Round Mountain 500kV Dynamic Reactive Support Project
Biological Resources Technical Report

March 2022

Prepared For:

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1. Introduction

1.1. Project Description

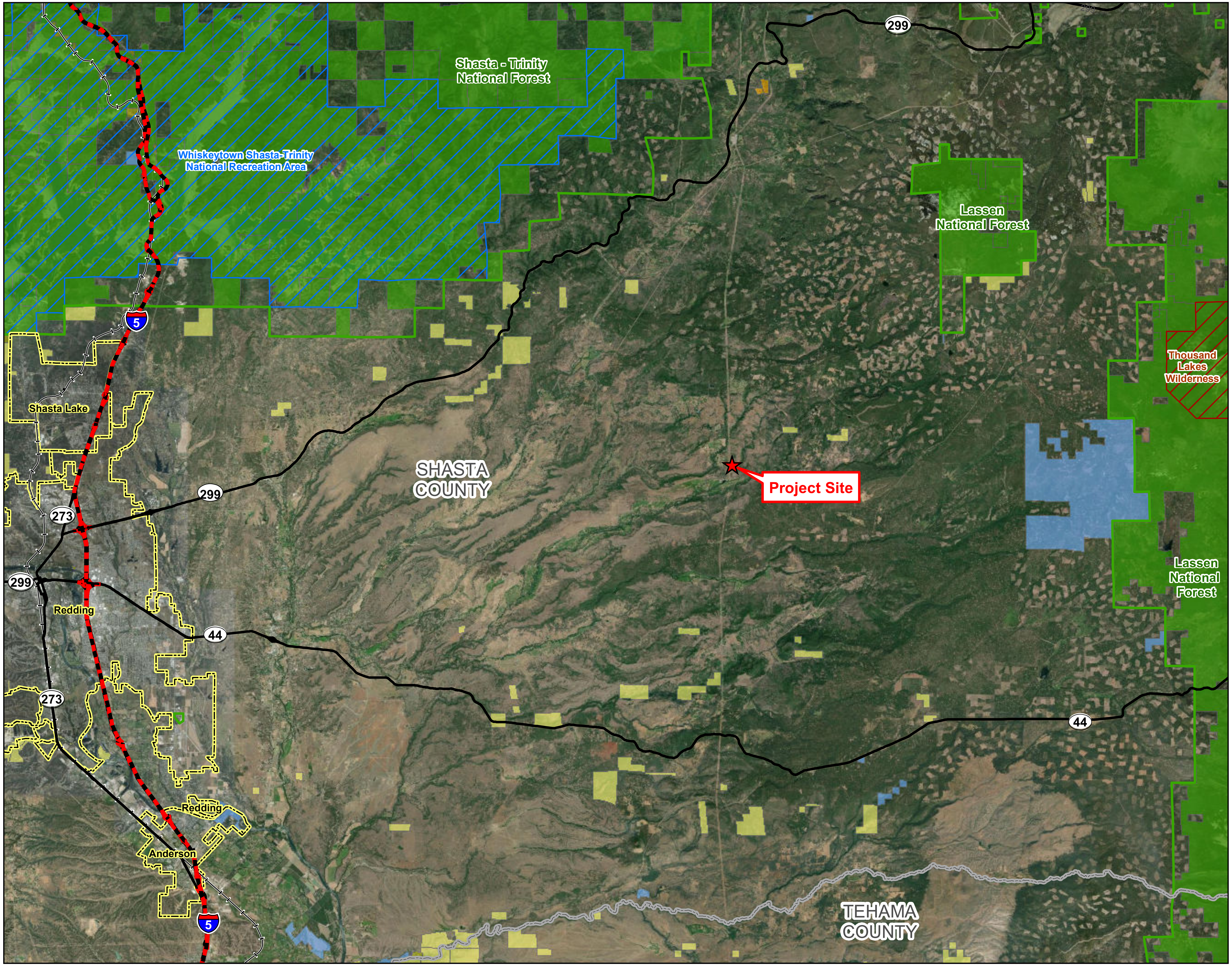
LS Power Grid California, LLC (LSPGC) is proposing the Round Mountain 500 kilovolt (kV) Dynamic Reactive Support Project (Proposed Project) in Shasta County. The Proposed Project was approved by the California Independent System Operator Corporation (CAISO) to ensure the reliability of the CAISO controlled grid. This would be accomplished through the construction of a dynamic reactive device between two equally sized blocks. The Proposed Project is being proposed by LSPGC, a Delaware limited liability company established to own transmission projects in California.

The main component of the Proposed Project is a Static Synchronous Compensator (STATCOM) Substation, herein referred to as the Fern Road Substation, which would include an approximately +/-529 million volt-amperes, reactive (MVAR) dynamic reactive support facility to include a minimum of two equally sized STATCOM units. The STATCOM units would be located within the new Fern Road Substation and would be independently connected (e.g., looped-in) to Pacific Gas and Electric Company's (PG&E) regional electric transmission system via the Round Mountain - Table Mountain #1 and #2 500 kV transmission lines that are located adjacent to the Proposed Project site.

1.2. Project Area

LSPGC holds an option to purchase 40 acres or more within an approximately 426-acre parcel located directly adjacent to the Round Mountain - Table Mountain #1 and #2 500 kV transmission line corridor. The Proposed Project site is located east of Fern Road and east of an existing PG&E transmission right-of-way (ROW), approximately 1.6 miles northwest of the unincorporated community of Whitmore and approximately 9.3 miles north of State Highway 44 in unincorporated southern Shasta County, as shown on **Figures 1 and 2**. The Proposed Project site is zoned within a Habitat Protection District (HP-BA-80) and is currently used as grazing land.

The Proposed Project would require a permanent footprint of approximately 40 acres of land that would be owned by LSPGC. These 40 acres would contain: the Fern Road Substation , which would contain the STACOM units, a 500-kV switchyard, and associated facilities (totaling approximately 7.5 acres); and ancillary facilities including an access road, laydown yards, and parking (totaling approximately 3 acres). Additionally, there would be required PG&E distribution line upgrades along the west side of Fern Road which includes replacing eight wooden poles (the work area is approximately 3.2 acres).



LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 1 - General Location

Shasta County, CA

LEGEND

- Project Site
- Interstate
- State Highway
- Railroad
- County Boundary
- Municipal Boundary
- National Forest Boundary
- Wilderness Area
- National Recreation Area

Jurisdiction

- Bureau of Land Management Land
- US Forest Service Land
- Indian Reservation
- California State Land Commission Land

0 1 2 3 4 5
Miles

Data Sources: BLM, CA.gov, CalTrans, ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\Biology\Fig 1 General Location 101721.mxd
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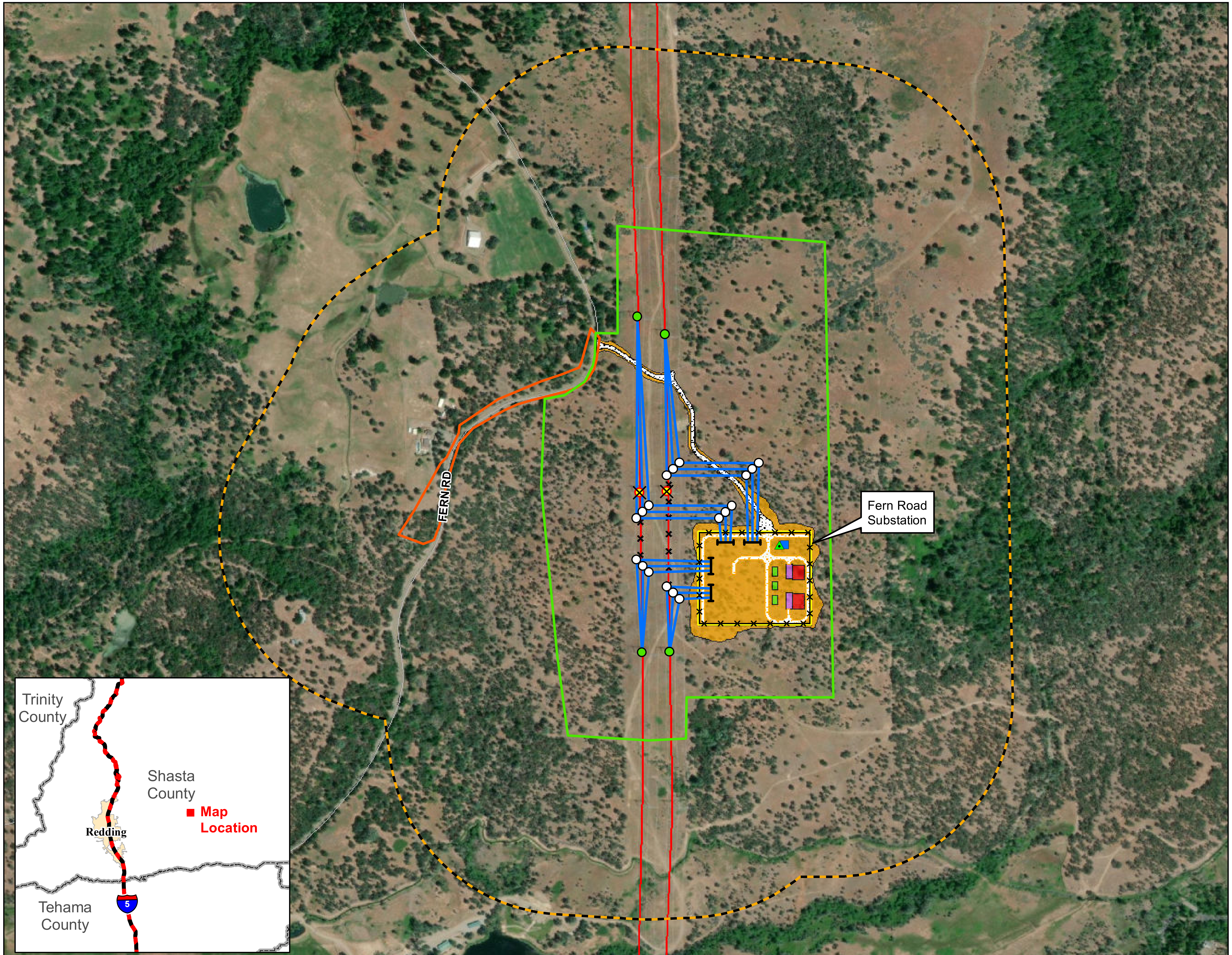

LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 2 Project Location

Shasta County, CA

LEGEND

Project Components
- New 3-Pole Dead-End Pole
- Existing Structure to be Removed
- Microwave Tower
- Control Enclosure
- Project Tie Line
- Existing 500kV Transmission Line to be Removed
- Fern Road Substation Bay
- Substation Fence
- Transformer
- Reactor
- Converter & Control Enclosure
- Interior Access Road
- Exterior Access Road
- Graded Area
- Site Boundary - Approx. 7.5 Acres
- Limits of Construction
- Distribution Overland Travel

Biological Resources
- Biological Resource Survey Area

General Features
- Existing Structure
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 250 500 750 1,000
Feet

Data Sources: ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\Biology\Figure 2 Project Location 032822.mxd
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Project Components

1.2.1. Fern Road Substation

The main components of the Proposed Project's system consist of two new STATCOM units that would be independently connected to the existing, adjacent PG&E Round Mountain - Table Mountain #1 and #2 500 kV transmission lines. The STATCOM units would be contained within the new Fern Road Substation facility and would have a rated real power output of zero mega-watts (MW) and a nominal terminal voltage of 500 kV. The STATCOM units would not increase existing system capacity. The Fern Road Substation facility would support the regional

transmission system by providing voltage support and grid stability at the PG&E Round Mountain Substation 500 kV bus.

The Fern Road Substation's STATCOM units would be interconnected (i.e., looped-in) with the PG&E electrical transmission system via the Round Mountain – Table Mountain #1 and #2 500 kV transmission lines. The existing transmission lines would be reconfigured to enter from the north of the proposed Fern Road Substation. The 500 kV transmission lines would exit the western portion of the substation and join the original alignment for the Round Mountain – Table Mountain #1 and #2 500 kV transmission lines. The point of ownership demarcation for the conductor would be the connection to LSPGC's take-off towers on LSPGC property. All facilities would be installed during the initial buildout; therefore, there is no anticipated ultimate buildout scenario beyond the Proposed Project.

The Fern Road Substation would include the STATCOM units, a 500 kV switchyard and associated facilities, occupying a total of approximately 7.5 acres. Ancillary facilities, including an access road and parking, would require grading and disturbance of approximately three (3) additional acres. The Proposed Project's primary component is the construction of the Fern Road Substation that would include two new STATCOM units, with a rated real power output of zero MW and a nominal terminal voltage of 500 kV. The STATCOM units would not increase the capacity of the regional electric transmission system. The proposed STATCOM units and associated facilities would be constructed within the new Fern Road Substation and include:

- Lightning Shielding Masts;
- Nine 500 kV Gas-Insulated Circuit Breakers and associated Disconnect Switches, Current Transformers, Voltage Transformers;
- 500 kV Disconnect Switches;
- 500 kV Voltage Transformers;
- 500 kV Power Line Carrier Equipment;
- 500 kV Station Service Transformers;
- 500 kV Bussing;
- 500 kV Surge Arresters;
- One Microwave Tower Communications Enclosure;
- One Control Enclosure;
- Four 500kV Take-Off Towers;
- Three Three-Phase 500 kV Main Power Transformers (including One Installed Spare);

- Outdoor Heating Ventilation and Air Conditioning (HVAC) Equipment and insulated gas bipolar transistor (IGBT)/Converter Cooling Equipment;
- Outdoor Air Core Reactors;
- Outdoor Medium Voltage Bussing;
- Outdoor Medium Voltage Instrument/Auxiliary Transformers;
- Outdoor Medium Voltage Surge Arresters
- Outdoor Medium Voltage Group Operated Air Break Switches; and
- Two approximately 4,000 square feet STATCOM IGBT Valve/Control Enclosures containing the following equipment:
    - IGBT Converters
    - Protective Relaying and Control Equipment
    - Supervisory Control and Data Acquisition (SCADA) Equipment
    - Cooling Equipment
    - AC/DC Auxiliary Power Equipment
    - Spare Parts and Maintenance Tool Storage
    - Miscellaneous Support Facilities

All major equipment (e.g., power transformers, power circuit breakers, reactors, IGBT value/control enclosures, cooling equipment) would be installed on concrete foundations. The maximum amount of oil required for the transformers at the Fern Road Substation facilities would be approximately 18,500 gallons for each of the three transformers. Each transformer would have an oil containment system consisting of an impervious, lined, open or stone-filled sump area around the transformer. The tallest structure within the Fern Road Substation would be the approximately 199-foot-high microwave tower. The microwave tower and take-off tower foundations would be set approximately 20 to 25 feet below ground-level.

