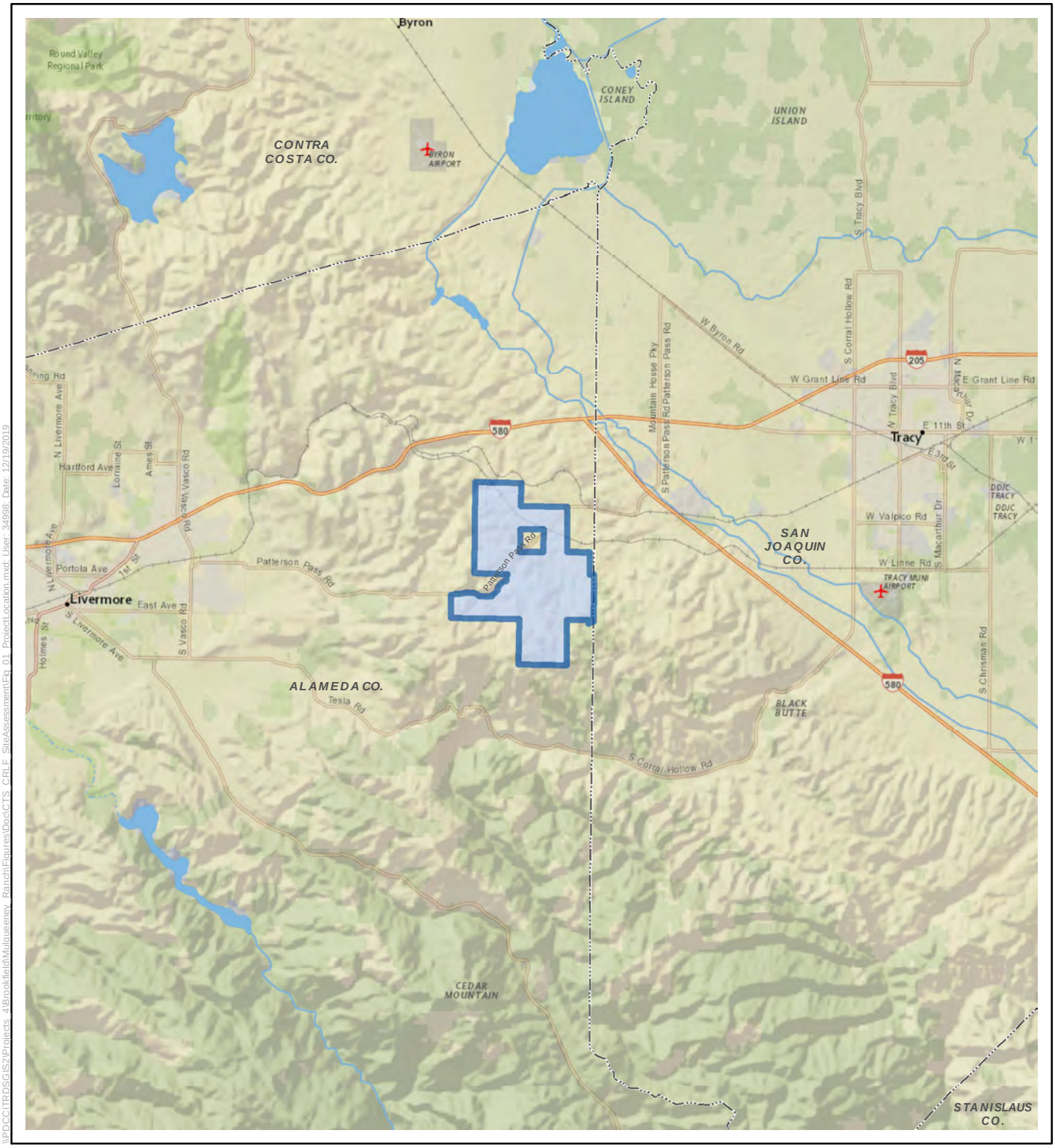
The central population of California tiger salamander is federally listed as threatened (69 Federal Register [FR] 47212–47248) and state-listed as threatened (California Department of Fish and Wildlife 2019a). California tiger salamander is endemic to the San Joaquin–Sacramento River valleys, bordering foothills, and coastal valleys of central California (Barry and Shaffer 1994:159). The species' range is from Sonoma County and the Colusa-Yolo County line south to Santa Barbara County in the Coast Ranges and from southern Sacramento County south to Tulare County in the Central Valley (Jennings and Hayes 1994:12–13). California tiger salamanders occur at elevations from sea level to approximately 3,600 feet (69 FR 47212–47248; 69 FR 48570–48619).

Critical Habitat

Critical habitat for the California tiger salamander central population was designated on August 23, 2005 (70 FR 49380–49458). The project area is not within critical habitat.

Habitat Requirements

California tiger salamander is a lowland species restricted to grasslands and low foothill regions where its breeding habitat is present (Jennings and Hayes 1994:14). Breeding habitat consists of temporary ponds or pools, slower portions of streams, and some permanent waters (Stebbins 2003:153–154). Aquatic habitats with perennial water are unlikely to be used for breeding unless they lack fish predators (Jennings and Hayes 1994:14).



Project Boundary
County Boundary

0 2 4 Miles
1:200,000

Figure 1
Location of the Mulqueeney Ranch Wind Repowering Project

California tiger salamanders also require dry-season refuge sites in the vicinity of breeding sites (within 1 mile) (Jennings and Hayes 1994:14). California ground squirrel (*Spermophilus beecheyi*) burrows are important dry-season refuge sites for adults and juveniles (Loredo et al. 1996:283–284). In one study, refuge sites used by adult California tiger salamanders consisted of California ground squirrel burrows, other burrows, soil crevices, and logs, whereas juvenile tiger salamanders utilized only ground squirrel burrows and soil crevices (Loredo et al. 1996:283–284). Juvenile salamanders will also use Botta's pocket gopher (*Thomomys bottae*) burrows for summer aestivation (Barry and Schaffer 1994:159). While juvenile salamanders most often use rodent burrows for shelter, many juveniles use soil crevices during upland migrations, usually entering the first burrow or large crevice they encounter (Loredo et al. 1996:283).

Adult California tiger salamanders move from subterranean burrow sites to breeding pools during warm late winter and spring rains (Jennings and Hayes 1994:12). Breeding generally occurs from December through March (Stebbins 2003:154). In drought years, the seasonal pools may not pond and the adults may not breed (Barry and Shaffer 1994:159). Females attach their eggs singly or, in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris (Storer 1925:65; Twitty 1941:2). After breeding, adults leave the pool and return to small mammal burrows in surrounding uplands (Loredo et al.1996:283). The eggs hatch in 10–14 days and the larval stage usually lasts 3–6 months, at which time seasonal ponds usually dry up (69 FR 47215). However, in some locations where ponds persisted through the summer, California tiger salamanders have been observed to stay in the larval stage until the following winter, metamorphosing in their second spring. In late fall 1993, one larval overwintering salamander was observed in Monterey County and many overwintering salamanders were observed in three perennial stock ponds in Contra Costa County from 1998 to 2001 (Alvarez 2004a: 344).

California Red-Legged Frog

Legal Status and Distribution

California red-legged frog is one of two species of red-legged frog found on the Pacific coast. The U.S. Fish and Wildlife Service (USFWS) designated California red-legged frog as threatened on June 24, 1996 (61 FR 25813). The historical range of California red-legged frog extended along the coast from the vicinity of Mendocino, Mendocino County, California, and inland from the vicinity of Redding, California, south to northwestern Baja California, Mexico (Storer 1925:235–236; Jennings and Hayes 1985:95). The species is known from isolated locations in the Sierra Nevada and the North Coast and northern Transverse Ranges. It is locally abundant in portions of the San Francisco Bay area and along the Central Coast and is still present in Baja California, Mexico (69 FR 19622). California red-legged frog is believed to be extirpated from the floor of the Central Valley (U. S. Fish and Wildlife Service 2002: 5). California red-legged frogs have been found at elevations from sea level to about 5,000 feet. Nearly all documented occurrences have been below 3,500 feet (U.S. Fish and Wildlife Service 2002:1).

Critical Habitat

Final critical habitat for California red-legged frog was designated by USFWS on March 17, 2010 (75 FR 12816–12959). The entire project area is within critical habitat unit ALA-2 (75 FR 12912).

Habitat Requirements

California red-legged frogs use a variety of habitat types; these include various aquatic systems, as well as riparian and upland habitats (U. S. Fish and Wildlife Service 2002:12). However, they may complete their entire life cycle in a pond or other aquatic site that is suitable for all life stages (66 FR 14626). California red-legged frogs inhabit marshes, streams, lakes, ponds, and other, usually permanent, aquatic features that have dense riparian vegetation (Stebbins 2003: 225). Habitat generally consists of deep (at least 2.5 feet deep) still or slow-moving water with shrubby riparian vegetation (e.g., willows [*Salix* sp.]), tules [*Scirpus* sp.], cattails [*Typha* sp.]) (Jennings and Hayes 1994:64). Juvenile frogs seem to favor open, shallow aquatic habitats with dense submergent vegetation. Although California red-legged frogs can inhabit either ephemeral or permanent streams or ponds, populations probably cannot be maintained in ephemeral streams in which all surface water disappears (Jennings and Hayes 1994:64–65).

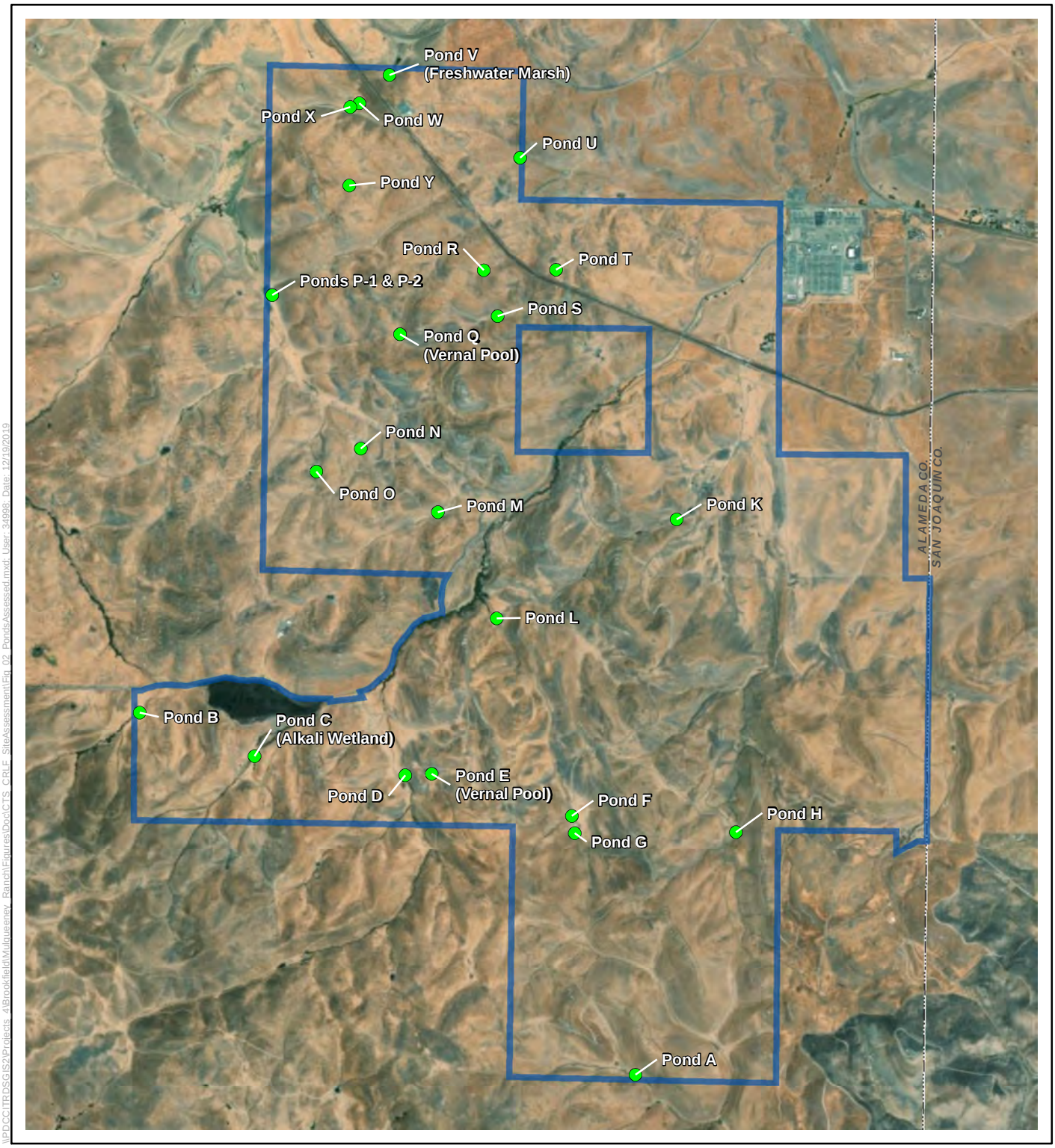
California red-legged frogs are highly aquatic and spend the majority of their lives in the riparian zone (Brode and Bury 1984:32). Adults may take refuge during dry periods in rodent holes or leaf litter in riparian habitats (U. S. Fish and Wildlife Service 2002:14). Adult California red-legged frogs have been observed using large cracks in the bottom of dried ponds as refugia (Alvarez 2004b:162). Although red-legged frogs typically remain near streams or ponds, marked and radio-tagged frogs have been observed to move more than 2 miles through upland habitat. These movements are typically made during wet weather and at night (U. S. Fish and Wildlife Service 2002:12–13).

California red-legged frogs breed from November through April and typically lay their eggs in clusters around aquatic vegetation (U. S. Fish and Wildlife Service 2002:16). Larvae undergo metamorphosis between July and September, 3.5–7 months after hatching (66 FR 14626). However, larvae have been observed to take more than a year to complete metamorphosis in four counties on the central coast of California (Fellers et al. 2001:156).

The diet of California red-legged frogs is highly variable. Larvae probably eat algae; juveniles and adults mainly eat invertebrates. Larger frogs will eat vertebrates such as Sierran treefrog *(Pseudacris sierra*) and California mouse (*Peromyscus californicus*). Juvenile frogs are active diurnally and nocturnally, whereas adult frogs are mostly nocturnal. Feeding activity most commonly occurs along the shoreline and on the surface of the water (U. S. Fish and Wildlife Service 2002:16).

Assessment Methods

ICF wildlife biologist Jennifer Haire conducted a search of the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDB) for records of California tiger salamander and California red-legged frog occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). Ms. Haire conducted an assessment of the suitability of 24 ponds to provide habitat for California tiger salamander and California red-legged frog on June 26 and 27, August 12, and October 28, 2019. Pond locations are shown on Figure 2. Datasheets were completed for each of the 24 ponds assessed. With the exception of evaluating habitat within 1.24 miles of the project boundary, the habitat assessment was conducted in accordance with the methods described in USFWS's (2005) *Revised Guidance on Site Assessment and Field Surveys for the California Red-legged Frog* and USFWS's and the California Department of Fish and Game's (2003) *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding*



Project Boundary
County Boundary
Assessed Pond

Source: ICF

0 2,000 4,000 Feet
1:36,000

Figure 2
Locations of Ponds Assessed for California Tiger Salamander and California Red-Legged Frog Habitat Suitability

of the California Tiger Salamander. In view of the abundance of potentially suitable habitat in the project area, an assessment of habitat within 1.24 mile was not conducted; however, much of this area contains habitat similar to that of the project area (i.e., grazed grassland).

At each pond, information on ponding duration, area, water depth, vegetation present, bank description, and substrate was recorded. Ms. Haire walked the perimeter of most ponds looking for amphibians. She also walked an approximately 100-foot area around the pond, looking for California ground squirrel and other rodent burrows. Information on upland habitat in the surrounding area was recorded and photographs were taken. The presence of amphibians at the ponds was recorded. Datasheets and photographs can be found in Appendix A. For California red-legged frog, nonbreeding habitat is defined as aquatic habitat that may not stay inundated long enough for completion of metamorphosis but that could be used for cover, foraging, or dispersal.

Information from the CNDDB, Google Earth aerial photo images, the Midway 7.5-minute U.S. Geological Survey topographic quadrangle, and the aquatic resources delineation conducted for the proposed project were also used to inform decisions about the suitability of habitat for California tiger salamander and California red-legged frog.

Results

Occurrences in Project Vicinity

The CNDDB lists two occurrences of California tiger salamander in the project area and numerous additional occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). One California tiger salamander was found dead in 2001 on Patterson Pass Road northeast of Ponds D and E and southwest of Pond L (occurrence #810). Twenty larval and metamorph California tiger salamanders were captured in June 2012 at Pond L (occurrence #1210).

The CNDDB lists three occurrences of California red-legged frog in the project area and numerous additional occurrences within 5 miles of the project area (California Department of Fish and Wildlife 2019b). Adult and larval California red-legged frogs were found at Ponds P-1 and P-2 in 1993 (occurrence #44). California red-legged frog was noted as being present in Pond L in 2012 as part of the California tiger salamander occurrence (occurrence #1210) for this pond. The third occurrence of California red-legged frog is from 2009 at Pond A (occurrence #1083); however, this occurrence notes that it is representative of several ponds on the property (but does not include the property boundary).

Potential Habitat in the Project Area

Twenty-four ponds in the project area were identified as providing potential habitat for California tiger salamander and/or California red-legged frog. Each of these ponds is discussed below.