In addition to the electrical equipment, the Fern Road Substation would include the following facilities or components:

- Signage and lighting;
- New access road construction;
- Chain link and barb wire security fencing approximately nine feet in height with secure gates accessible only by PG&E and LSPGC staff and emergency services personnel;
- Microwave tower approximately 199 feet in height and associated PG&E communications control building (The microwave tower and associated communications control building would be in a separately fenced area within the larger Fern Road Substation. This area would be only accessed by PG&E maintenance and operations personnel);
- Transformer oil containment basins designed to contain the oil volume of the transformers plus the 25-year 24-hour storm; and
- Electric distribution power connection.

All substation control enclosures would be painted a non-reflective, American National Standards Institute (ANSI) 70 light grey. Lighting would be installed at the Fern Road Substation and would conform to National Electric Safety Code (NESC) requirements and other applicable outdoor lighting codes. NESC recommends, as good practice, illuminating the substation facilities to a minimum of 22 lux or two foot-candles. The facility would not require 24-hour illumination. Photocell controlled lighting (motion detection) would be provided at a level sufficient to provide safe entry and exit to the Fern Road Substation and Control Building. Additional manually controlled lighting would be provided to create safe working conditions at the Fern Road Substation facility when required. All lighting provided would be shielded and pointed down to minimize glare onto surrounding properties and habitats.

The Fern Road Substation would be primarily powered by station service transformers located within the facility that would step-down the voltage from the PG&E 500 kV transmission lines to distribution voltage. An electric overhead distribution line would be installed to provide backup power for the Fern Road Substation facility from an existing PG&E distribution line that currently runs parallel to Fern Road. The distribution line would be installed on approximately 35 new wood poles that would be placed on the northern side of the Proposed Project's access road and into the Fern Road Substation facility. The distribution poles would be set approximately 8 to 10 feet below ground-level and would be approximately 30 to 40 feet tall.

All facilities at the Fern Road Substation, including the associated access road, would occur within the property line of the approximately 40-acre parcel to be owned by LSPGC.

1.2.2. PG&E Distribution Line Upgrades

The extension of distribution level power to the Fern Road Substation would be provided through a new tap into an existing PG&E distribution line that is located on the west side of Fern Road. PG&E distribution upgrades include the conversion of approximately eight wood poles from a single phase 12 kV to three phase 12 kV. This would require PG&E to replace approximately 8 wood poles and reconductor approximately 1,600 feet of distribution line. The new wood or steel poles would be approximately 50 feet and height and would be installed as close to the original pole location as feasible.

1.2.3. Access Roads

The Proposed Project would require the improvement of approximately 700 feet of an existing dirt access road and extending the access road for approximately 1,000 feet so that the access would connect the site to Fern Road Substation. The private dirt road is located along the northwestern property line and is currently used by PG&E for access to their transmission lines. The new section and improved access road would have a width of 20 feet and graded to accommodate construction, as well as operation and maintenance (O&M) vehicles. Site access roads would be surfaced with dust resistant base rock or gravel to maintain an all-weather roadway.

The Proposed Project would also require the development of a new access road, which would provide internal access within the Fern Road Substation facility during construction and O&M. The internal access road would be located completely within the fenced Fern Road Substation facility, constructed with gravel or rock, and would loop around the substation. This new road would be approximately 20 feet wide and approximately 1,500 feet long and would include a gate at the substation's entrance. Construction of this internal access road would include grading and rocking per the final Proposed Project design. A permanent gate would be installed at the Fern Road Substation facility driveway. Access roads are shown on **Figure 2**.

1.2.4. Other Potentially Required Facilities

PG&E 500 kV Interconnection Upgrades

The modification of the PG&E Round Mountain - Table Mountain #1 and #2 500 kV transmission lines would be required for the interconnection of the Fern Road Substation facility to the regional transmission system and is considered a connected project for purposes of California Environmental Quality Act (CEQA) compliance. Per PG&E's current plans, PG&E would reconfigure approximately 1,000 feet of both the Round Mountain - Table Mountain #1 and #2 500 kV transmission lines for an overhead connection into and out of the Fern Road Substation. Each transmission line circuit would be individually connected to one of the proposed STATCOM units. The PG&E transmission line reconfiguration would require the removal of two existing lattice steel structures (approximately 130 feet in height) located just north of the proposed substation. Eighteen tubular steel pole (TSP) dead-end structures, three for each line, would be constructed to support the 90-degree turns necessary to connect to Fern Road Substation. The new PG&E TSPs would be approximately 110 to 130 feet in height and would require new permanent easement rights from LSPGC.

PG&E Substation Upgrades

In addition to the modified 500 kV transmission lines described above, additional upgrades would be required at the existing PG&E Round Mountain Substation and the Table Mountain Substation. The Round Mountain Substation would require the reduction of the series capacitor banks and the upgrade protection (i.e., adding additional relays). The Table Mountain Substation would add series capacitor banks and upgraded protection that would require the extension of an internal substation isolation fence. New PG&E microwave path communications would also be included as part of the upgrades, which would require the installation of two new microwave towers or monopoles. These microwave towers would range in height from approximately 30 to 100 feet. The new microwave towers or monopoles would be constructed at the existing PG&E Redding Service Center and Cottonwood Substation.

1.2.5. Future Expansions and Equipment Lifespans

As described in Section 3.3.6, Future Expansions and Equipment Lifespan, CAISO requirements for the Proposed Project include providing sufficient space within the Fern Road Substation property to incorporate potential future incremental expansion of the substation to support increased future renewable energy generating capacity on the electrical grid. If implemented, the potential future expansion would require the Fern Road Substation's southern fenceline to be extended approximately 215 feet to add approximately 2.1 acres to the site's footprint. The estimated timeframe for this potential expansion would be approximately ten years from the energization of the Fern Road Substation. Additionally, there are no foreseeable consequences of the Proposed Project, as this Proposed Project would provide voltage support to the existing PG&E transmission system and would ensure additional voltage support upgrades would not be needed elsewhere. The expected usable life of all Proposed Project facilities is 40 years.

1.2.6. Below-ground Conductor / Cable Installations

Below-grade work would include the construction of equipment foundations, oil containment for transformers, the grounding grid, low voltage cable needed for the Geographic Information System (GIS) substation equipment and STATCOM equipment, conduit, and erection of the control enclosures. Typical below ground conductor and/or cable would be approximately two to four feet below ground surface. No other below-grade work or cable installations are proposed.

1.2.7. Telecommunication Lines

The Proposed Project does not include underground telecommunication lines. However, the Proposed Project would include a SCADA system that would consist of fully redundant servers, power supplies, and Ethernet Local Area Network (LAN) and Wide Area Network (WAN) connections, routers, firewalls, and switches. The Fern Road Substation would include an approximately 199-foot-tall microwave tower that would be used as the primary path for telecommunications for the facility.

Additionally, LSPGC is evaluating a second medium that would provide telecommunication diversity back to its off-site control center. This communication medium would likely be a Long Term Evolution (LTE) cellular connection from the control enclosures located within the Fern Road Substation. An LTE antenna (approximately 10 inches tall) would be mounted to one of the control enclosures to boost the LTE cellular connection at the Proposed Project site.

1.3. Agency Consultation

Heritage Environmental Consultants (Heritage) spoke with Amy Henderson of the California Department of Fish and Wildlife (CDFW) about potential biological concerns surrounding the Proposed Project. It was determined that bumble bee, nesting bird, botanical, and aquatic resources surveys should be conducted for the Proposed Project. No other biological concerns were raised during these correspondences. Heritage submitted a Crotch bumble bee (*Bombus crotchii*) and western bumble bee (*Bombus occidentalis occidentalis*) adult presence survey plan for LSPGC Round Mountain 500 kV Area Dynamic Reactive Support Project on June 16, 2020. The plan was approved by Mrs. Henderson on June 16, 2020. After the initial survey reports were prepared, submitted, and reviewed by Mrs. Henderson on January 13, 2021, a change in the Proposed Project work area occurred. Heritage spoke with Mrs. Henderson again on January 13 to determine if additional surveys would need to be conducted. Mrs. Henderson confirmed on January 13 via email and during a call with Heritage on January 22 that no additional bumble bee surveys would be required and no additional nesting bird surveys would be required until a week before Proposed Project commences construction, and only if it started during nesting season (February 1 through August 31). Mrs. Henderson stated that additional botanical surveys should be conducted in potential impact areas and for the new work area for special-status species plants, and additional aquatic resources surveys should be conducted.

2. Methods

2.1. Literature Review

This Biological Resources Technical Report (BRTR) describes all biological resources considered to be within the scope of the BRTR Standards checklist (California Public Utilities Commission [CPUC], 2019). Prior to conducting field surveys, Heritage conducted a literature review and records search for information on occurrences of special-status species in the vicinity of the Proposed Project. The following databases/resources were reviewed for occurrences within five miles of the area (defined by the CPUC as the Project region):

- CDFW's Special Animals List;
- California Natural Diversity Database (CNDDB);
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants;
- Western Bat Working Group (WBWG) priority species lists;
- National Wetlands Inventory (NWI);
- United States Geological Survey (USGS) 7.5-minute topographical maps of the Project site and vicinity;
- United States Fish and Wildlife Service (USFWS): Critical Habitat for Threatened and Endangered Species;
- USFWS: Information for Planning and Consultation (IPaC) Project Planning Tool.

Species are considered to have special status if they meet at least one of the following criteria:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR § 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [proposed species]);
- Species that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR § 40, February 28, 1996);
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 CCR § 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- Species that meet the definitions of rare and endangered under CEQA Section 15380;
- Plants considered by the CNPS to be "rare, threatened or endangered in California" (California Rare Plant Rank 1A, 1B, 2A, and 2B) as well as California Rare Plant Rank 3 and 4 plant species (CNPS, 2021a);
- Species designated by CDFW as Fully Protected or a Species of Special Concern;
- Species protected under the federal Bald and Golden Eagle Protection Act (BGEPA);
- Birds of Conservation Concern (BCC) or Watch List species;
- Bats considered by the WBWG to be "high" or "medium" priority (Western Bat Working Group [WBWG], 2021a).

Sensitive vegetation communities and habitats include:

- Sensitive vegetation communities/habitats identified in local or regional plans, policies, or regulations, or designated by CDFW or USFWS;
- Areas that provide habitat for locally unique biotic species/communities (e.g., oak woodlands, grasslands, and forests);
- Habitat that contains or supports rare, endangered, or threatened wildlife or plant species as defined by CDFW and USFWS;
- Habitat that supports CDFW Species of Special Concern;
- Areas that provide habitat for rare and endangered species and that meet the definition in CEQA Guidelines Section 15380;
- Existing game and wildlife refuges and reserves;
- Lakes, wetlands, estuaries, lagoons, streams, and rivers;
- Riparian corridors.

The results of the literature review were compiled to create a list of plant and wildlife species and sensitive vegetation communities or habitats that could potentially occur in the Project area. Each species was analyzed for potential to occur in the area (**Section 3**).

2.2. Biological Resources Survey Area

The Proposed Project was given a 1,000-foot buffer which is referred to as the Biological Resources Survey Area (approximately 387 acres; Survey Area, as shown on **Figures 3 and 4**). This Survey Area includes all areas of permanent and temporary impacts associated with the construction of the Proposed Project and is the area for which special-status species occurrence potential was analyzed. Several private residences and Fern Road are located to the west and northwest of the Proposed Project within the 1,000-foot Survey Area.

2.3. Biological Surveys

2.3.1. Bumble Bee Surveys

Crotch bumble bee and western bumble bee were identified as species of concern. CDFW requested that surveys be conducted to determine whether the two species occur within the Proposed Project area. A bumble bee survey plan was prepared in consultation with CDFW and approved in June 2020 (**Appendix C**).

Heritage biologists performed Crotch bumble bee and western bumble bee habitat and host plant surveys on June 23, 2020 to determine if the six most associated bumble bee host plant genera or any other flowering plants were present in the Survey Area. Two photograph-only surveys were conducted on July 29 and August 10, 2020 to determine adult bumble bee presence/absence.

2.3.2. Botanical Surveys

Qualified botanists consulted the USFWS IPaC, the CNPS rare plant inventory, and CNDDB to identify potential and/or known occurrences of special-status species within the Survey Area. Prior to plant surveys, staff consulted with CDFW for reference population phenology.

Botanists conducted field surveys on April 25 and May 31, 2020 over the entire approximately 42-acre botanical Survey Area (note: the final Proposed Project Area expanded after these surveys were conducted). Additional surveys were conducted on April 11 and 12, and May 16 and 17, 2021 covering the entire updated Proposed Project Area limits of construction. The Survey Area was systematically surveyed on foot in accordance with the 2018, CDFW Plant and Vegetation Survey Protocols (CDFW, 2018), to ensure complete coverage and optimal bloom time. During the field surveys, attention was given to identifying areas on the site with the potential for supporting special-status species and sensitive habitats. Field personnel recorded incidental observations of plant species and characterized biological communities occurring on-site. All plant species that were observed were recorded. The survey report for botanical surveys is included in **Appendix D**.

2.3.3. Tree Census

A tree census, requested by the CPUC, was conducted by qualified biologists and foresters on March 8-11, 2021 (Foster, 2021a). The survey was designed to determine the number of trees, species, diameter at breast height (DBH), and relative health of individual trees located within the Proposed Project work area. The census memo is included in **Appendix E**.

2.3.4. Nesting Bird Surveys

In accordance with a CDFW request, bird nesting and breeding surveys were conducted by a qualified biologist. Pre-construction nesting surveys would also be conducted within 30 days prior to construction activities. If actively nesting birds are observed, the biologist would consult with the CDFW to establish species-specific buffers and work activities would be avoided until the young have fledged.