Pond A

Pond A, assessed on August 12, 2019, is approximately 160 by 80 feet and is perennial. It has an estimated maximum depth of more than 5 feet. There is a small patch of cattails near the center of the pond and an aquatic plant covers most of the pond's surface. Pond A has a silt bottom and the bank is low to moderately sloped. The grassland surrounding the pond is knee-high and moderately

dense, and California ground squirrel burrows are present. As described above, California red-legged frog was previously recorded in Pond A (California Department of Fish and Wildlife 2019b). During the site assessment, two dead California red-legged frog tadpoles were observed. Numerous California toad (*Anaxyrus boreas halophilus*) metamorphs, juveniles, and adults were observed along the shore of the pond and the wetland area to the northeast. Pond A provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond B

Pond B, assessed on June 27, 2019, was dry. This pond is approximately 40 by 30 feet with an estimated maximum depth of 12–18 inches. Pond B is ephemeral and likely dries in March or April. Plant species in and along the edge of the pond were turkey-mullein (*Croton setiger*), barley (*Hordeum* sp.), and curly dock (*Rumex crispus*). Pond B has a silt and sand substrate and the bank is low to moderately sloped. Gopher, mouse, and California ground squirrel burrows were observed in the vicinity of the pond. Pond B is unlikely to hold water long enough to provide suitable breeding habitat for California tiger salamander. The ponding depth and duration are insufficient to provide breeding habitat for California red-legged frog.

Pond C (Alkali Wetland)

Pond C, assessed on June 27, 2019, was mostly dry. This pond is actually an alkali wetland within an intermittent creek. The wetland is approximately 130 by 70 feet with an estimated maximum depth of 12 inches, but could be deeper in some cattle hoof prints. Much of the wetland likely dries by May but portions of the wetland may be perennial. There is a dense patch of cattails at the south end of the wetland. Other plants present were rabbitsfoot grass (*Polypogon monspeliensis*), tall flatsedge (*Cyperus eragrostis*), salt grass *(Distichlis spicata*) and rush (*Juncus* sp.). The substrate is silt and the bank is moderately to steeply sloped. Many mouse and California ground squirrel burrows were observed in the vicinity of the wetland. This alkali wetland does not provide suitable breeding habitat for California tiger salamander or California red-legged frog because of the lack of substantial open water and limited depth, but it provides suitable nonbreeding habitat for California red-legged frog.

Pond D

Pond D, assessed on June 27, 2019, is approximately 150 by 120 feet and is perennial. It has an estimated maximum depth of 5 feet. Emergent vegetation consists of a large ring of cattails within the pond. Water milfoil (*Myriophyllum spicatum*) and duckweed (*Lemna* sp.) float on the surface of the pond. Pond D has a silt bottom and the bank is low to moderately sloped. Approximately 100 feet south of the pond is a fence line with a large cattail marsh beyond the fence. The cattail marsh is within a drainage that flows to the pond. The grassland surrounding the pond has been heavily grazed and is short. No mouse or California ground squirrel burrows were observed in the vicinity of the pond. Six to eight tadpoles were observed in the pond on June 27 but could not be identified due to poor visibility (e.g., turbid water and cloud cover). The pond was revisited on August 12, 2019. During this site visit, two California red-legged frogs were heard calling. Pond D provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond E (Vernal Pool)

Pond E, assessed on June 27, 2019, was dry. This pond is actually a vernal pool approximately 370 by 150 feet with an estimated maximum depth of 6–8 inches. The vernal pool likely dries in March or April, if not sooner. Plant species in the pool were smooth boisduvalia (*Epilobium campestre*), turkey-mullein, stalked popcornflower (*Plagiobothrys stipitatus*), and seaside barley (*Hordeum marinum*). The substrate is silt and the pool bank is low sloped. The grasses surrounding the pool are moderately to well grazed. No California ground squirrel burrows were observed in the vicinity of the pool but mouse burrows and soil cracks were observed. The vernal pool would not hold water long enough to provide suitable breeding habitat for California tiger salamander. The ponding depth and duration are insufficient to provide breeding habitat for California red-legged frog.

Pond F

Pond F, assessed on August 12, 2019, was dry. This pond is approximately 120 by 70 feet with an estimated maximum depth of 4 feet. Pond F is ephemeral and likely dries between May and July, depending on the rainfall year type. The pond is largely unvegetated except for some patches of turkey-mullein and grasses along the perimeter. Pond F has a silt substrate and the bank is low to moderately sloped. The area immediately around the pond is heavily grazed; farther out the grazing is moderate and the grasses are knee-high. Fewer than five California ground squirrel burrows were observed in the vicinity of the pond. Pond F provides suitable breeding habitat for California tiger salamander and California red-legged frog breeding; however, it may not hold water long enough for California red-legged frog larvae to metamorphose in low rainfall years.

Pond G

Pond G, assessed on August 12, 2019, is approximately 170 by 115 feet and is perennial, with an estimated maximum depth of more than 5 feet. The pond has a cattail ring with open water in the center and along a portion of the perimeter. Pond G has a silt substrate and the bank is moderately to steeply sloped. The area immediately around the pond is heavily grazed; farther out the grasses are moderately grazed. No California ground squirrel burrows were observed in the vicinity of the pond but some mouse burrows were observed. Two adult California red-legged frogs were observed during the site assessment and many more are likely present (there were numerous sounds of hopping and movement in the cattails). Pond G provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond H

Pond H, assessed on August 12, 2019, was dry. This pond is approximately 115 by 110 feet with an estimated maximum depth of 18 inches. Pond H is ephemeral and likely dries in April. The pond was filled with turkey-mullein and spiny cocklebur (*Xanthium spinosum*). Pond H has a silt and sand substrate and the bank is low to steeply sloped. Fewer than five California ground squirrel burrows were observed in the vicinity of the pond but mouse burrows were present. Pond H is unlikely to hold water long enough to provide suitable breeding habitat for California tiger salamander. The ponding depth and duration are insufficient to provide breeding habitat for California red-legged frog.

Pond K

Pond K, assessed on October 28, 2019, is approximately 150 by 40 feet and is perennial. It appears from Google Earth imagery that the pond was created between October 2015 and March 2017. Pond K has an estimated maximum depth of 5 feet. Duckweed floats on the surface of the pond but there is no emergent vegetation. There are grasses along the lower bank of the pond and three spiny cocklebur plants on the pond bank. Pond K has a silt substrate and the bank is moderately to steeply sloped. The area immediately around the pond is heavily grazed; farther out the grasses are moderately grazed. Several California ground squirrel and mouse burrows were observed in the vicinity of the pond and along the drainage to the southwest. Pond K provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond L

Pond L, assessed on October 28, 2019, is approximately 110 by 100 feet with an estimated maximum depth of 3–5 feet. Pond L is perennial but dries down in late summer/early fall. No emergent vegetation is present and there were grasses growing in a portion of the pond that was drying. Pond L has a silt substrate and the bank is low to moderately sloped. Upstream (south) of the pond is a small ponded area within a drainage where a spring or seep is likely present. The area immediately around the pond is heavily grazed; farther out the grasses are moderately grazed. Fewer than five California ground squirrel and mouse burrows were observed in the vicinity of the pond. Pond L provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond M

Pond M, assessed on June 26, 2019, is approximately 130 by 90 feet and is perennial, with an estimated maximum depth of more than 5 feet. Emergent vegetation consists of dense, tall cattails on the north side of the pond and a smaller patch on the south side of the pond. Duckweed, algae, and aquatic grasses float on the surface of the shallower portions of the pond. There is one willow tree on the east bank. It appears from Google Earth imagery that the pond was dredged between August and October 2015. Pond M has a silt bottom and the bank is low to steeply sloped. The grassland surrounding the pond has been grazed well and is short. Fewer than five California ground squirrel burrows were observed in the vicinity of the pond. Pond M provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond N

Pond N, assessed on June 26, 2019, is approximately 140 by 110 feet and is perennial, with an estimated maximum depth of more than 5 feet. Emergent vegetation consists of a dense, tall ring of cattails along the pond edge. Pond N has a silt bottom and the bank is low to moderately sloped. The grassland surrounding the pond has been grazed well and is short. Five California ground squirrel burrows were observed in the vicinity of the pond. Pond N provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond O

Pond O, assessed on June 26, 2019, was dry. This pond is approximately 80 by 50 feet with an estimated maximum depth of 18 inches. Pond O is ephemeral and likely dries in April or May. There

are two small springs at the top (south) of the pond with patches of shallow water that are likely perennial. The water was 2–6 inches deep in cattle hoof prints in these areas. Vegetation in the spring area consisted of cattail and rush; vegetation in the pond consisted of salt grass and other grasses. Pond O has a silt and sand substrate and the bank is low to moderately sloped. California ground squirrel burrows were observed below the pond spillway. Pond O may hold water long enough to provide suitable breeding habitat for California tiger salamander but the ponding depth and duration are insufficient to provide breeding habitat for California red-legged frog. The pond and spring areas provide suitable nonbreeding habitat for California red-legged frog.

Pond P-1

Pond P-1, assessed on June 26, 2019, is approximately 150 by 100 feet with an estimated maximum depth of less than 5 feet. Only a portion of this pond is within the project area. This pond is ephemeral and likely dries between June and August, depending on the type of rainfall year. Emergent vegetation consists of a dense, tall ring of cattails along the pond edge. Submerged grasses and algae were also present. Pond P-1 has a silt bottom and the bank is moderately to steeply sloped. The grassland surrounding the pond has been grazed well and is short. About a dozen California ground squirrel burrows were observed in the vicinity of the pond. Pond P-1 provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond P-2

Pond P-2, assessed on June 26, 2019, is approximately 175 by 70 feet and is perennial, with an estimated maximum depth of more than 5 feet. Emergent vegetation consists of very tall, dense cattails in 60% of the pond. There were some patches of emergent grasses in shallow areas along the edge of the pond. Submerged grasses and algae were also present. There is a wetland swale between Ponds P-1 and P-2. Pond P-2 has a silt bottom and the bank is low to moderately sloped. The grassland surrounding the pond has been grazed well and is short. About a dozen California ground squirrel burrows were observed in the vicinity of the pond. Pond P-2 provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond Q (Vernal Pool)

Pond Q, assessed on June 26, 2019, was dry. This pond is actually a vernal pool approximately 240 by 80 feet with an estimated maximum depth of 6–12 inches. The vernal pool likely dries in March or April. Plant species in the pool were rabbitsfoot grass, turkey-mullein, Italian ryegrass (*Festuca perennis*), seaside barley, and stalked popcornflower. The substrate is silt and the pool bank is low sloped. The grasses surrounding the pool are moderately to well grazed. No California ground squirrel burrows were observed in the vicinity of the pool but a few mouse burrows were observed. The ponding depth and duration are insufficient to provide suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond R

Pond R, assessed on June 27, 2019, is approximately 120 by 80 feet and is perennial, with an estimated maximum depth of more than 5 feet. Emergent vegetation consists of a small patch of short cattails and sedges on the west side of the pond. Thick green algae was floating in the shallow area on the west side of the pond and submerged algae in slightly deeper areas of the pond. Pond R has a silt bottom and the bank is moderately to steeply sloped. The grassland surrounding the pond

is moderately to well grazed. Many California ground squirrel burrows were observed on the hillside west and southwest of the pond. Pond R provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond S

Pond S, assessed on June 27, 2019, is approximately 180 by 90 feet with an estimated maximum depth of more than 5 feet. Pond S is ephemeral and likely dries between May and July, depending on the rainfall year type. The pond did not have any emergent, floating, or submerged vegetation. Pond S has a silt substrate and the bank is low to steeply sloped. The grassland surrounding the pond has been grazed well and is short. No mouse or California ground squirrel burrows were observed in the vicinity of the pond. Pond S provides suitable breeding habitat for California tiger salamander and California red-legged frog breeding; however, it may not hold water long enough in low rainfall years for California red-legged frog larvae to metamorphose.

Pond T

Pond T, assessed on June 27, 2019, is approximately 400 by 90 feet in size and is perennial, with an estimated maximum depth of more than 5 feet. Emergent vegetation consists of a linear patch of cattails on the southeast side of the pond. No submerged or floating vegetation is present. Pond T has a silt bottom and the bank is low to steeply sloped. There is some rock outcrop/bedrock along the pond bank. The grassland surrounding the pond has been moderately to heavily grazed. Five California ground squirrel burrows were observed in the vicinity of the pond. Pond T provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond U

Pond U, assessed on June 27, 2019, was dry. This pond is approximately 65 by 50 feet with an estimated maximum depth of 6–12 inches. Pond U is ephemeral and likely dries in May. Vegetation in the pond included rabbitsfoot grass, turkey-mullein, seaside barley, and tarweed. Pond U has a silt substrate and the bank is low to moderately sloped. The grassland around the pond is lightly grazed. No California ground squirrel burrows were observed but mouse burrows and gopher sign were present around the pond. Pond U may hold water long enough to provide suitable breeding habitat for California tiger salamander but the ponding depth and duration are insufficient to provide breeding habitat for California red-legged frog.

Pond V (Freshwater Marsh and Stream)

Pond V was assessed on June 27, 2019. This pond is actually freshwater marsh and stream leading to an offsite pond. The marsh is approximately 150 by 45 feet and the stream is approximately 100 long by 10 feet wide within the project area (it continues beyond the project area to the offsite pond). The estimated maximum depth of the freshwater marsh and stream is 6–8 inches. The freshwater marsh appears to be seep- or spring-fed and is likely perennial. Cattail, tall flatsedge, and common threesquare (*Schoenoplectus pungens*) are the dominant plants in the freshwater marsh. Water milfoil was floating in portions of the marsh. The grassland around the marsh is lightly grazed. No mouse or California ground squirrel burrows were observed near the marsh but little of the area near the marsh was walked due to the saturated soil conditions and presence of fences. The freshwater marsh does not provide suitable breeding habitat for California tiger salamander or

California red-legged frog because of the lack of substantial open water and limited depth. The marsh provides suitable nonbreeding habitat for California red-legged frog.

Pond W

Pond W, assessed on June 26, 2019, was dry. This pond is approximately 35 by 30 feet with an estimated maximum depth of 2–3 feet. Pond W is ephemeral and dries between April and June, depending on the rain year type. Except for a couple of weeds, the pond was devoid of vegetation. Pond W has a silt substrate and the bank is moderately sloped. The grassland around the pond is lightly grazed. No California ground squirrel burrows or other rodent burrows were observed around the pond. Pond W may hold water long enough to provide suitable breeding habitat for California tiger salamander but the ponding duration is insufficient to provide breeding habitat for California red-legged frog.

Pond X

Pond X, assessed on June 26, 2019, is approximately 130 by 80 feet with an estimated maximum depth of 5 feet. Pond X is ephemeral and dries between May and August, depending on the rain year type. The pond contained no emergent vegetation but there was floating and submerged water milfoil present. Pond X has a silt substrate and the bank is low to moderately sloped. The grassland around the pond is lightly grazed. Six California ground squirrel burrows were observed around the pond. Pond X provides suitable breeding habitat for California tiger salamander and California red-legged frog.

Pond Y

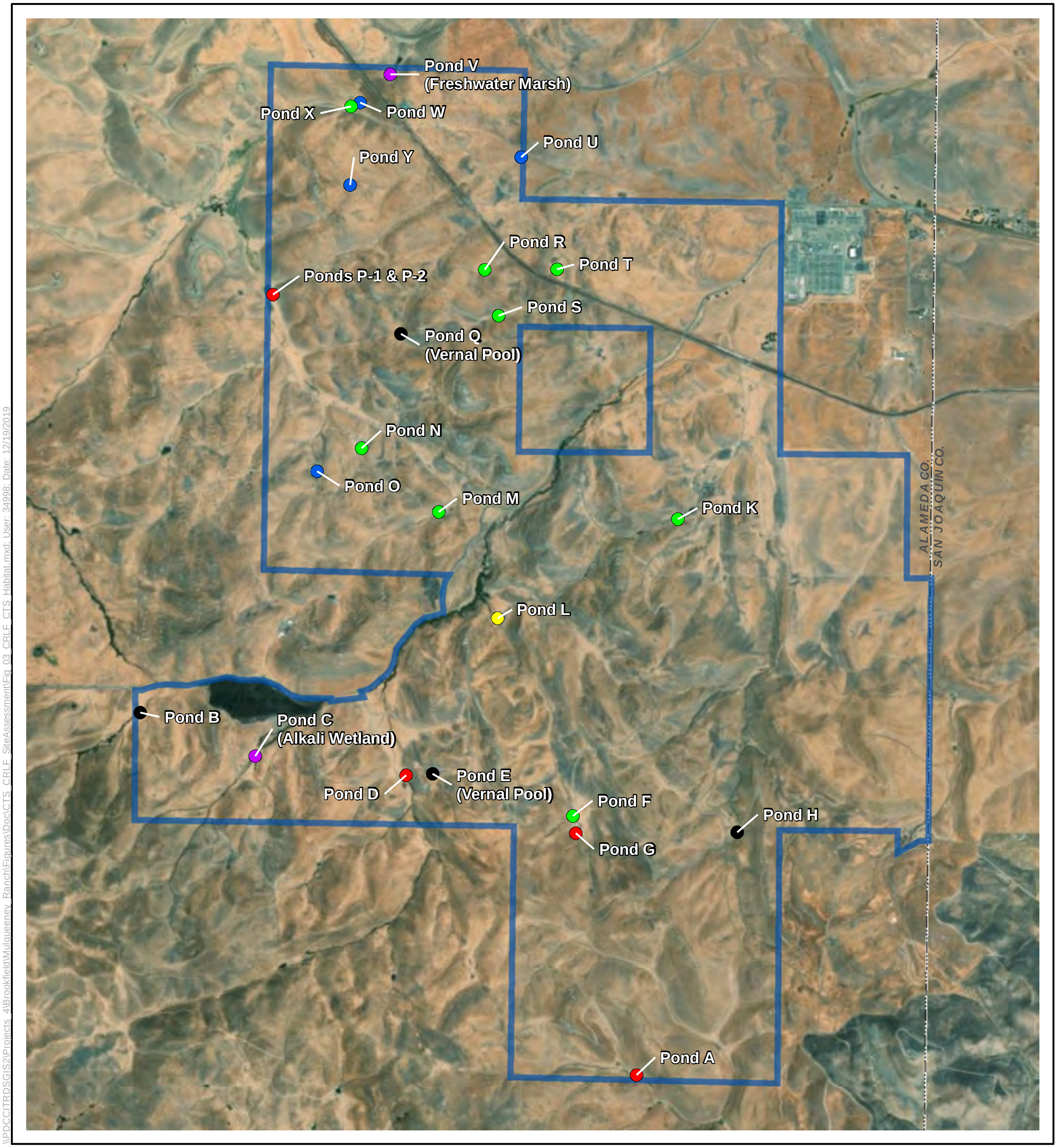
Pond Y, assessed on June 26, 2019, was dry. This pond is approximately 120 by 40 feet with an estimated maximum depth of 5 feet. Pond Y is ephemeral and likely dries in April or May. Vegetation in the pond consisted of turkey-mullein and one mustard plant. Pond Y has a silt substrate and the bank slope is moderately steep. The grassland around the pond is moderately grazed. Some gopher activity is present but no mouse or California ground squirrel burrows were observed around the pond. Pond Y may hold water long enough to provide suitable breeding habitat for California tiger salamander but the ponding duration is insufficient to provide breeding habitat for California red-legged frog.