Qualified biologists conducted focused nesting bird surveys within the Survey Area on April 24, May 22, and June 26, 2020, (Foster, 2020a). The surveys covered the entire original proposed 42-acre Proposed Project Area and surrounding habitats including adjacent lands out to and including a 300 foot-buffer for raptors and a 75 foot-buffer for passerines with additional focus on ridges and trees within 0.5-mile radius for bald and golden eagles. All suitable nest trees and structures were carefully searched for nests and suitable substrates for nesting birds. During the survey, the biologists walked the Survey Area and visually surveyed all the habitats. Potential active nests were observed for several minutes to determine the presence of birds or nesting activity. Birds present in the Survey Area were observed for any evidence of breeding behavior (such as carrying food or nesting materials). The nesting bird survey report is included in **Appendix F**.

2.3.5. Aquatic Resource Surveys

Qualified wetland ecologists conducted fieldwork for the aquatic resources delineation on April 7 and April 24, 2020 and March 4 and March 10, 2021 (Foster, 2020b, 2021b, **Appendix G**). The surveyor used the routine on-site determination methods described in the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987 Manual) (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE, 2008). Streams were mapped and delineated in the field in accordance with indicators and guidance in USACE Regulatory Guidance Letter No. 05-05, dated

December 7, 2005 (USACE, 2005) and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region (Lichvar and McColley, 2008). Methods and standards conform to the USACE Sacramento District's Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE, 2016) and Updated Map and Drawing Standards for the South Pacific Division Regulatory Program (USACE, 2016). These methods were also used to determine CDFW Lake and Streambed Alteration Program jurisdictional waterways. In accordance with the 1987 Manual and the 2008 Arid West Region Supplement, data on vegetation, soil, and hydrology characteristics that were used as the basis for determining if wetland boundaries were present, were collected and recorded on data forms. A GPS with sub-meter accuracy was used to record the location of jurisdictional boundaries and data points. The data were downloaded and superimposed onto aerial photographs to generate the aquatic resources delineation map in compliance with USACE minimum standards (USACE, 2016). A list of plant species observed in the Survey Area was compiled, and the scientific name and wetland indicator status of each species are provided following Lichvar et al. (2016). Additionally, photographs were taken to show representative views of the Survey Area and aquatic resources. The aquatic resource survey report is included in **Appendix G**.

3. Regulatory Setting

Several regulations have been established by federal, state, and local agencies to protect and conserve biological resources. The discussion below provides a brief overview of agency regulations that may be applicable to the resources that could occur within the area of the Proposed Project and their respective requirements. The final determination of whether permits are required is made by the regulating agencies.

3.1. Federal

3.1.1. Federal Endangered Species Act of 1973

The Endangered Species Act of 1973 (16 United States Code [U.S.C.] 1531–1544), as amended, protects federally listed threatened and endangered species from unlawful take. "Take" under the ESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The USFWS regulations define harm to include some type of "significant habitat modification or degradation."

3.1.2. Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703 et seq.) makes it unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess; offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried, or received any native migratory bird, part, nest, egg or product. Nearly all North American species are classified as "migratory birds" and are subject to protection under this act, including all species that are discussed in this document.

3.1.3. Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940 and as amended, prohibits anyone, without a permit issued by the USFWS, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For the purposes of these guidelines, "disturb" means: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available:

1. injury to an eagle; or
2. a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior;
3. nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

3.1.4. Clean Water Act

The Clean Water Act (CWA; 33 USC 1251 et seq.), as amended, provides a structure for regulating the discharge of pollutants into the waters of the U.S. Through this Act, the Environmental Protection Agency (EPA) is given the authority to implement pollution control programs. These include setting wastewater standards for industry and water quality standards for contaminants in surface waters. The discharge of any pollutant from a point source into navigable waters is illegal unless permitted under the act’s provisions.

Section 404 of the CWA regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other waters of the U.S. The USACE is the federal agency authorized to issue Section 404 permits for certain activities conducted in wetlands or other waters of the U.S. Section 401 of the CWA grants each state the right to ensure that the state's interests are protected on any federally permitted activity resulting in any discharge into navigable waters within the state. In California, the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) are responsible for implementing Section 401 of the CWA. For a proposed project that requires a USACE CWA Section 404 permit, the RWQCB must certify that such discharge complies with state water quality standards through a Water Quality Certification determination under Section 401 of the CWA.

The EPA and USACE have jurisdiction over wetlands and other Waters of the United States (WOTUS; collectively “waters”) that are subject to Section 404 of the CWA or Section 10 of the Rivers and Harbors Act.

3.2. State

3.2.1. California Endangered Species Act

The CDFW administers the CESA, which prohibits the “taking” of listed species except as otherwise provided in state law. Section 86 of the Fish and Game Code defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Under certain circumstances, the CESA applies these take prohibitions to species petitioned for listing (state candidates). Pursuant to the requirements of the CESA, State lead agencies (as defined under CEQA Public Resources Code [PRC] Section 21067) are required to consult with the CDFW to ensure that any action or project is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat. Additionally, the CDFW encourages informal consultation on any proposed project that may impact a candidate species. The CESA requires the CDFW to maintain a list of threatened and endangered species. The CDFW also maintains a list of candidates for listing under the CESA and of species of special concern (or watch list species).

3.2.2. State Fully Protected Species

California Fish and Game Code Sections 3511, 4700, 5050 and 5515 designate 37 species of wildlife as Fully Protected in California. The classification of Fully Protected was the State's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds, and mammals. Most fully protected species have also been listed as threatened or endangered species under ESA and/or CESA. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

3.2.3. California Fish and Game Code Section 1602

Under Section 1602 of the Fish and Game Code, CDFW regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFW has jurisdiction over riparian habitats associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider. Section 1602 of the Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or use materials from a streambed to notify the CDFW before beginning the project. If the CDFW determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.

3.2.4. Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Section 1900-1913; NPPA) prohibits the taking, possessing, or sale within the state of any plant listed by CDFW as rare, threatened, or endangered. An exception to this prohibition allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFW at least 10 days prior to the initiation of activities that would destroy them. The NPPA exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way."

3.2.5. California Environmental Quality Act

CEQA requires lead agencies to evaluate the environmental impact associated with a proposed project. CEQA requires that a local agency prepare an Environmental Impact Report (EIR) on any project it proposes to approve that may have a significant effect on the environment, or a Mitigated Negative Declaration (MND) if the project would not have significant or unmitigable effects. The purpose of a CEQA document is to provide decision-makers, public agencies, and the general public with an objective document that fully discloses the potential environmental effects of a proposed project. The process is specifically designed to objectively evaluate and disclose potentially significant direct, indirect, and cumulative impacts of a proposed project; to identify alternatives that may reduce or eliminate a project's significant effects; and to identify feasible measures that mitigate significant effects of a project.

3.2.6. Porter-Cologne Water Quality Control Act

The Porter-Cologne Act grants the SWRCB and the RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the federal CWA. Any person proposing to discharge waste to waters of the state within any region must file a report of waste discharge with the appropriate regional board.

3.2.7. California Migratory Bird Protection Act

Assembly Bill (AB) No. 454 is an act to amend, repeal, and add Section 3513 of the California Fish and Game Code, relating to migratory birds. This act was approved by the governor on September 27, 2019. This AB amends Section 3513 to read: "It is unlawful to take or possess any migratory nongame bird as designated in the federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703 et seq.) before January 1, 2017, any additional migratory nongame bird that may be designated in that federal act after that date, or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the United States Secretary of the Interior under that federal act before January 1, 2017, or subsequent rules or regulations adopted pursuant to that federal act, unless those rules or regulations are inconsistent with this code."

3.3. Local

The CPUC has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order 131-D (GO 131-D), Section XIV.B, "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters." Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county regulations are not applicable as Shasta County does not have jurisdiction over the Proposed Project. Because the CPUC has exclusive jurisdiction over the Proposed Project siting, design, and construction, the Proposed Project is not subject to local land use and zoning regulations or discretionary permits. This section includes a summary of local biological resources-related policies, plans or programs for informational purposes and to assist with CEQA review. Although LS Power Grid California, LLC (LSPGC) is not subject to local discretionary permitting, ministerial permits would be secured as appropriate.

3.3.1. Shasta County General Plan

The following relevant biological policies from the Shasta County General Plan (Shasta County, 2004a, 2004b) were reviewed, and the following summaries are provided for informational purposes only:

- ***Policy FW-c***: Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the USFWS, shall be designed or conditioned to avoid any net adverse project impacts on those species.
- ***Policy FW-d:*** The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. The purpose is also to encourage open space and recreation (policy OSR-e). Mapping of significant waterway corridors in areas designated as resource protection lands is not required since it is assumed that resource land uses will also act to protect such waterway corridors. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by the following measures:
    - Regulation of vegetation removal.
    - Design of grading and road construction to restrict sediment input to all streams.
    - Establishment of a development set-back.
    - The siting of structures, including clustering.
    - Recreation plans for the Sacramento River, Clear Creek, and other feasible waterway resources.
- ***Policy FW-e:*** Salmon spawning gravel in the following rivers and creeks shall be protected:
    - **Sacramento River**: Keswick Dam to Shasta-Tehama County line
    - **Battle Creek**: Mouth to the mouth of South Fork Battle Creek.
    - **Cow Creek**: Mouth to: Powerhouse on South Cow Creek; the mouth of Coal Gulch on Old Cow Creek; the mouth of Dry Clover Creek on Clover Creek; the mouth of Tracy Creek on Oak Run Creek; the mouth of Salt Creek on Little Cow Creek.
    - **Cottonwood Creek**: Mouth to west line of Section 6, T.29N., R.5W., M.D.B.& M.
    - **Bear Creek**: Mouth to the Highway 44 bridge.
    - **Clear Creek**: Mouth to Whiskeytown Dam.
    - **Churn Creek**: Mouth to Redding City limits.
    - **Stillwater Creek**: Mouth to the Highway 299E bridge.
    - **Olney Creek**: Mouth to mouth of Tadpole Creek
    - **Anderson Creek**: Mouth to Interstate 5.
- ***Policy FW-f:*** The County should encourage and support efforts by State and Federal agencies that implement the Upper Sacramento River Fisheries and Riparian Habitat Management Plan.
- ***Policy FW-g:*** The County shall encourage the Department of Fish and Game to prepare periodic biological assessments regarding the overall effectiveness of waterway protection efforts under the Stream Corridor Protection Program.

- ***Policy FW-h:*** The County shall encourage efforts to develop tree protection standards which focus on the County's differing land use types, namely; lowland urban, upland urban, rural residential and resource lands. Urban tree protection standards shall focus on landscaping that promotes energy conservation and design aesthetics, as opposed to preserving native vegetation.
- ***Policy FW-j:*** Efforts to restore the Middle Creek drainage basin, Clear Creek watershed basin, Battle Creek, Cow Creek, and other Sacramento River tributary watersheds shall be supported by the County.
- ***Policy W-a:*** Sedimentation and erosion from proposed developments shall be minimized through grading and hillside development ordinances and other similar safeguards as adopted and implemented by the County.
- ***Policy W-b:*** Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to streams, creeks, rivers, reservoirs, or groundwater basins in accordance with standards and water resource management plans adopted by the County.
- ***Policy W-c:*** All proposed land divisions and developments in Shasta County shall have an adequate water supply of a quantity and a quality for the planned uses. Project proponents shall submit sufficient data and reports, when requested, which demonstrate that potential adverse impacts on the existing water users will not be significant. The reports for land divisions shall be submitted to the County for review and acceptance prior to a completeness determination of a tentative map. This policy will not apply to developments in special districts which have committed and documented, in writing, the ability to provide the needed water supply.
- ***Policy W-d:*** The potential for cumulative water quality impacts resulting from widespread use of septic systems in poorly suited soil areas shall be periodically evaluated by the County for the need to provide greater monitoring and possible changes to applicable sewage disposal standards.
- ***Policy W-e:*** The Shasta County Water Agency should encourage and promote interagency water planning efforts within the County, particularly in the Redding Basin.
- ***Policy W-f:*** The County shall encourage and participate in interagency planning efforts, such as the Redding Area Water Council, to protect and enhance the quality of all groundwater and surface water resources.

4. Existing Conditions

4.1. Biological Resource Setting

The Proposed Project is located in the foothills of the Sacramento Valley in an unincorporated area of southcentral Shasta County, California approximately 1.6 miles northwest of the unincorporated community of Whitmore, 11 miles north of Shingletown, and 24 miles east-northeast of Redding. The Proposed Project is located within the Cascade Range Foothills Subregion (Jepson, 2021) approximately 20 miles to the west of the Cascade Range in northern California. Lassen Peak, the southernmost active volcano in the Cascade Range, is located approximately 25 miles southeast of the Proposed Project area. The Proposed Project area and Biological Resources Survey Area is characterized by blue oak woodland except under the electric transmission lines where annual grassland is maintained by ongoing vegetation management associated with the transmission lines and along several intermittent streams and seasonal wetlands where seasonal wetland habitats exist. A majority of the Survey Area is actively grazed by cattle. All of the common species that were observed in the Survey Area were typical for oak woodland and annual grassland habitats and included American robin (*Turdus migratorious*), acorn woodpecker (*Melanerpes formicivorous*), red-winged blackbird (*Agelaius phoeniceus*), California quail (*Callipepla californica*), European starling (*Sturnus vulgaris*), and red-tailed hawk (*Buteo jamaicensis*). A full list of observed plant and animal species is included in **Appendix H**. Photographs of the Proposed Project and Survey Area are included in **Appendix A**.

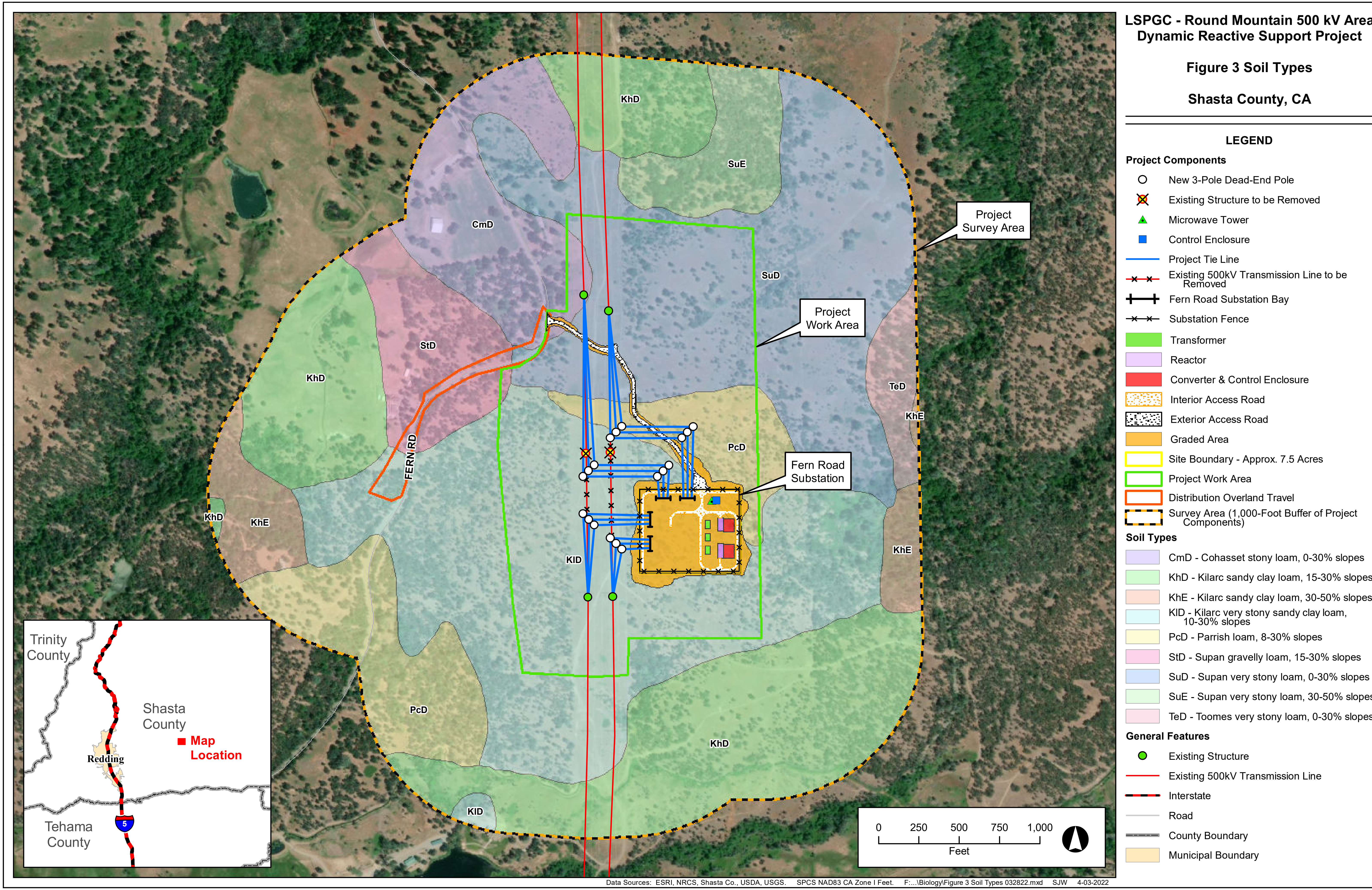
4.2. Soils, Topography, and Drainage

Five different soil types are located within the Survey Area (U.S. Department of Agriculture National Resource Conservation Service [USDA NRCS], 2021a): Kilarc sandy clay loam and very stony sandy clay loam, Supan gravelly loam and very stony loam, Cohasset stony loam, Parrish loam, and Toomes very stony loam. **Figure 3** shows the soil types within the Survey Area.

The Proposed Project region ranges in elevation from 825 to 3,980 feet above mean sea level (amsl), with the highest points to the east of the Proposed Project towards the Cascade Range and lowest to the west of the Proposed Project near Redding (**Figure 1**). The Survey Area gradually slopes downhill from north to south; elevations range from 1,710 feet amsl along the southern boundary to 2,130 feet amsl along the northern boundary (U.S. Geological Survey [USGS], 2021).

Water in the Proposed Project region flows generally from the east and northeast off the Cascade Range towards the Sacramento Valley floor to the west and southwest. Water within the Survey Area flows generally from north to south.

The Buckhorn climate station, which is located north of Montgomery Creek, approximately 16 miles north-northeast of the Proposed Project, averages 63.55 inches of precipitation per year (USDA NRCS, 2021b). A similar amount of precipitation likely occurs in the Survey Area.



LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project
Figure 3 Soil Types
Shasta County, CA
LEGEND
Project Components
New 3-Pole Dead-End Pole
Existing Structure to be Removed
Microwave Tower
Control Enclosure
Project Tie Line
Existing 500kV Transmission Line to be Removed
Fern Road Substation Bay
Substation Fence
Transformer
Reactor
Converter & Control Enclosure
Interior Access Road
Exterior Access Road
Graded Area
Site Boundary - Approx. 7.5 Acres
Project Work Area
Distribution Overland Travel
Survey Area (1,000-Foot Buffer of Project Components)
Soil Types
CmD - Cohasset stony loam, 0-30% slopes
KhD - Kilarc sandy clay loam, 15-30% slopes
KhE - Kilarc sandy clay loam, 30-50% slopes
KlD - Kilarc very stony sandy clay loam, 10-30% slopes
PcD - Parrish loam, 8-30% slopes
StD - Supan gravelly loam, 15-30% slopes
SuD - Supan very stony loam, 0-30% slopes
SuE - Supan very stony loam, 30-50% slopes
TeD - Toomes very stony loam, 0-30% slopes
General Features
Existing Structure
Existing 500kV Transmission Line
Interstate
Road
County Boundary
Municipal Boundary
Project Survey Area
Project Work Area
Fern Road Substation
FERN RD
KhD
SuE
CmD
SuD
StD
KhD
TeD
KhE
PcD
KhD
KhE
KhE
KlD
PcD
KhD
KlD
Trinity County
Shasta County
Redding
Map Location
Tehama County
5
0 250 500 750 1,000
Feet
Data Sources: ESRI, NRCS, Shasta Co., USDA, USGS. SPCS NAD83 CA Zone I Feet. F:...\Biology\Figure 3 Soil Types 032822.mxd SJW 4-03-2022

4.3. Vegetation Communities and Land Cover Types

The approximately 387-acre Survey Area supports native, non-native vegetation communities that have been disturbed by grazing and has disturbed areas associated with the construction and maintenance of the existing 500 kV transmission lines, Fern Road, private roads, and private residences. Vegetation community types are based on field observations and descriptions in the CNPS Manual of California Vegetation Online (MCV, CNPS, 2021c). Natural communities were evaluated using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the CNDDB. Sensitive natural communities are natural communities with ranks of S1, S2 or S3. The natural communities observed in the Survey Area are ranked S4 and SNA (semi-natural stands dominated by non-native species). No sensitive natural communities were observed in the Survey Area.

The Proposed Project and Survey Area are dominated by blue oak woodland: *Quercus douglasii* forest and woodland alliance (S4), annual grassland: *Bromus tectorum-Taeniatherum caput-medusae* herbaceous semi-natural alliance (SNA), with some seasonal wetlands: Baltic and Mexican rush marshes: *Juncus arcticus* (var. *balticus, mexicanus*) herbaceous alliance (S4) and disturbed areas. All components of the Proposed Project would be located in blue oak woodland, annual grassland and disturbed land cover types (**Figure 4**).

The approximate acreage of each of the vegetation communities and land cover types that were mapped within the Survey Area is summarized in **Table 1**. Brief descriptions of each land cover type are provided following the table. Vegetation community and land cover mapping is shown on **Figure 4**. None of the vegetation communities and land cover types that were mapped with the Survey Area are considered sensitive vegetation communities or habitats.

Table 1 – Vegetation Communities and Land Cover Types within the Survey Area

Vegetation Community or Land Cover Type Name	Approximate Acreage in Survey Area	Approximate Percent of Total Acreage
Blue Oak Woodland: *Quercus douglasii* Forest and Woodland Alliance	302	78%
Annual Grassland: *Bromus tectorum-Taeniatherum caput-medusae* Herbaceous Semi-Natural Alliance	34	9%
Seasonal Wetlands: Baltic and Mexican Rush Marshes: *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance	1	<1%
Disturbed	51	13%
Total	**387**	

Blue Oak Woodland: Quercus douglasii Forest and Woodland Alliance

This habitat includes both hardwoods and conifers and comprises the majority of the Survey Area (approximately 78 percent of the Survey Area). Blue oak is the dominant tree species with a gray pine (*Pinus sabiniana*) and buckeye (*Aesculus californica*) subcomponent. Associated shrub species include poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), and whiteleaf manzanita (*Arctostaphylos viscida*). The ground cover consists of forbs (predominantly big heron bill [*Erodium botrys*], common butter cup [*Ranunculus californicus*], and rose clover [*Trifolium hirtum*]); and annual grasses (predominantly bulbous bluegrass [*Poa bulbosa*], seaside barley [*Hordeum marinum*], and medusa head [*Taeniatherum caput-medusae*]).

Annual Grassland: Bromus tectorum-Taeniatherum caput-medusae Herbaceous Semi-Natural Alliance

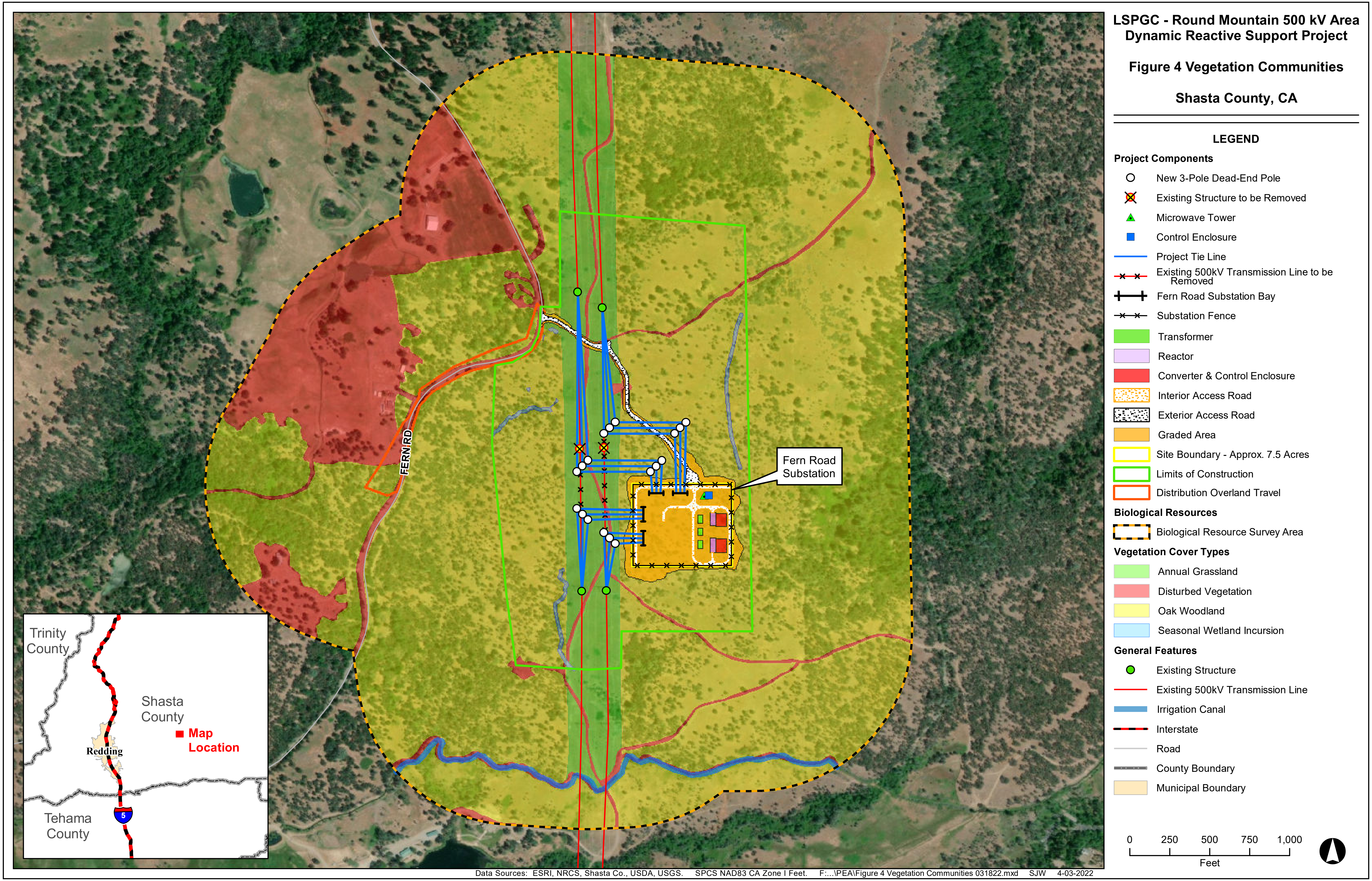
Annual grassland exists under the powerlines and is a result of ongoing vegetation management (approximately 9 percent of the Survey Area). Non-native annual grasses such as seaside barley, medusa head, and bulbous bluegrass are the dominant grass species and big heron bill, yellow star thistle (*Centaurea solstitalis*), and butter n' eggs (*Triphysaria eriantha*) are the dominant forb species in this habitat.

Seasonal Wetlands: Baltic and Mexican Rush Marshes: Juncus arcticus (var. balticus, mexicanus) Herbaceous Semi-Natural Alliance

The seasonal wetland habitats are found along the intermittent streams and seasonal wetlands within the Survey Area (less than one percent of the Survey Area). The dominant species in this habitat are wire rush (*Juncus balticus*), yellow monkey flower (*Erythranthe guttata*), and annual beard grass (*Polypogon monspeliensis*).

Disturbed

Disturbed areas (approximately 13 percent of the Survey Area) are those that have been changed from their natural state by human influence and include disturbed vegetation. This cover type includes all paved and dirt roads, buildings, and cleared areas associated with residences and agriculture within the Survey Area.