Summary and Conclusion

The CNDDB lists two California tiger salamander occurrences and three California red-legged frog occurrences in the project area. California red-legged frog was detected at three ponds during the site assessment.

Fourteen of the 24 ponds have suitable breeding habitat for California tiger salamander and California red-legged frog. Four aquatic habitats provide suitable breeding habitat for California tiger salamander and suitable nonbreeding habitat for California red-legged frog. Two locations provide only suitable nonbreeding habitat for California red-legged frog. Four sites do not provide suitable breeding or nonbreeding habitat for either species. Table 1 summarizes the ponding duration and habitat suitability of each pond or aquatic feature. Figure 3 shows habitat suitability for, and known occurrences of, California tiger salamander and California red-legged frog. Suitable

upland habitat is located throughout the project area, but California ground squirrels and their burrows are particularly abundant along the west side of the project area, west of Patterson Road.



Project Boundary

County Boundary

CTS/CRLF Occurrence or Habitat Suitability

- CRLF known occurrence, suitable for CTS
- CTS and CRLF known occurrence
- Not suitable
- Suitable CTS and CRLF breeding habitat
- Suitable breeding habitat for CTS; suitable nonbreeding habitat for CRLF
- Suitable nonbreeding habitat for CRLF

Source: ICF 2019, CNDDB 2019
Note: CTS = California tiger salamander, CRLF = California red-legged frog

ICF

N

0 2,000 4,000
Feet
1:36,000

Figure 3
Known Occurrences of, and Habitat Suitability for, California Tiger Salamander and California Red-Legged Frog

Table 1. Summary of Habitat Suitability for California Tiger Salamander and California Red-legged Frog

Name and Delineation Identification	Perennial or Ephemeral (estimated month of drying)	Habitat Suitability and Notes
Pond A (P-016)	Perennial	Suitable CTS and CRLF breeding habitat; two dead CRLF tadpoles and California toads observed; CRLF CNDDB record (occurrence #1083)
Pond B (P-012)	Ephemeral (Mar/Apr)	Not suitable; insufficient ponding duration
Pond C (AW-046)	Ephemeral (May); portions may be perennial	Alkali wetland; not suitable breeding habitat for CTS or CRLF (inadequate depth and open water); provides suitable nonbreeding habitat for CRLF
Pond D (P-013)	Perennial	Suitable CTS and CRLF breeding habitat; tadpoles observed on 6/27 but could not identify due to poor water clarity and light conditions; CRLF heard calling on 8/12
Pond E (VP-001)	Ephemeral (Mar/Apr or sooner)	Vernal pool; not suitable (insufficient ponding depth and duration)
Pond F (P-014)	Ephemeral (May–July)	Suitable CTS and CRLF breeding habitat, but may not hold water long enough for CRLF larvae to metamorphose in some years; suitable nonbreeding habitat
Pond G (FM-003)	Perennial	Suitable CTS and CRLF breeding habitat; two adult CRLF observed; many more heard jumping and moving in cattails
Pond H (P-015)	Ephemeral (April)	Insufficient pond duration for CTS and insufficient ponding duration and depth for CRLF
Pond K (P-010)	Perennial	Suitable CTS and CRLF breeding habitat
Pond L (P-011)	Perennial	Suitable CTS and CRLF breeding habitat; CTS and CRLF CNDDB record (occurrence #1210)
Pond M (P-009)	Perennial	Suitable CTS and CRLF breeding habitat
Pond N (P-008)	Perennial	Suitable CTS and CRLF breeding habitat
Pond O (AW-002)	Ephemeral (Apr/May)	Suitable breeding habitat for CTS; unsuitable breeding habitat for CRLF (inadequate ponding depth and duration); suitable nonbreeding habitat for CRLF
Pond P-1 (P-004)	Ephemeral (June–Aug)	Suitable CTS and CRLF breeding habitat; CRLF CNDDB record (occurrence #44)
Pond P-2 (FM-002)	Perennial	Suitable CTS and CRLF breeding habitat; CRLF CNDDB record (occurrence #44)
Pond Q (VP-002)	Ephemeral (Mar/Apr)	Vernal pool; not suitable (insufficient ponding depth and duration)
Pond R (P-005)	Perennial	Suitable CTS and CRLF breeding habitat
Pond S (P-007)	Ephemeral (May–June)	Suitable CTS and CRLF breeding habitat; may not hold water long enough for CRLF larvae to metamorphose in some years
Pond T (P-006)	Perennial	Suitable CTS and CRLF breeding habitat
Pond U (AW-067)	Ephemeral (May)	Suitable breeding habitat for CTS; unsuitable breeding habitat for CRLF (inadequate ponding depth and duration)

Name and Delineation Identification	Perennial or Ephemeral (estimated month of drying)	Habitat Suitability and Notes
Pond V (FM-001)	Perennial	Freshwater marsh; not suitable breeding habitat for CTS or CRLF (inadequate depth and open water); suitable nonbreeding habitat for CRLF
Pond W (AW-006)	Ephemeral (Apr-June)	Suitable breeding habitat for CTS; unsuitable breeding habitat for CRLF (inadequate ponding depth and duration)
Pond X (P-001)	Ephemeral (May-Aug)	Suitable CTS and CRLF breeding habitat; may not hold water long enough for CRLF larvae to metamorphose in some years
Pond Y (P-002)	Ephemeral (Apr-May)	Suitable breeding habitat for CTS; unsuitable breeding habitat for CRLF (inadequate ponding depth and duration)

Notes:
CTS = California tiger salamander; CRLF = California red-legged frog.

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Appendix A

Datasheets and Photographs

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 08/12/2019 (mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer (last name) (first name) _____ (last name) (first name)

_____ (last name) (first name) _____ (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: A

Size: 160' x 80' delin = (0.286 acre) Maximum depth: 75'

Circle one: Measured / (Estimated)

Stream/(Spring-fed) or (Rain-fed)? (*circle one*)

Vegetation: emergent, overhanging, dominant species: Sm patch of cattails in pond. Unknown aquatic plant covers 90% of pond. Turbid from recent cattle disturbance.

Substrate: silt; banks low to moderately sloped

Upland habitat (characterize): grazed grassland - moderately grazed- grasses are knee high & moderately dense

Ground squirrel burrows present? (YES) NO

(**Perennial**) or **Ephemeral** *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
2 dead CRLF tadpoles - one w/ lrg back legs. Numerous CATO metamorphs along S. shore. Dead CRLF tadpoles along S edge of pond. Also CATO juveniles & adults.

Photos
19 = pond
20-25 = tadpoles
26-31 = CATO
32 = Pond A wetland
33-36 = CATO
37 = A60-059

Pond A

Pond A looking southeast on August 12, 2019

Dead California red-legged frog tadpole at Pond A on August 12, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

(last name) (first name)

(last name) (first name)

(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: B

Size: 40' x 30' (delin= 0.057acre)

Maximum depth: 12-18" /dry

Circle one: Measured / Estimated

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: hordeum, curly dock, turkey mullein

Substrate: silt + sand; low to moderately sloped banks

Upland habitat (characterize): grazed grassland, wind farm
Grazing is light-moderate. Some (~12) CGS burrows surrounding pond (most to the west). Also mice burrows + gopher sign.

Ground squirrel burrows present? (YES) NO

Perennial or Ephemeral (*circle one*). If ephemeral, month it goes dry: Mar/Apr

Other aquatic habitat characteristics, species observations, drawings, or comments:
Pond is dry.
Unlikely to hold water long enough for CTS breeding.
Ponding depth + duration insufficient for CRLF breeding.