FERN RD
Fern Road Substation
Trinity County
Shasta County
Tehama County
Redding
Map Location
5
LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project
Figure 4 Vegetation Communities
Shasta County, CA
LEGEND
Project Components
New 3-Pole Dead-End Pole
Existing Structure to be Removed
Microwave Tower
Control Enclosure
Project Tie Line
Existing 500kV Transmission Line to be Removed
Fern Road Substation Bay
Substation Fence
Transformer
Reactor
Converter & Control Enclosure
Interior Access Road
Exterior Access Road
Graded Area
Site Boundary - Approx. 7.5 Acres
Limits of Construction
Distribution Overland Travel
Biological Resources
Biological Resource Survey Area
Vegetation Cover Types
Annual Grassland
Disturbed Vegetation
Oak Woodland
Seasonal Wetland Incursion
General Features
Existing Structure
Existing 500kV Transmission Line
Irrigation Canal
Interstate
Road
County Boundary
Municipal Boundary
0 250 500 750 1,000
Feet
Data Sources: ESRI, NRCS, Shasta Co., USDA, USGS. SPCS NAD83 CA Zone I Feet. F:...\PEA\Figure 4 Vegetation Communities 031822.mxd SJW 4-03-2022

4.4. Special-Status Plants

All special-status species plants listed in the IPaC (USFWS, 2021b), CNPS (CNPS, 2021b), and CNDDB (CDFW, 2021b) occurrence records within the five-mile Proposed Project region were evaluated for their potential to occur within the Survey Area based on the presence of suitable habitat, elevation, and soils (**Table 2**). The IPaC report is provided in **Appendix B**; CNDDB records are shown on **Figure 5**. There is no USFWS critical habitat for special-status species plants mapped within 5 miles of the Proposed Project (USFWS, 2021b). Based on the literature review, 41 special-status plant species were evaluated for their potential to occur within the Survey Area; of the 41 special-status plant species, 24 have low or no potential to occur in the Survey Area and 17 have moderate to high potential to occur in the Survey Area (**Table 2**).

Botanical surveys were conducted in April and May, 2020 and April and May, 2021 (Quercus, 2020, 2021, **Appendix D**). During the 2020 surveys, no special-status plant species were observed, but during the 2021 expanded surveys, one CNPS California Rare Plant Rank (CRPR) 4.3 plant species: silvery false lupine (*Thermopsis californica var. argentata*) was observed. No state or federally listed plant species are known to occur in the Proposed Project vicinity. These plant species are discussed in further detail in **Table 2**.

4.5. Special-Status Wildlife

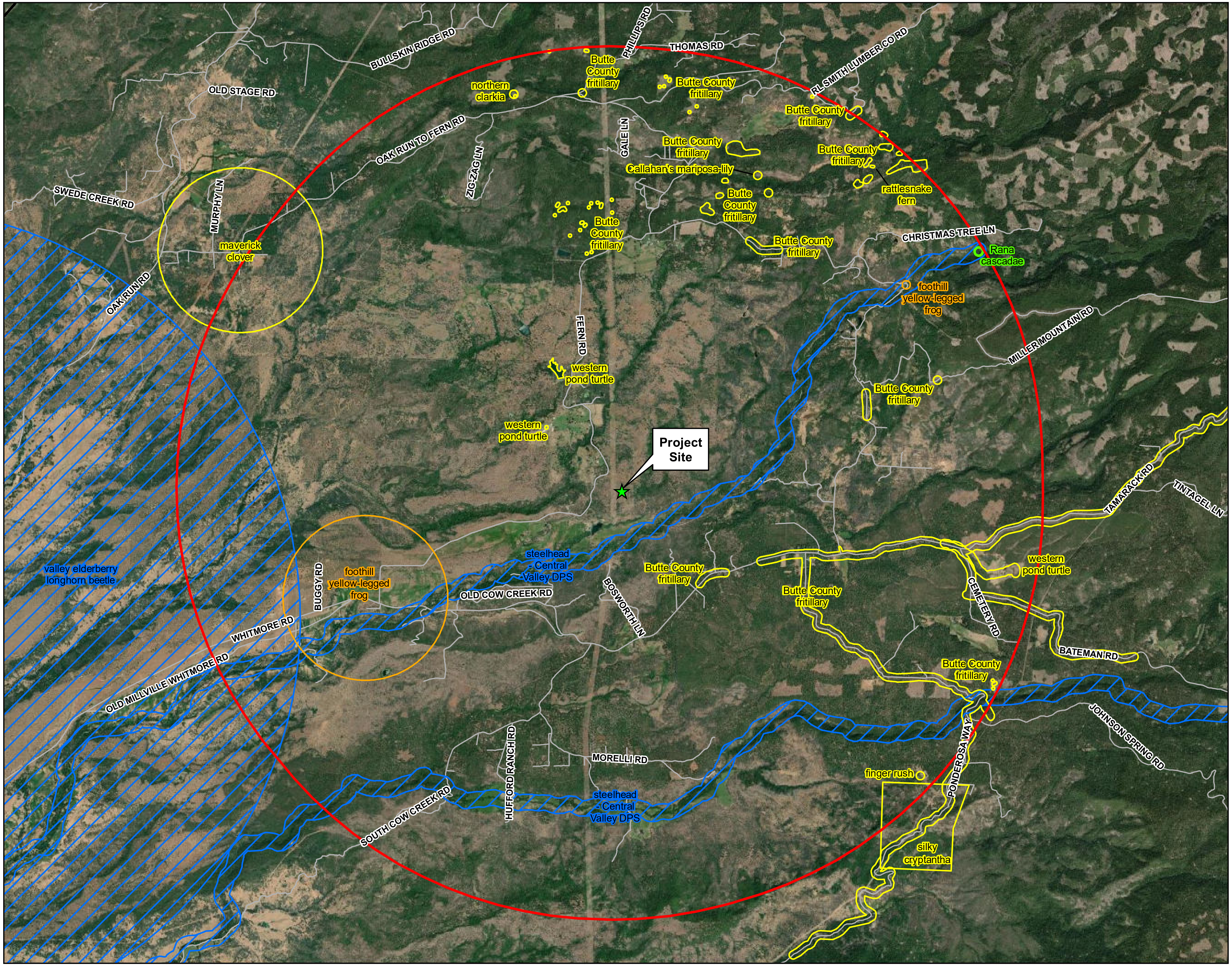
All special-status species wildlife listed in the IPaC (USFWS, 2021b), CNDDB (CDFW, 2021b) occurrence records within the 5-mile Project region, and WBWG priority bats that were determined to have an overlapping range with the Proposed Project (WBWG, 2021b) were evaluated for their potential to occur within the Survey Area based on the presence of suitable habitat (**Table 2**). The IPaC report is provided in **Appendix B**; CNDDB records are shown on **Figure 5**. There is no USFWS critical habitat for special-status species wildlife mapped within 5 miles of the Proposed Project (USFWS, 2021b). Based on the literature review, 12 mammals, 11 birds, five invertebrates, three amphibians, two fish, and one reptile were evaluated for their potential to occur within the Survey Area (**Table 2**).

Five bird species and five mammal species were identified as having moderate or high potential to occur within the Survey Area. Raptors (protected by the MBTA and the California Fish and Game Code) were also identified as having a high potential to occur within the Survey Area. The rest of the species that were analyzed for occurrence in the Survey Area are not expected to occur or are considered to have a low potential to occur. The species that have a moderate or high potential to occur within the Survey Area are described in more detail following **Table 2**.

LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 5 CNDDB

Shasta County, CA



LEGEND

Project Components

- Project Site
- 5-Mile Buffer of Project

CNDDB

- Threatened
- CA Endangered
- CA Cand. Endangered
- Species of Concern

General Features

- Interstate
- Road
- County Boundary
- Municipal Boundary

0 0.5 1 1.5 2

Miles

Data Sources: CNDDB, ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
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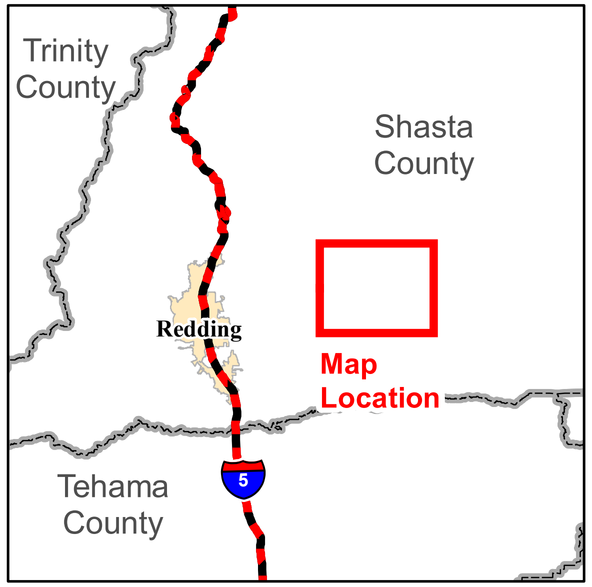


Special-Status Species Descriptions

The following special-status descriptions are used in **Table 2**.

- **FE** = Federally Endangered
- **FT** = Federally Threatened
- **SE** = State Endangered
- **ST** = State Threatened
- **SC** = State Candidate Species
- **CSSC** = California Species of Special Concern
- **CFP** = California Fully Protected Species
- **CFGC** = California Fish and Game Code Protected Species
- **CWL** = California Watch List Species
- **BCC** = USFWS Bird of Conservation Concern
- **BGEPA** = Bald and Golden Eagle Protection Act Protected Species
- **MBTA** = Migratory Bird Treatment Act Protected Species
- **Western Bat Working Group-H (WBWG-H)** = The High (H)designation represents those species considered the highest priority for funding, planning, and conservation actions. Information about status and threats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment.
- **WBWG-M** = The Medium (M)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.
- **CNPS:**
- **1B** = Plants rare, threatened, or endangered in California or elsewhere
- **2B** = Plants rare, threatened, or endangered in California but more common elsewhere
- **3** = Review List: Plants about which more information is needed
- **4** = Watch List: Plants of limited distribution
- **0.1** = Plants seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- **0.2** = Plants moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
- **0.3** = Plants not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Sources: CDFW 2021a, WBWG 2021a and CNPS 2021.

Table 2 – Special-Status Species Potential for Occurrence in the Survey Area

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Plants				
Shasta maidenhair fern	*Adiantum shastense*	4.3	Occurs in mesic hardwood-conifer forests, on the forest floor as well as on limestone and metasedimentary rock outcrops. This includes rocky road cuts, most often in shade and with northern or eastern exposures. Occurs at elevations from 1,100 - 2,740 ft. This fern blooms from April through August (Calflora, 2021; Huiet, et al. 2015).	None; based on lack of suitable coniferous forest habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Sanborn's onion	*Allium sanbornii*	4.2	Usually occurs in serpentine, gravelly soil of the Cascade Range and Sierra Nevada foothills. Occurs in chaparral, cismontane woodland, and lower montane coniferous forest habitats. Occurs at elevations from 200 - 8,000 ft. This perennial herb blooms from May through September (Calflora, 2021; CNPS, 2021b).	None; based on lack of serpentine soils. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Shasta ageratina	*Ageratina shastensis*	1B.2	Usually occurs on limestone or metavolcanic cliffs in chaparral and lower montane coniferous forest. Occurs at elevations from 1,300 - 5,900 ft. This perennial herb blooms from June through October (Calflora, 2021; Jepson, 2021)	Low; based on lack of cliff habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Henderson's bent grass	*Agrostis hendersonii*	3.2	Occurs in mesic valley and foothill grasslands and is associated with vernal pools habitats. Occurs at elevations below 1,000 ft. This annual grass blooms from April through June (Calflora, 2021; Jepson, 2021)	None; based on lack of suitable vernal pool habitats and elevation is too high. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Mallory's manzanita	*Arctostaphylos malloryi*	4.3	Occurs in chaparral or lower montane coniferous forest habitat often on volcanic soils. Occurs at elevations from 2,100 - 3,900 ft. This perennial evergreen shrub blooms from April through July (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	None; based on the lack of coniferous forest or chaparral habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Scalloped moonwort	*Botrychium crenulatum*	2B.2	Occurs in bogs and fens, meadows and seeps in upper montane coniferous forest, lower montane coniferous forest, marshes, and swamps. Occurs at elevations from 4,000 - 10,000 ft. This perennial rhizomatous herb blooms from June to September (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; based on the lack of bog/marsh habitat and elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Mingan moonwort	*Botrychium minganense*	2B.2	Occurs in meadows and open forest along streams or around seeps. Occurs at elevations from 4,900 - 10,150 ft. This fern blooms from July through September (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Rattlesnake fern	*Botrypus virginianus*	2B.2	Occurs in bogs and fens, meadows and seeps in lower montane deciduous forests and other riparian forests. Prefers moist, humus-rich soils. Occurs at elevations from 2,500 - 3,800 ft. This perennial fern blooms from September through November (Calflora, 2021b; Jepson, 2021).	Low; potentially suitable habitat exists within seasonal wetlands; however, elevation is lower than 2,500 feet. The nearest CNDDB occurrence was recorded approximately four miles north-northeast of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Watershield	*Brasenia schreberi*	2B.3	Occurs in shallow water of freshwater marshes, lakes, rivers, ponds, and seeps. Usually occurs within slightly acidic water. Occurs at elevations up to 7,000 ft. This perennial aquatic herb blooms from June through September (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; due to the lack of suitable freshwater habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Callahan's mariposa-lily	*Calochortus syntrophus*	1B.1	Occurs in open, rocky areas with moist or wet soils in oak woodland and valley and foothill grassland habitats. Occurs at elevations from 1,680 - 3,870 ft. This perennial herb blooms from May through June. It is endemic to northern California and is only known to occur in a small range in Shasta and Tehama Counties (Calflora, 2021; Jepson, 2021; CNPS, 2021d).	Moderate; suitable oak woodland and annual grassland habitats exist within the Survey Area, though soils are not typically moist. The nearest CNDDB occurrence was recorded approximately four miles north-northeast of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Butte County morning-glory	*Calystegia atriplicifolia ssp. buttensis*	4.2	Occurs in chaparral, lower montane coniferous forest, and valley and foothill grasslands. Occurs at elevations from 100 - 3,800 ft. This perennial herb blooms from May through July (Calflora, 2021; Jepson, 2021; CNPS, 2021d).	High; suitable annual grassland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Fleshy toothwort	*Cardamine bellidifolia var. pachyphylla*	4.3	Occurs in rocky talus and scree within alpine boulder and rock fields, subalpine or upper montane coniferous forests. Occurs at elevations from 5,900 - 9,350 ft. This perennial herb blooms from June through August (Calflora, 2021; Jepson, 2021; CNPS, 2021b)	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Shasta clarkia	*Clarkia borealis ssp. arida*	1B.1	Occurs in cismontane woodland and lower montane coniferous forest within openings. Occurs at elevations from 1,600 - 2,000 ft. This annual herb blooms from June through August. Is only known to occur within the foothill forests north and south of Shingletown in Shasta and Tehama Counties (south of the Survey Area by approximately 10 miles) (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	Moderate; suitable oak woodland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b), and is only known to occur in an area approximately 10 miles south of the Survey Area. No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Northern clarkia	*Clarkia borealis ssp. borealis*	1B.3	Occurs in chaparral, cismontane woodland, and lower montane coniferous forest often in roadcuts. Occurs at elevations from 1,130 - 4,300 ft. This annual herb blooms from June through September (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	High; suitable oak woodland habitat exists within the Survey Area. The nearest CNDDB occurrence was recorded approximately five miles north of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Castlegar hawthorne	*Crataegus castlegarensis*	3	Occurs in riparian woodland areas and on streamsides in meadows, scrub and forests. Occurs at elevations from 3,000 - 4,260 ft. This perennial shrub blooms from May through June (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	Moderate; suitable woodland habitat exists in the vicinity of seasonal wetlands, but elevations within the Survey Area are lower than this plant prefers. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Silky cryptantha	*Crypthantha crinita*	1B.2	Occurs primarily in gravelly streambeds within cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, and valley and foothill grassland. Occurs at elevations from 110 - 5,225 ft. This annual herb blooms from April through May (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	High; suitable oak woodland habitat and seasonal wetlands exist within the Survey Area. The nearest CNDDB occurrence was recorded approximately five miles southeast of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Shasta limestone monkeyflower	*Erythranthe taylorii*	1B.1	Occurs in openings, carbonate crevices and rocky outcrops within cismontane woodland and lower montane coniferous forest. Occurs at elevations from 3,000 - 3,600 ft. This annual herb blooms from April through May (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Shasta fawn lily	*Erythronium shastense*	1B.2	Usually occurs in limestone and carbonate, rocky soils in openings within cismontane woodland and lower montane coniferous forest. Occurs at elevations from 1,080 - 3,350 ft. This perennial herb blooms from February through April (Calflora, 2021; CNPS, 2021b).	None; no limestone soils are present. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Butte County fritillary	*Fritillaria eastwoodiae*	3.2	Occurs within openings and on dry benches and slopes and usually in serpentine soils. Occurs in chaparral, cismontane woodlands, and lower montane coniferous forest. Occurs at elevations below 4,900 ft. This perennial herb blooms from March through June (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	High; suitable oak woodland habitat exists within the Survey Area. There are 15 CNDDB occurrences within five miles of the Proposed Project, including occurrences between two and five miles north, northeast, east, and southeast of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Jepson's horkelia	*Horkelia daucifolia var. indicta*	1B.1	Occurs primarily within dry openings in cismontane woodland and usually on clay soils. Occurs at elevations from 760 - 2,500 ft. This perennial herb blooms from April through June. Only known to occur in a few locations in Shasta County surrounding Redding, including occurrences south of the Proposed Project by approx. seven miles (Calflora, 2021; CNPS, 2021b; Jepson, 2021; CNPS, 2021d).	High; suitable oak woodland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Baker's globe mallow	*Ilamna bakeri*	4.2	Occurs primarily on volcanic soils and in openings and burned areas within chaparral, Great Basin scrub, lower montane coniferous forest, and pinyon and juniper woodland. Occurs at elevations from 3,280 - 7,700 ft. This perennial herb blooms from June through September (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Finger rush	*Juncus digitatus*	1B.1	Occurs primarily within vernal pools, swales, and volcanic seeps within cismontane woodlands and lower montane coniferous forest openings. Occurs at elevations from 2,200 - 4,000 ft. This perennial grass-like herb blooms from May through June. Only known to occur in several locations in the vicinity of Shingletown in Shasta County, including an occurrence five miles south of the Proposed Project (Calflora, 2021; CNPS, 2021b; CNPS, 2021d).	Moderate; some potentially suitable habitat exists within seasonal wetland habitats. The nearest CNDDB occurrence was recorded approximately five miles southeast of the Proposed Project (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Bellinger's meadowfoam	*Limnanthes floccosa ssp. bellingeriana*	1B.2	Occurs in mesic habitats in cismontane woodland and meadows and seeps. Occurs at elevations from 1,015 - 3,080 ft. This annual herb blooms from April through June (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	Moderate; some potentially suitable habitat exists within seasonal wetland habitats. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Woolly meadowfoam	*Limnanthes floccosa ssp. floccosa*	4.2	Occurs in vernally mesic habitats within chaparral, cismontane woodland, valley and foothill grassland, and vernal pools. Occurs at elevations below 2,000 ft. This annual herb blooms from March through May (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	Moderate; some potentially suitable habitat exists within seasonal wetland habitats. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Shasta snow-wreath	*Neviusia cliftonii*	1B.2	Often occurs along streamsides in cismontane woodland, lower montane coniferous forest, and riparian woodland. Typically occurs in limestone soils and on shaded north-facing slopes. Occurs at elevations from 380 - 2,150 ft. This shrub blooms from April through June. Only known to occur in the mountains surrounding Shasta Lake, including an occurrence approx. nine miles north-northwest of the Proposed Proejct (Calflora, 2021; CNPS, 2021b; CNPS, 2021d).	None; no limestone soils or shaded north-facing slopes exist. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Ahart's paronychia	*Paronychia ahartii*	1B.1	Tends to occur in moist, rocky habitats such as vernal pools within cismontane woodland and valley and foothill grassland. Occurs at elevations from 50 - 1,700 ft. This annual herb blooms from March through June (Calflora, 2021; CNPS, 2021b; CNPS, 2021d).	None; based on lack of vernal pool habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Shasta beardtongue	*Penstemon heterodoxus var. shastensis*	4.3	Occurs in broad-leafed upland forest, chaparral, lower montane coniferous forest, meadows and seeps, and upper montane coniferous forest. Occurs at elevations from 3,115 - 10,940 ft. This perennial herb blooms from May through September (Calflora, 2021; CNPS, 2021b).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Sierra blue grass	*Poa sierrae*	1B.3	Occurs in openings in lower montane coniferous forest. Usually occurs on shady moist slopes and mossy rocks. Occurs at elevations from 1,150 - 5,130 ft. This perennial grass blooms from April through June (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	Low; based on lack of coniferous forest habitat. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Bidwell's knotweed	*Polygonum bidwelliae*	4.3	Occurs in chaparral, cismontane woodland, and valley and foothill grassland usually on volcanic soils. Occurs at elevations from 200 - 4,040 ft. This annual herb blooms from April through July (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	High; suitable oak woodland and annual grassland habitats exist within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Redding checkerbloom	*Sidalcea celata*	3	Occurs within cismontane woodlands, sometimes within serpentine soils. Occurs at elevations from 490 - 1,210 ft. This perennial herb blooms from May through June (Calflora, 2021; Jepson, 2021).	None; elevation is too high. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Giant checkerbloom	*Sidalcea gigantea*	4.3	Occurs on moist to wet slopes, seeps, stream margins, and meadows in upper and lower montane coniferous forest. Occurs at elevations from 2,950 - 3,400 ft. This perennial herb blooms from July through September (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
English peak greenbrier	*Smilax jamesii*	4.2	Occurs on streambanks and lake margins within broad-leafed upland forest, lower montane coniferous forest, marshes and swamps, North Coast coniferous forest, and upper montane coniferous forest. Occurs at elevations from 4,900 - 8,200 ft. This perennial herb blooms from May through July (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Long-fruited jewel flower	*Streptanthus longisiliquus*	4.3	Occurs within openings in cismontane woodland or lower montane coniferous forest. Occurs at elevations from 1,310 - 5,580 ft. This perennial herb blooms from April through September (Calflora, 2021; CNPS, 2021b).	High; potentially suitable oak woodland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Long-leaved starwort	*Stellaria longifolia*	2B.2	Occurs in marshes, bogs, and fens, meadows and seeps, riparian woodland, and upper montane coniferous forest. Occurs at elevations from 3,115 - 5,495 ft. This perennial herb blooms from May through August (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Water awlwort	*Subularia aquatica ssp. americana*	4.3	Occurs along lake margins and streambanks within upper montane coniferous forest. Occurs at elevations from 6,000 - 11,100 ft. This annual herb blooms from July through September (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	None; elevation is too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Silvery false lupine	*Thermopsis californica var. argentata*	4.3	Occurs in cismontane woodland, lower montane coniferous, and pinyon and juniper woodland. Primarily occurs at elevations from 3,930 - 7,220 ft. This perennial herb blooms from April through October (Calflora, 2021; CNPS, 2021b; Jepson, 2021).	Present; two populations of silvery false lupine were observed during botanical surveys in 2021 in the northern portion of the Study Area; these populations included between two hundred and three hundred individuals (**Figure 6**, Quercus, 2021). No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Slender false lupine	*Thermopsis gracilis*	4.3	Occurs in chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, and North Coast coniferous forest. Occurs at elevations from 330 - 3,940 ft. This perennial herb blooms from March through July (CNPS, 2021b; Calflora, 2021; Jepson, 2021).	Moderate; potentially suitable oak woodland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Maverick clover	*Trifolium piorkowskii*	1B.2	Occurs on shallow vernal depressions on volcanic flats, or the banks of intermittent or perennial watercourses flowing through open rocky grassland, often with scattered oaks or in transitional habitats with scattered chaparral and conifers. Only one location is known from southern Shasta County approx. 16 miles southwest pf the Proposed Project. Occurs at elevations from approximately 900 - 2,200 ft. This annual herb blooms from April through May (Morgan et al., 2014; CNPS, 2021b).	Moderate; potentially suitable habitat exists within seasonal wetland habitats. The nearest CNDDB occurrence was recorded approximately five miles northwest of the Proposed Project, but this record was made in 1894 and has not been rediscovered since (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Siskiyou clover	*Trifolium siskiyouense*	1B.1	Occurs in mesic habitats in meadows and seeps. Sometime occurs along streambeds. Occurs at elevations from 2,625 - 4,920 ft. This perennial herb blooms from June through July (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	Low; potentially suitable habitat exists within seasonal wetland habitats, but elevations within the Survey Area are lower than this plant prefers. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Yellow triteleia	*Triteleia crocea var. crocea*	4.3	Occurs in lower montane coniferous forest on granitic or serpentine soils. Occurs at elevations from 3,900 - 6,560 ft. This perennial herb blooms from May through June (Calflora, 2021; CNPS, 2021b).	None; based on lack of granitic or serpentine soils and elevations that are too low. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Shasta huckleberry	*Vaccinium shastense ssp. shastense*	1B.3	Occurs on acidic and mesic soils, often along streambanks, seeps, rocky outcrops and disturbed areas. Occurs in chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, and subalpine coniferous forest. Occurs at elevations from 1,060 - 4,000 ft. This shrub blooms from December through May (Calflora, 2021; Jepson, 2021; CNPS, 2021b).	Moderate; potentially suitable oak woodland habitat exists within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). No observations during protocol botanical surveys (Quercus, 2020, 2021); therefore, this species is not expected to occur.
Fish				
Delta smelt	*Hypomesus transpacificus*	FT, ST	Only occurs within the Sacramento - San Joaquin River delta estuary. This fish species can tolerate a wide range of salinities and migrates upstream to freshwater areas for breeding purposes. Not known to exist upstream of Knights Landing in Yuba County on the Sacramento River, approximately 130 miles southwest of the Proposed Project (USFWS, 1995, 2017).	None; lack of suitable habitat. No known occurrences withinfive5 miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Steelhead (Central Valley distinct population segment)	*Oncorhynchus mykiss irideus pop. 11*	FT, ST	This anadromous fish is found in Pacific Ocean drainages from Southern California to Alaska. The Central Valley population segment uses the Sacramento River and its tributaries for spawning and migration purposes. Steelhead spawn downstream of dams on every major tributary within the Sacramento River system, including Cow Creek and its tributaries. Steelhead spawn within coarse gravel in pools or riffles within small streams and tributaries where cool, well oxygenated water is available year-round (National Marine Fisheries Service [NMFS], 2016).	None; the streams within the Survey Area are ephemeral or intermittent, very small, and do not contain gravelly bottoms that are preferred for steelhead spawning purposes. There are known CNDDB occurrences somewhere within the reach of Old Cow Creek which is located approximately 0.5 mile south of the Proposed Project and somewhere within the reach of South Cow Creek which is located approximately three miles southeast of the Proposed Project (CDFW, 2021b).
Invertebrates				