Photo 12

Pond B

Pond B on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: C (wetland)

Size: ~130' x 70' (delin= 0.823 acre)

Maximum depth: 12" (possibly deeper in hoof prints)
Circle one: Measured / (Estimated)

Stream (Spring-fed or Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: cattails, juncus, rabbits-foot grass, umbrella sedge. Cattails in dense patch at SW end of pond.

Substrate: silt; banks moderate to steeply sloped.

Upland habitat (characterize): grazed grassland, wind farm. Grasses are moderately grazed. Many (25+) GS burrows. Also mice burrows.

Ground squirrel burrows present? (YES) NO

(Perennial) or (Ephemeral) *(circle one)*. If ephemeral, month it goes dry: May but some limited, shallow pooling may be perennial

Other aquatic habitat characteristics, species observations, drawings, or comments:
"Pond" has standing water of 1-5" depth. Water is mostly in hoof prints. This pond could be spring or seep fed. Few open pooled areas. No fish or amphibians observed.

Photos
13-17 golden eagle
18- "pond" (alkali wetland)

Pond C (Alkali Wetland)

Looking northeast at Pond C (alkali wetland) on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: D

Size: ~150' x 120' (delin = 0.435 acre) Maximum depth: ~5'
Circle one: Measured / Estimated

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: Emergent = tall, dense cattails. Floating = watermilfoil, duckweed. Wet area extends south/shallow wet areas w/rabbits foot grass & then becomes cattail marsh up the drainage. Small flow of water towards pond.

Substrate: silt
low to moderately sloped bank

Upland habitat (characterize): grazed grassland, wind farm
Grasses well grazed around pond; no CGS or mice burrows obs. around pond

Ground squirrel burrows present? YES (NO)

Perennial or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
6-8 mallards flew off when I arrived. BBB flock also present & may nest in cattails.
observed 6-8 tadpoles along S edge of pond - could not ID due to poor visibility - turbid water + cloud cover.
Pond fed by stream/spring/seep to south.

Photos 19 + 20 = pond over →
photo 21 = upstream cattail marsh (SW-145)

Pond D

8/12/19 re-visit

more water is flowing into pond 4 it is larger than on 6/27. It looks like some of the cattails have been removed. CRLF calling (2 individuals).

Pond D

Looking northwest at Pond D on June 27, 2019

Looking southwest at Pond D on August 12, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

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(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: E = vernal pool
dclin =

Size: ~370 x 150' (1.228 acre)

Maximum depth: 6-8"

Circle one: Measured / (Estimated)

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: turkey mullein, hordeum, smooth boisduvalia

Substrate: silt

Upland habitat (characterize): grazed grassland, wind farm
Grasses are well-to moderately grazed. No CGS burrows obs. surrounding wetland but there are mouse burrows on the hillside east of pond + soil cracks
Ground squirrel burrows present? YES (NO) on east + west sides

Perennial or (Ephemeral) *(circle one)*. If ephemeral, month it goes dry: Mar/Apr or sooner

Other aquatic habitat characteristics, species observations, drawings, or comments:
Site is a seasonal wetland that is dry. Based on the depth + vegetation present, it does not appear to provide suitable breeding habitat for CTS + CRLF.
Provides suitable habitat for fairy shrimp.

Photo 22 - vernal pool
23 - smooth boisduvalia (plant)

Pond E (Vernal Pool)

Looking southeast at Pond E (vernal pool) on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 08/12/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

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(last name) (first name)

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(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: F

Size: ~120' x 70' (delin = 0.187 acre) Maximum depth: 4ft

Circle one: Measured / (Estimated)

Stream/Spring-fed or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: Unvegetated; turkey mullein & grasses on upper edge.

Substrate: silt; banks low-mod sloped

Upland habitat (characterize): moderate to heavy grazing (heavy right around pond, then mod). Grasses low to knee height & mod dense - grazed grassland (cows)

Ground squirrel burrows present? (YES) NO very few <5

Perennial or (Ephemeral) (*circle one*). If ephemeral, month it goes dry: May-July depending on year/rainfall

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

Pond is dry.
month of drying based on aerial photo review.
Suitable CTS & CRLF breeding habitat but may not stay inundated long enough for CRLF metamorphosis in some years.

Photo 1 - looking SE

Photo 2 - "AW-032" = ephem. stream

Pond F

Looking southeast at Pond F on August 12, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 08/12/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

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(last name) (first name)

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(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: G1

Size: ~170'x115' delin= (0.426 acre)

Maximum depth: 5'+

Circle one: Measured (Estimated)

Stream (Spring-fed or Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: cattail ring - open water in center & portion of perimeter

Substrate: silt; mod to steep-sloped banks

Upland habitat (characterize): grazed grassland - low to mod grazing; heavy grazing around pond & moderate further out.

Ground squirrel burrows present? YES (NO) none obs. Some mice burrows

Perennial or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
CRLF adults present - 2 adults obs (3"+4") + several more heard (20+ likely). No tadpoles obs.

Photo 3 = Pond G1 looking SE
photos 4-7 = CRLF in mud/cattails
photo 8 = AW-050
17 = rock outcrop 18 = AW-031
photo 9 = From in AW-050
photo 10-12 = PATE
photo 13 = FM 074
photo 14 = AW-050
photo 15 = From in AW-051
16 = AW-051

Pond G

Looking southeast at Pond G on August 12, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 08/12/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
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(last name) (first name)

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(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: H- seasonal wetland?

Size: ~115'x110' (0.285acre) decln=

Maximum depth: 18"

Circle one: Measured (Estimated)

Stream/Spring-fed or (Rain-fed)? (*circle one*)

Vegetation: emergent, overhanging, dominant species: Pond/wetland filled w/ turkey mullein & spiny cocklebur

Substrate: silt; bank low to steeply sloped

Upland habitat (characterize): grazed grassland

Ground squirrel burrows present? (YES) NO very few <5; mice burrows & mole

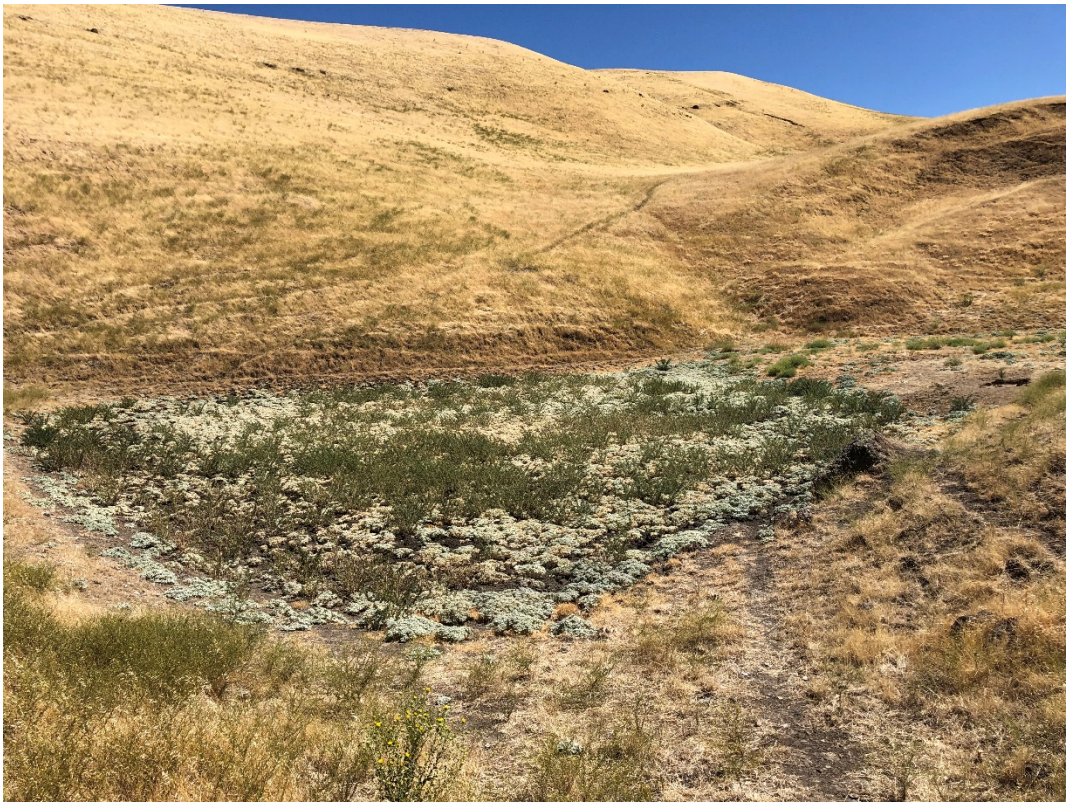
Perennial or (Ephemeral *(circle one)*. If ephemeral, month it goes dry: April

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

Pond is dry.