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Vernal pool fairy shrimp	*Branchinecta lynchii*	FT	These fairy shrimp have an ephemeral life cycle and exist only in vernal pools or vernal pool-like habitat; the species does not occur in riverine, marine, or other permanent bodies of water. When the temporary pools dry, offspring persist in suspended development as desiccation resistant embryos (USFWS, 2007).	None; lack of vernal pool habitats at the site and in surrounding areas. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Shasta crayfish	*Pacifastacus fortis*	FE, SE	Occupies cool, clear, spring-fed lakes, rivers, and streams usually at or near a spring inflow source, where waters show little annual fluctuation in temperature and remain cool during the summer. The most important habitat requirement appears to be the presence of adequate volcanic rock rubble to provide escape cover from predators (USFWS, 2009).	None; lack of suitable spring-fed lakes, streams, or rivers at the site and in surrounding areas. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Crotch bumble bee	*Bombus crotchii*	SC	Distributed from coastal California east towards the Sierra-Cascade crest. Inhabits open grassland and scrub habitats within many ecoregions including adjacent foothills. Generally occupies warmer and more arid regions than other bumble bees and does not usually occupy mountainous regions. Most current observations (2002-2017) occur in southern California with few records as far north as Sacramento (Xerces et al., 2018, Williams et al., 2014).	None; outside this species' current range does not extend as far north as the Proposed Project. No observations of bumble bees or host plants during bumble bee surveys (Heritage, 2020). This species is not tracked by CNDDB (CDFW, 2021b).
Western bumble bee	*Bombus occidentalis occidentalis*	SC	Previously a widespread generalist, this bumble bee is now largely restricted to high elevation sites in Oregon, Washington, and California. Western bumble bee require habitat with rich supplies of floral resources with continuous blooming from spring to autumn. Found in a range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows and into the western edge of the prairie grasslands. Like many bumble bees, it typically nests underground in abandoned rodent burrows or within hollows in decaying wood (Xerces et al., 2018, Williams et al., 2014).	None; elevations are lower than current occurrences for this species. No observations of bumble bees or host plants during bumble bee surveys (Heritage, 2020). This species is not tracked by CNDDB (CDFW, 2021b).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	ST	Occurs almost entirely on or close to its host plant, blue or red elderberry (*Sambucas sp.*), along rivers or streams. Elderberry shrubs typically exist along drainages in moist loamy soils. Elderberry species exist at a wide range of elevations from sea level to 11,000 ft. (USFWS, 2006).	None; based on a lack of suitable elderberry shrub habitat. No elderberry shrubs were observed during botanical or aquatic resource surveys (Quercus, 2020; Foster, 2020b). There are known CNDDB occurrences approximately 4.5 miles west of the Proposed Project (CDFW, 2021b).
Mammals				
Townsend's big-eared bat	*Corynorhinus townsendii*	CSSC, WBWG-H	Occurs in a wide variety of habitats including coniferous forests, mixed forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Forages near edge habitats along streams and adjacent to and within a variety of wooded habitats. Requires caves or mines for roosting habitat (WBWG, 2021b).	Moderate; foraging only. No cave or mine roosting habitat is present, but foraging individuals could occur over seasonal wetlands and annual grassland habitats. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Spotted bat	*Euderma maculatum*	CSSC, WBWG-H	Occurs in a wide variety of habitats from arid, low desert habitats to high elevation coniferous forests. Prominent rock features are a necessary feature for roosting. Forages in close proximity to roost sites (WBWG, 2021b).	Low; due to a lack of suitable roosting habitat. Since foraging usually occurs in the immediate vicinity of the roost site, there is a very low potential for foraging individuals to occur. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Silver-haired bat	*Lasionycteris noctivagans*	WBWG-M	Occurs in coastal and montane coniferous forests, valley foothill woodland, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Prefers old growth forests, but can be found in a variety of wooded habitats. Roosts individually or in small groups in hollow trees, snags, buildings, rock crevices, caves, and under bark (CDFW, 2021a).	Low; potentially suitable foraging and roosting habitat exists within oak woodland and seasonal wetland habitats within the Survey Area, but this bat prefers old growth forests. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Western red bat	*Lasiurus blossevillii*	CSSC, WBWG-H	Prefers riparian woodlands but is also found in a variety of other forests. Primarily roosts in trees along forest edges adjacent to streams or open fields, but will sometimes use orchards and buildings for day roosts. Forages over open areas near the roosting sites (WBWG, 2021b).	Moderate; potentially suitable foraging habitat exists within oak woodland and seasonal wetland habitats and there is a low chance for roosting bats in trees within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Hoary bat	*Lasiurus cinereus*	WBWG-M	The most widespread bat in the United States. Prefers coniferous and broadleaf trees at the edges of clearings but will also use dense forested areas. Usually roosts in dense foliage of trees. Forages in open areas near roosting areas (WBWG, 2021b).	Moderate; potentially suitable foraging habitat exists within oak woodland and seasonal wetland habitats and there is a low chance for roosting bats in trees in the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Long-eared myotis	*Myotis evotis*	WBWG-M	Occurs in semiarid shrublands, sage, chaparral, and agricultural areas, but prefers coniferous woodlands and forests. Roosts under tree bark, in hollow trees, caves, mines, cliff crevices, sinkholes, rocky outcrops, buildings, and under bridges. Forages amongst and along the edges of forested areas (WBWG, 2021b).	Low; lack of coniferous forests and shrublands within the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Little brown myotis	*Myotis lucifugus*	WBWG-M	Widespread and common in mesic, forested areas of temperate North America. Will exploit a wide variety of natural and man-made roost sites in woodland/forested areas where water sources are nearby. Maternity roost sites include tree cavities, caves, and buildings. Most common in mid- to high-elevation forests. Feeds over water and other open areas such as agricultural fields and grasslands (WBWG, 2021b).	Moderate; potentially suitable foraging habitat exists within oak woodland and seasonal wetland habitats and there is a low chance for roosting bats in trees and buildings in the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Fringed myotis	*Myotis thysanodes*	WBWG-H	Mostly occupies dry habitats where open areas (e.g., grasslands and deserts) are interspersed with mature forests (usually ponderosa pine, pinyon-juniper, or oak), creating complex mosaics with ample edges and abundant snags. In dry environments, exists in close proximity to water sources. Tends to forage along forest edges. Uses caves, mines, large trees and snags, and buildings as roost areas (Keinath, 2004; CDFW, 2021a).	Low; lack of suitable mature forests in the vicinity of the Survey Area. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Long-legged myotis	*Myotis volans*	WBWG-H	Primarily occupies coniferous woodlands and forests above 4,000 feet in elevation, but will also use chaparral, coastal scrub, riparian, and desert habitats. Roosts in rock crevices, buildings, under tree bark, in snags, mines, and caves. Forages in openings, near trees and cliffs, and over water sources (WBWG, 2021b; CDFW, 2021a).	Low; lack of coniferous forests. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
American Badger	*Taxidea taxus*	CSSC	Prefers open areas in relatively dry grasslands, open forests and creosote bush scrub, as well as agricultural land. Prefers areas with sandy/loamy, friable soils where burrowing is easier (CDFW, 2021a).	Moderate; open oak woodland habitat with loamy soils exists. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Pacific Fisher	*Martes pennanti*	CSSC	Use a variety of forest types including redwood, Douglas fir, white fir, mixed conifer, oak, and ponderosa pine. Overhead forest canopy is an important habitat component, with fishers typically occupying moderate or dense canopy forest. Typically occupies dense, late successional forests with under-story vegetation, decadent structures (snags, cavities, fallen trees and limbs, etc.), and limbs close to the ground (CDFW, 2010).	None; no suitable habitat is present. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Ring-tailed cat	*Bassariscus astutus*	CFP	Occurs in various riparian habitats and in brush stands of most forest and shrub habitats at low to middle elevations. Hollow trees, logs, snags, cavities in talus and other rocky areas, abandoned burrows, and other recesses are used for cover and denning. Usually not found more than 0.6 mile from a permanent water source. Prefer habitats with rocky outcrops, canyons, or talus slopes (CDFW, 2021a).	None; no suitable habitat is present. This species is not tracked by CNDDB (CDFW, 2021b).
Birds				
Swainson's hawk	*Buteo swainsonii*	ST, BCC	Overwinters in South America. Habitat in the breeding range consists of open stands of grass dominated vegetation, sparse shrublands, open woodlands, and agricultural lands – primarily those dominated by row, grain, and hay crops. Nests in scattered trees within these landscapes, such as in riparian trees near grasslands or agricultural areas (Bechard et al., 2020).	Low; based on the lack of expansive open areas for foraging. Swainson's hawks usually occupy less forested areas. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and no observations during nesting bird surveys (Foster, 2020a).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Peregrine falcon	*Falco peregrinus anatum*	CFP, BCC	Inhabits a large range from tundra to tropics in a wide range of habitat types from wetlands, deserts, forests, and islands. Nesting locations are always high off the ground over open areas, usually on cliffs or tall buildings (White et al., 2020).	Moderate; suitable oak woodland foraging habitat occurs within the Survey Area, but there is no potential for nesting based on the lack of cliff habitat. There is a known occurrence east-northeast of the Proposed Project based on CNDDB records. The occurrence buffer extends to approximately four miles north-northeast of the Proposed Project (CDFW, 2021b). There were no observations during nesting bird surveys (Foster, 2020a).
Greater sandhill crane	*Antigone canadensis tabida*	ST	This species breeds in flooded meadows and marshes with emergent vegetation in the northern United States and Canada. Wintering areas in California include a variety of wetland habitats in the Central and Imperial Valleys, including irrigated pastures/agricultural fields with cereal grain crops. Similar habitats are used during migration periods (Pacific Flyway Council, 1997; Gerber et al., 2020).	Low; no breeding or wintering habitat. Sandhill cranes have a low potential to pass through the Survey Area while migrating between breeding grounds in NE California, Oregon, Washington, and Canada and wintering grounds in the imperial and central valleys of California. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and no observations during nesting bird surveys (Foster, 2020a). They are very unlikely to use the Survey Area as stopover habitat.
Bank swallow	*Riparia riparia*	ST	Breeds primarily in North America and winters in South America. Breeds primarily in lowland areas along coasts, rivers, streams, lakes, reservoirs and wetlands. Vertical banks, cliffs, and bluffs in alluvial, friable soils characterize nesting sites in North America (Garrison and Turner, 2020).	Low; based on a lack of nesting habitat in the vicinity. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and no observations during nesting bird surveys (Foster, 2020a).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Osprey	*Pandion haliaetus*	CWL	Habitats for this species vary greatly, from boreal forests and mountain valleys to temperate coasts, lakes and rivers to subtropical coasts to desert salt-flat lagoons. Prefers large lakes, reservoirs and rivers. Must have an adequate supply of accessible fish within energetically adequate commuting distance (6-12 miles) of nest; open, elevated nest sites free from predators (e.g., trees, large rocks, bluffs, and artificial structures). Migrates south to similar habitats during winter (Bierregaard et al., 2020).	Low; based on the lack of suitable water habitats. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). An osprey was observed flying over the site during nesting bird surveys (Foster, 2020a).
California thrasher	*Toxostoma redivivum*	BCC	Occurs from sea level to upper elevations of montane chaparral and lower elevation limits of coniferous and pine-oak woodlands (approximately 5,000 ft.). Relies on dense cover and shrub habitats for breeding (Cody, 2020).	Low; based on a lack of suitable dense, shrub habitats. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and no observations during nesting bird surveys (Foster, 2020a).
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC, CFP	Nest in high densities in open and semi-open habitat, but also may nest at lower densities in coniferous habitat when open space is available, (e. g. fire breaks, clear-cuts, burned areas, pasture land, etc.). Golden eagles can be found from the tundra, through grasslands, woodland-brushlands, and forested habitat, south to arid deserts. Usually associated with areas of high topographic relief such as rolling hills and mountains. Uses cliffs, rock outcroppings and tall, prominent trees for nesting. Will occasionally nest on tall transmission towers (Pagel et al., 2010; Katzner et al., 2020).	Low (foraging only); suitable open habitats exist within annual grassland habitat for foraging, but there is no potential for nesting in the area due to a lack of cliffs and tall, prominent trees. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and no observations during nesting bird surveys (Foster, 2020a).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Nuttall's woodpecker	*Picoides nuttallii*	BCC	Occurs mostly in oak and riparian deciduous woodland. Nest cavities are built in soft wood often in dead trunks or limbs of willow, cottonwood, oak, and sycamore (Lowther et al., 2020).	Moderate to high; based on the presence of suitable oak woodland habitat. This species is not tracked by CNDDB (CDFW, 2021b) and there were no observations during nesting bird surveys (Foster, 2020a).
Oak titmouse	*Baeolophus inornatus*	BCC	Occurs primarily in warm, dry oak or oak-pine woodlands. Composition of the oak woodlands varies, but woodland is generally open. Nests primarily in natural cavities and woodpecker-excavated cavities in oak trees (Cicero et al., 2020).	Moderate to high; based on the presence of suitable oak woodland habitat. This species is not tracked by CNDDB (CDFW, 2021b) and there were no observations during nesting bird surveys (Foster, 2020a).
Rufous hummingbird	*Salasphorus rufus*	BCC	Breeds in a wide range of habitats, but primarily within secondary succession communities and openings, but also mature forests, parks, and residential areas. Breeds in the northern U.S. through extreme northern California, and Canada. Migrates south through montane meadows and disturbed areas to Mexico and the extreme southern U.S for wintering. Migrates back north through valley lowlands and foothills using habitats such as chaparral, valley foothill hardwood, valley foothill hardwood-conifer, and riparian during migration (Healy and Calder, 2020; CDFW, 2021a).	Moderate (migration); not expected to occur for breeding or wintering. Suitable oak woodlands exist within the Survey Area with potentially suitable nectar-producing plants for use during migration. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b) and there were no observations during nesting bird surveys (Foster, 2020a).
Spotted towhee	*Pilio maculatus*	CSSC, BCC	Breeds in a wide variety of plant associations, all characterized by dense, broadleaf, shrubby growth only a few meters tall that provide deep, sheltered, semi-shaded litter and humus on the ground and a screen of twigs and foliage overhead (i.e., brush, thickets, tangles). Nests are built in litter on the ground or within low shrubs (Smith and Greenlaw, 2020).	Low; based on a lack of shrubby thickets. This species is not tracked by CNDDB (CDFW, 2021b) and there were no observations during nesting bird surveys (Foster, 2020a).