Photos
Pond H-looking SE
AW-052-S from rd
AW-053-W from rd
AW-029-perennial seep wetland

Pond H



Looking southeast at Pond H on August 12, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 10/28/2019 (mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer (last name) (first name) _____ (last name) (first name)

_____ (last name) (first name) _____ (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: K

Size: ~150'x40' delin= (0.175acre) Maximum depth: ~5'

Circle one: Measured (Estimated)

Stream (Spring-fed) or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: NO emergent veg; duckweed + floating algae, sm grasses on edge of pond + 3 spiny cocklebur plants on bank.

Substrate: silt; bank is mod-steeply sloped

Upland habitat (characterize): grazed grassland, sm home (unoccupied) + cattle holding lot + building

Ground squirrel burrows present? (YES) NO

(**Perennial**) **or Ephemeral** *(circle one)*. If ephemeral, month it goes dry: Fed by spring upstream

Other aquatic habitat characteristics, species observations, drawings, or comments:
Appears berm may have been installed between Oct 2015 + mar 2017. NO pond/ponding is visible in GE photos prior to mar 2017.
Cottonwood at end of pond w/ stick nest

Photos
1=Pond K - looking E
2=~~nest in tree at Pond K~~
3=Pond K intermittent stream
4=AWO-064

Pond K

Looking east at Pond K on October 28, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 10/28/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: L

Size: 116' x 100' (delin = 0.293 acre) Maximum depth: 3-5'

Circle one: Measured / (Estimated)

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: Grasses in areas of pond that are drying; no other veg present

Substrate: silt; bank is low-mod. sloped

Upland habitat (characterize): grazed grassland. Heavily grazed around pond; moderate grazing further out.

Ground squirrel burrows present? (YES) NO – few – 2 CGS + 1 mouse burrow in rocky area

(Perennial) or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
Much of pond may dry out each year but a small portion may stay ponded (similar to this year). There is also a small pooled area at the upstream/end/top of the pond

Photos
top of pond - looking N
pond - looking east
pond - looking NE

Pond L

Looking north at Pond L on October 28, 2019

Looking northeast at Pond L on October 28, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: M

Size: ~130' x 90' delin = (0.412 acre) Maximum depth: >5'
Circle one: Measured (Estimated)

Stream (Spring-fed) or Rain-fed? (~~circle one~~)

Vegetation: emergent, overhanging, dominant species: dense tall cattails on one side of pond + smaller patch on other. Duckweed + algae + aquatic grasses floating on shallower portions of pond. One willow on edge.

Substrate: silty bank low to steeply sloped

Upland habitat (characterize): grazed grassland, wind farm. Grasses are well grazed but few CGS burrows (<5) observed in area surrounding pond

Ground squirrel burrows present? (YES) NO

(**Perennial**) **or Ephemeral** *(circle one)*. If ephemeral, month it goes dry: Appears perennial in most years.

Other aquatic habitat characteristics, species observations, drawings, or comments:
Pond is likely spring fed based on amount of water + density/height of cattails.
Water is turbid along edge; no tadpoles obs.
Appears pond was dredged btwn Aug + Oct 2015.
Suitable breeding habitat for CTS + CRLF.

photo 8 - looking NE at Pond M

Pond M

Looking northeast at Pond M on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: N

Size: 140'x110' (0.365 acre) delin = Maximum depth: 7.5'

Circle one: Measured (Estimated)

Stream/Spring-fed or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: tall, dense cattails surround pond perimeter; open water in center

Substrate: silt; bank is low to mod sloped

Upland habitat (characterize): grazed grassland, wind farm Grasses are well grazed. Few CGS burrows surrounding pond (saw ~5)

Ground squirrel burrows present? (YES) NO

(Perennial) or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

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

Likely spring fed due to amnt of water present + density/height of cattails.

rubb may be nesting; suitable trbb nesting habitat

Suitable breeding habitat for CTS & CRLF.

photo 7 - looking W at Pond N mallard obs.

Pond N

Looking west at Pond N on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 6/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: ①

Size: 80'x50'+ springs (0.27 acre delin=) Maximum depth: 18"
(portion that ponds) *Circle one*: Measured (Estimated)

Stream/(Spring-fed) or (Rain-fed)? (*circle one*)

Vegetation: emergent, overhanging, dominant species: cattails, juncus, upland grasses

Substrate: silt; banks are low-mod sloped

Upland habitat (characterize): grazed grassland, wind farm
Grasses are well grazed & there are CGS burrows below the spillway

Ground squirrel burrows present? (YES) NO

Perennial or (Ephemeral) *(circle one)*. If ephemeral, month it goes dry: Spring is perennial but pond probably dries in Apr/May.

Other aquatic habitat characteristics, species observations, drawings, or comments:
2.5m springs at top of pond with patches of shallow water + cattails. Water is 2-6" deep in hoof prints + trails toward dry area of pond. Walked drainage above pond (photo) to top at eroded area (photo). Patches of water in hoofprints in drainage.

may provide suitable CTS breeding habitat; inadequate pond depth + duration for CRLF but could use as nonbreeding aquatic habitat.

photo 4 - pond - looking NE.
5 - top of drainage
6 - drainage

Pond O

Looking northeast at Pond O on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/20/2019 (mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer (last name) (first name) _____ (last name) (first name)

_____ (last name) (first name) _____ (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: P-1

Size: ~150' x 100' (0.05 acre in project area) Maximum depth: >5'
Circle one: Measured (Estimated)

Stream/(Spring-fed) or (Rain-fed)? (*circle one*)

Vegetation: emergent, overhanging, dominant species: cattails ring pond + emerg from it. Center is open. Submerged grasses + algae. Saltgrass surrounding pond.

Substrate: silt; banks are mod-steeply sloped

Upland habitat (characterize): grazed grassland, wind farm. Grasses are well grazed + there are some (12+) CGS burrows w/in 100ft of Ponds P-1 + P-2

Ground squirrel burrows present? (YES) NO

Perennial or (Ephemeral) *(circle one)*. If ephemeral, month it goes dry: June-Aug depending on year

Other aquatic habitat characteristics, species observations, drawings, or comments:
Because of the density + height of cattails + the surrounding wetland signature of Ponds P-1 + P-2, it is likely that these ponds are spring fed. There is a wetland swale btwn P-2 + P-1 (flow from P-2 → P-1) Based on aerial photo review, appears ephemeral. Suitable for CTS + CRLF breeding.
Photos 1 + 3

Pond P-1

Looking east at Pond P-1 on June 26, 2019

Looking west at Pond P-1 on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: P-2

Size: ~175'x70' (0.346 acre) delin= Maximum depth: 7.5'

Circle one: Measured (Estimated)

Stream (Spring-fed) or Rain-fed? ~~(circle one)~~

Vegetation: emergent, overhanging, dominant species: Very tall, dense cattails in 60% of pond. Some patches of grasses in shallow areas on edge. Floating & submerged grasses/algae

Substrate: silt; bank is low-mod sloped

Upland habitat (characterize): grazed grassland, wind farm
Grasses are well grazed & there some (12+) GS burrows w/in 100ft of ponds P-1 + P-2

Ground squirrel burrows present? (YES) NO

Perennial or **Ephemeral** *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
Because of the density & height of cattails & the surrounding wetland signature of Ponds P-1 + P-2, it is likely that these ponds are spring-fed.
Based on aerial photo review, this pond is perennial.
Suitable breeding habitat for CTS + CRLF.

Photo 2

Pond P-2

Looking southwest at Pond P-2 on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: Q = vernal pool

Size: ~240' x 80' (0.39 acre) delin = Maximum depth: 6-12"
Circle one: Measured (Estimated)

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: rabbitsfoot grass, turkey mullein, rye grass, hordeum

Substrate: silt - blackish crumbly soil; bank low sloped

Upland habitat (characterize): grazed grassland, wind farm
Grasses are moderately grazed. Few mice burrows; no CGS burrows.

Ground squirrel burrows present? YES (NO)

Perennial or Ephemeral (*circle one*). If ephemeral, month it goes dry: Mar/Apr

Other aquatic habitat characteristics, species observations, drawings, or comments:
Large, shallow wetland that provides suitable habitat for fairy shrimp, but not for CTS + CRLF (too shallow, dries too early).

Photo 12

Pond Q (Vernal Pool)

Looking east at Pond Q (vernal pool) on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) _____ (last name) (first name)

_____ (last name) (first name) _____ (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: R

Size: ~120' x 80' (delin= 0.224 acre) Maximum depth: 75'
Circle one: Measured / (Estimated)

Stream/Spring-fed or (Rain-fed)? (*circle one*)

Vegetation: emergent, overhanging, dominant species: Emergent veg= short cattails + sedges. Thick green algae floating on shallow point of pond + submerged algae in slightly deeper areas along edge

Substrate: silt; bank is moderate - steeply sloped

Upland habitat (characterize): grazed grassland, wind-farm moderate to well grazed around pond; many CGS burrows on hillside SE of pond.

Ground squirrel burrows present? (YES) NO

(**Perennial**) or **Ephemeral** *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
Two mallards on pond when I arrived. Walked around pond - no fish or amphibians observed. One burrowing owl hanging out near pond + flew from burrow on west side to SE side. Pond is perennial based on aerial photo review. Suitable breeding habitat for CTS + CRLF.

Photo 5 = pond - looking NE

Photos 6-8 burrows, owl sign

Pond R

Looking northeast at Pond R on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

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(last name) (first name)

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(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: S

Size: ~180' x 90' delin = (0.293 acre) Maximum depth: 75'
Circle one: Measured / Estimated

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: No emergent or floating veg; pond is devoid of veg.

Substrate: silt; bank is low to steeply sloped

Upland habitat (characterize): grazed grassland, wind farm
Grasses are well grazed. No burrows observed in area surrounding pond.

Ground squirrel burrows present? YES (NO)

Perennial or Ephemeral (*circle one*). If ephemeral, month it goes dry: May-July depending on rain yr type

Other aquatic habitat characteristics, species observations, drawings, or comments:
Pond is heavily disturbed by cattle & water is olive green.
Appears ephemeral based on aerial photo review. Provides suitable CTS+CRLF breeding habitat but may not hold water long enough for CRLF to metamorphose in all years.

Photo 9 - looking NE

Pond S

Looking northeast at Pond S on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: T

Size: 400' x 90' delin = (0.212 acre) Maximum depth: 75'

Circle one: Measured / (Estimated)

Stream/Spring-fed or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: Emergent veg = cattails on SE side of pond. No other veg present. Some of cattails have been chewed down by cattle (about 1/2)

Substrate: silt, some rock outcrop/bedrock around perimeter of pond; bank is low to steeply sloped

Upland habitat (characterize): grazed grassland, wind farm. Grasses on east side of pond low-grazed, SW sides moderately grazed + N side bare dirt. Few burrows ~5

Ground squirrel burrows present? (YES) NO

(Perennial) or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
Water is greenish-brown. Fairly heavy cattle use.
No amphibians or fish observed.
Suitable CTS + CRLF breeding habitat.

Photo 10 - looking N.

Pond T

Looking north at Pond T on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

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(last name) (first name)

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(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: U

Size: 65' x 50' (0.071 acre) delin= . Maximum depth: 6-12"

Circle one: Measured (Estimated)

Stream/Spring-fed or (Rain-fed) (*circle one*)

Vegetation: emergent, overhanging, dominant species: Turkey mullein, rabbitsfoot grass, hordeum, & tarweed

Substrate: silt; bank is low-mod. sloped

Upland habitat (characterize): grazed grassland wind farm grasses lightly grazed. No CGS burrows present but mice burrows & gopher activity in upland surrounding pond.

Ground squirrel burrows present? YES (NO)

Perennial or (Ephemeral) *(circle one)*. If ephemeral, month it goes dry: May

Other aquatic habitat characteristics, species observations, drawings, or comments:
Pond is dry. Although it could inundate to 2-3' it only appears to fill to a max of 1 foot. may hold water long enough for CTS breeding but has an inadequate ponding duration for CRLF.

Photo 11 - looking NE

Pond U

Looking northeast at Pond U on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 04/27/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

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(last name) (first name)

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(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: V (freshwater marsh + stream)

Size: 150'x45' (marsh)
100'x10' (stream)

Maximum depth: 1-4" marsh
6-8" stream

Circle one: Measured (Estimated)

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: cattails, umbrella sedge + common threesquare in marsh (emergent veg). Rabbitsfoot grass on edges + in shallow areas. Watermilfoil floating on portion of marsh.

Substrate: silt

Upland habitat (characterize): grazed grassland + wind farm. Grasses are tall/dense (light grazing) but are blown over. Did not walk around marsh because of fences + wet areas.

Ground squirrel burrows present? YES (NO) None obs. but didn't do a thorough survey

?

(Perennial) or Ephemeral *(circle one)*. If ephemeral, month it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:
The freshwater marsh may have a spring or seep feeding it. The stream is flowing from the marsh to an offsite pond. There is a small amnt of flow where the marsh narrows into the stream.
Does not provide suitable CTS or CRLF breeding habitat due to lack of depth + open water. Provides nonbreeding habitat for CRLF.
Photos:
1- marsh
2- milkweed
3- offsite pond
4- marsh

Pond V (Freshwater Marsh)

Looking northwest at Pond V (freshwater marsh) on June 27, 2019

Looking west at Pond V (freshwater marsh) on June 27, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: W

Size: 35'x30'

Maximum depth: Dry/2-3'
Circle one: Measured (Estimated)

Stream/Spring-fed or Rain-fed? (*circle one*)

Vegetation: emergent, overhanging, dominant species: no emergent or overhanging veg, only a cpl of weeds in wetland.

Substrate: silt; moderately sloped bank

Upland habitat (characterize): cattle grazing, wind farm. Grasses surrounding wetland are taller/denser. Also more Star thistle & other thistles

Ground squirrel burrows present? YES (NO) - none obs. surrounding wetland

Perennial or (Ephemeral *(circle one)*. If ephemeral, month it goes dry: Apr - June depending on rainfall yr

Other aquatic habitat characteristics, species observations, drawings, or comments:
Small pond that is currently dry. Botanists are calling this a seasonal wetland because it is part of a larger wetland feature.
Aerial photo review - ponding as late as June.

Photo 10 - looking NE

Pond W

Looking northeast at Pond W on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

_____ _____
(last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: X

Size: ~130'x80' (0.278acre) delin. Maximum depth: 5 ft

Circle one: Measured (Estimated)

Stream/Spring-fed or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: no emergent vegetation, unknown aquatic veg floating/submerged on pond perimeter ↳ water milfoil

Substrate: silt; bank is low-mod sloped

Upland habitat (characterize): grazed grassland wind farm. Grasses are well grazed; more Star thistle + purple thistle near this pond, Few (<6) GS burrows in area surrounding pond

Ground squirrel burrows present? (YES), NO

Perennial or (Ephemeral) (*circle one*). If ephemeral, month it goes dry: May-Aug depending on rainfall year

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

No amphibians observed.

Suitable breeding habitat for CTS + CRLF.

Timeframe that pond dries is based on aerial photo review.

photo 9 - looking NW

Pond X

Looking northwest at Pond X on June 26, 2019

Survey Sheet#:_____

CRLF and CTS Habitat Site Assessment Data Sheet

Date of Site Assessment: 06/26/2019
(mm/dd/yyyy)

Site Assessment Biologists: Haire Jennifer
(last name) (first name) (last name) (first name)

(last name) (first name) (last name) (first name)

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

Landowner(s): Brookfield Renewable Energy Group

POND HABITAT CHARACTERIZATION

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

POND: Y

Size: ~120' x 40'

Maximum depth: 5' - Dry
Circle one: Measured (Estimated)

Stream/Spring-fed or (Rain-fed?) (*circle one*)

Vegetation: emergent, overhanging, dominant species: No emergent or overhanging vegetation. One mustard plant + turkey mullein growing in pond

Substrate: silt; bank is moderately step

Upland habitat (characterize): grazed grassland, wind farm. Grasses have been moderately grazed. Some gopher activity but no burrows surrounding pond.

Ground squirrel burrows present? YES (NO)

Perennial or (Ephemeral) (*circle one*). If ephemeral, month it goes dry: Apr - May

Other aquatic habitat characteristics, species observations, drawings, or comments:
Pond basin could hold 5' of water but only appears to pond to a depth of 2-3'. Full in mar 2017 (aerial photo review).
May have been created in 2005; no obvious in aerial photos prior to this year.

photo 11 - looking SW

Pond Y

Looking southwest at Pond Y on June 26, 2019

Appendix B

List of Animal Species Observed during Surveys for the Mulqueeney Ranch Wind Repowering Project

List of Animal Species Observed during Surveys for the Mulqueeney Ranch Wind Repowering Project

Common Name	Scientific Name
Amphibians	
California toad	*Anaxyrus boreas halophilus*
Sierran treefrog	*Pseudacris sierra*
California red-legged frog	*Rana draytonii*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Birds	
Mallard	*Anas platyrhynchos*
Golden eagle	*Aquila chrysaetos*
Northern harrier	*Circus hudsonius*
Red-tailed hawk	*Buteo jamaicensis*
Barn owl	*Tyto alba*
Western burrowing owl	*Athene cunicularia hypugaea*
Killdeer	*Charadrius vociferus*
Black phoebe	*Sayornis nigricans*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Rock wren	*Salpinctes obsoletus*
Western bluebird	*Sialia mexicana*
European starling	*Sturnus vulgaris*
Western meadowlark	*Sturnella neglecta*
Red-winged blackbird	*Agelaius phoeniceus*
Tricolored blackbird	*Agelaius tricolor*
Brewer's blackbird	*Euphagus cyanocephalus*
Mammals	
California ground squirrel	*Otospermophilus beecheyi*
Botta's pocket gopher (sign)	*Thomomys bottae*
Coyote	*Canis latrans*
Red fox (dead)	*Vulpes vulpes*