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
Raptors		MBTA, CFGC	Various.	High; raptors could forage within any of the habitats within the Survey Area and could perch or nest in trees and on transmission line towers. A red-tailed hawk pair and turkey vultures were observed during nesting bird surveys and several inactive stick nests that could be used by raptors were observed on transmission line towers (Foster, 2020a, **Figure 8**).
Reptiles				
Western pond turtle	*Emys marmorata*	CSSC	Found in ponds, lakes, streams, creeks, marshes, and irrigation ditches with abundant vegetation and either rocky or muddy bottoms. Found in woodland, forest and grassland habitats along permanent or nearly permanent water sources. In streams, it prefers pools to shallower areas. Logs, rocks, and exposed banks are required for basking. Nests are typically located along stream or pond margins in areas with full sunlight, but sometimes nests can be as far as 300 feet from the water source. Sometimes terrestrial burrow habitats are used for wintering (Holland, 1994).	None; due to a lack of permanent water. The intermittent streams and seasonal wetlands do not contain enough water year-round for this species to use the area for breeding or foraging. There are several known CNDDB occurrences in the vicinity of the Survey Area, including approximately one mile northwest and 4.5 miles east in ponds and reservoirs (CDFW, 2021b).
Amphibians				

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence
California red-legged frog	*Rana draytonii*	FT, ST	Requires a variety of habitat elements with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites are in permanent water habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, lagoons, and stock ponds. Typically, breeding adults are associated with deep, slow-moving water with dense shrubby riparian and emergent vegetation. Upland habitats include downed woody vegetation, leaf litter, and small mammal burrows; habitats that provide protection from predators and prevent desiccation. California red-legged frogs are not known to currently occupy Shasta County (USFWS, 2002).	None; no suitable breeding habitats exist within the Survey Area. The intermittent stream and seasonal wetlands do not contain enough permanent water for breeding and the nearest streams that could be used for breeding are too far away for these frogs to use the Proposed Project area for upland dispersal. These frogs are not known to exist in Shasta County. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).
Foothill yellow-legged frog	*Rana boylii*	SE	Frequents rocky streams and rivers with rocky substrate and open, sunny banks. Usually occurs in forests, chaparral and woodland habitats. Can be found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools (Hayes et al. 2016) Tadpoles require at least 3-4 months of water to complete metamorphosis, so this frog occupies primarily perennial or permanent streams. In intermittent streams large groups of adults can be found in persistent pools (CDFW, 2021a).	None; the intermittent stream and seasonal wetlands within the Survey Area do not appear to contain enough water at any time for these frogs to breed. There are two known CNDDB occurrences approximately four miles southwest and 4.5 miles northeast (CDFW, 2021b).
Shasta salamander	*Hydromantes shastae*	ST	This salamander is only found in the vicinity of Shasta Lake in Shasta County, CA. It has been found in Shasta County along three limestone belts; the Kennett Formation, McCloud Limestone and Hosselkus Limestone. Found around cliff faces, vertical cavern walls, and level ground in mixed forests of Douglas fir, pines, and oaks. Lives in moist caves and rock cracks (CDFW, 2021a; CDFG, 1987).	None; based on a lack of suitable limestone soils, caverns, cliffs and water. This species is only known to occur around Shasta Lake, which is located approximately eight miles northwest of the Proposed Project. No known occurrences within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b).

Townsend's Big-eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is primarily a cavern-dwelling species that occurs in a wide variety of habitat types, including coniferous forest, mixed forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types (WBWG, 2021b). This bat forages near habitat edges along streams and adjacent to and within a variety of wooded habitats, feeds primarily on moths and requires a water source in close proximity to roost sites. Roost sites are primarily in caves and mines, but occasionally in buildings, rock crevices, hollow trees, and under bridges. Maternity roosts are also found in caves, tunnels, and mines (CDFW, 2021a). Townsend's big-eared bats are very sensitive to human disturbance and are commonly threatened by recreational cave/mine exploration, mine reclamation, and renewed mining in historic districts.

There are no known occurrences of Townsend's big-eared bat within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could occur within oak woodland, annual grassland, or seasonal wetland habitats in the Survey Area for foraging purposes. There are no known caves or mines within the Survey Area for roosting purposes, but there may be caves or mines in the Proposed Project region that could be utilized, as well as buildings.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) prefers riparian woodlands but is found in a variety of other forest habitats. This bat forages in and around vegetation and in open areas near roosting sites on cicadas, beetles, wasps, flies, and moths. Roosting sites are primarily located in trees and rock crevices along forest edges adjacent to streams or open fields, but day roosts will sometimes be located in orchard trees and buildings (CDFW, 20201a; WBWG, 2021b). This species makes relatively short migrations within California to summer and winter ranges in the north and south of the state. As this species prefers riparian woodlands, threats include loss of riparian zones, primarily due to agricultural conversion and creation of water storage reservoirs (WBWG, 2021b).

There are no known occurrences of western red bat within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could occur within oak woodland, annual grassland and seasonal wetland habitats in the Survey Area for foraging purposes, and there is a low potential that individuals could roost within trees in oak woodland habitat. Roosting is more likely to occur closer to large riparian areas outside the Survey Area.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) is the most widespread North American bat. This bat prefers coniferous and broadleaf forests where it primarily uses forest edges and clearings, but will also use dense forested areas. Roosts are located in dense foliage of medium to large trees and foraging occurs along habitat edges or in open areas near the roosting locations (CDFW, 2021a; WBWG, 2021b). Primary forage includes moths, but beetles, flies, grasshoppers, termites, dragonflies, and wasps are also known to be taken. This bat migrates in flocks to warmer climates during the winter months. Loss of roosting habitat due to timber harvest is likely the largest threat to this species (WBWG, 2021b).

There are no known occurrences of hoary bat within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could occur in oak woodland, annual grassland and seasonal wetland habitats in the Survey Area for foraging purposes, and a low potential that individuals could roost within tree foliage in oak woodland habitat during summer months.

Little Brown Myotis

The little brown myotis (*Myotis lucifugus*) is among the most widespread and common bats in mesic, typically forested, areas in North America. This bat will exploit a wide variety of natural and man-made roost sites in woodland and forested areas where there are water sources nearby (WBWG, 2021b). The little brown myotis feeds over water and other open areas such as agricultural fields and grasslands on a wide range of flying insects, including emerging adults of aquatic species. Roosting occurs in large groups in caves, rock crevices, hot attics, buildings, and bat houses. Maternity roost sites include tree cavities, caves, and buildings. This bat migrates to hibernation caves and mines (CDFW, 2021a).

There are no known occurrences of little brown myotis within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could occur in open areas in oak woodland and annual grassland and seasonal wetland habitats in the Survey Area for foraging purposes, and a low potential that individuals could roost within trees in oak woodland habitat or in buildings in the Proposed Project region.

American Badger

The American badger (*Taxidea taxus*) may be found in nearly any habitat in California, but they prefer open areas in relatively dry grasslands, open forests, and creosote bush scrub, as well as occasionally agricultural land. Badgers are burrowing species that prefer areas with sandy/loamy, friable soils where burrowing is easier or where burrows already exist for occupation (CDFW, 2021a, Harris and Ogan, 1997). Badgers are carnivores, feeding primarily on rodents; but are also opportunistic feeders, sometimes eating reptiles, insects, and carrion.

There are no known occurrences of American badger within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could occur in any habitat types within the Survey Area. Loamy soils exist within the Survey Area that could be suitable for burrowing. No badgers or suitable burrows were observed during any field surveys or incidentally while in the Proposed Project area.

Peregrine Falcon

The peregrine falcon (*Falco peregrinus anatum*) was listed as endangered in 1970 under the federal ESA and under the CESA in 1971. The species was federally delisted in 1999 and delisted in California in 2009. The peregrine falcon is one of the most widely distributed raptors, ranging from the tundra to the tropics and in a wide range of habitats from wetlands, deserts, forests, and islands. Breeding habitats for peregrine falcons include a variety of locations from cliffs in uninhabited areas to tall buildings or bridges within urban landscapes, but usually near water sources (CDFW, 2021a). Peregrine falcons do not build nests like most other birds; instead, they lay their eggs in shallow indentations high on cliff sides or tall human-made structures; occasionally, they will use old raven nests. Breeding for peregrine falcons begins in late February or early March and concludes after young leave the nest between May and June (White et al., 2020). Birds are the primary food source for peregrines, but occasionally mammals, amphibians, fish, and insects will be taken.

The nearest CNDDB occurrence of a peregrine falcon was recorded east-northeast of the Proposed Project near a 200-foot lava cliff surrounded by conifer stands. The occurrence buffer extends to approximately four miles north-northeast of the Proposed Project (CDFW, 2021b). There is a moderate potential that this species could use any habitats within the Survey Area for foraging purposes. There is a low potential that peregrine falcons would nest within the Survey Area due to a lack of cliffs and tall buildings, though nesting on transmission line structures has been documented, and several abandoned raven nests occur on the transmission line structures (Foster, 2020a). No peregrine falcons were observed during the nesting bird surveys (Foster, 2020a).

Nuttall's Woodpecker

Nuttall's woodpecker (*Picoides nuttallii*) is primarily an oak woodland dwelling species, and it occurs mostly among hills dominated by blue oak, coast live oak (*Quercus agrifolia*) and valley oak (*Quercus lobata*), or in riparian areas where oaks appear with willow (*Salix sp*.) and California sycamore (*Platanus racemosa*) (Lowther et al., 2020). Nuttall's woodpecker builds cavities for nesting in soft wood, often in dead trunks or limbs and breeds from April through June or July. This woodpecker forages primarily in oaks, and cottonwoods and willows of riparian habitats on a variety of insects.

This species is not tracked by CNDDB (CDFW, 2021b). There is a moderate to high potential that this species could occur within oak woodland habitat in the Survey Area as suitable trees for nest excavation and suitable foraging habitat exists. No Nuttall's woodpecker individuals were observed during nesting bird surveys (Foster, 2020a).

Oak Titmouse

Oak titmouse (*Baeolophus inornatus*) occurs primarily in warm, dry oak or oak-pine woodlands and are one of the most common bird species in oak woodlands in California. The composition of occupied oak woodland varies, but oak titmouse prefers open woodland habitats. This bird nests primarily in natural cavities and woodpecker-excavated cavities in oak trees (Cicero et al., 2020). The oak titmouse breeds from mid-March through early May and feeds on seeds and terrestrial invertebrates as well as plant material, especially during fall and winter.

This species is not tracked by CNDDB (CDFW, 2021b). There is a moderate to high potential that this species could occur within oak woodland habitat in the Survey Area as suitable foraging habitat exists and individuals could nest in cavities in trees within the area. No oak titmouse individuals were observed during nesting bird surveys (Foster, 2020a).

Rufous Hummingbird

Rufous hummingbird (*Selasphorus rufus*) is principally found in secondary succession communities and openings but also in mature forests, parks and residential areas during breeding season. This hummingbird migrates from breeding areas in the northwest US and southwest Canada to wintering grounds in Mexico and along the Gulf coast (Healy and Calder, 2020). During spring (March-April) migration from wintering grounds to breeding grounds, the rufous hummingbird uses montane meadows and disturbed areas with flowering plants in California. Fall migration also find this hummingbird using similar habitats, but migration paths usually take them further east (Healy and Calder, 2020).

There are no known occurrences of rufous hummingbirds within five miles of the Proposed Project based on CNDDB records (CDFW, 2021b). There is a moderate potential that this species could use all the habitat types in the Survey Area for foraging purposes during migration periods, but there is no potential for individuals during breeding and wintering periods. No rufous hummingbird individuals were observed during nesting bird surveys (Foster, 2020a).

Raptors

Per California Fish and Game Code 3503.5, all raptors are protected under state law. Several federal- or state-threatened, USFWS Birds of Conservation Concern, CDFW Fully Protected, or Species of Special Concern raptor species have a high potential to occur within the Survey Area at different times throughout the year (CDFW, 2021c, USFWS, 2021b). Examples include: Cooper's hawk (*Accipiter cooperii*), merlin (*Falco columbarius*), and sharp-shinned hawk (*Accipiter striatus*). Examples of non-listed raptor species that are known to occur or have a high potential to occur within the Survey Area include: red-shouldered hawk (*Buteo lineatus*), red-tailed hawk, barn owl (*Tyto alba*), great-horned owl, turkey vulture (*Cathartes aura*), and American kestrel (*Falco sparverius*). These raptor species with the highest potential to occur in the Survey Area use and inhabit open valley foothill woodland habitats including oak woodlands. Habitat use varies based on raptor species and time of year, but foraging and nesting individuals have the potential to occur within the Survey Area.

A red-tailed hawk pair was observed during nesting bird surveys, which were conducted for the original 42-acre Survey Area and a 300-foot buffer for nesting raptors (Foster, 2020a). The pair was inspecting two inactive nests on the 500-kV transmission line towers (one within the Survey Area, one south of the Survey Area). This pair did not end up using any of the nests during the three nesting bird visits and they did not display any nest building behavior (Foster, 2020a). The only other raptor species that was observed during field surveys was a turkey vulture. Sixteen large inactive stick nests were observed on the transmission line towers within the Survey Area; none of these nests became active during the field visits (Foster, 2020a)(**Figure 7**). These stick nests could potentially be occupied by a variety of raptor species, especially red-tailed hawks.

4.6. Bumble Bee Survey Results

Bumble bee (Crotch bumble bee and western bumble bee, *Bombus* sp.) surveys were conducted in 2020 at the request of the CDFW. Habitat/host plant surveys and photograph-only surveys were conducted (Heritage, 2020). No Crotch bumble bee, western bumble bee, or *Bombus* species individuals, or any of the six commonly used host plants were observed within the Survey Area. Potentially suitable flowering plants for both species of bumble bees were observed during these surveys. Crotch bumble bees and western bumble bees are not expected to occur within the Survey Area due to elevation, species range, lack of bumble bee host plant species, and lack of *Bombus* individual observations during field surveys. The survey report is included in **Appendix C**.

4.7. Botanical Survey Results

Botanical surveys were conducted within the Proposed Project limits of construction (See **Figure 6**) on April 24 and May 31, 2020 for the original Survey Area and April 11 and 12, and May 16 and 17, 2021 for the updated Survey Area (See **Figure 6**) (Quercus, 2020, Quercus, 2021). During the 2020 survey, no special-status plant species were observed. In the expanded survey area in 2021, one CNPS CRPR 4.3 plant species: silvery false lupine, was observed. No state or federally listed plant species are known to occur in the Proposed Project vicinity (USFWS, 2021b). The survey reports for these surveys are included in **Appendix D**.

4.8. Tree Count Survey Results

Tree count surveys were conducted within the Proposed Project limits of construction on March 8-11, 2021 (Foster, 2021a). Four species of trees over 4” DBH were present within the area, totaling 2,447 individual trees. Blue oaks (2,266 trees, 93% of the total) are most prevalent, followed by gray pines (95 trees, 4% of the total), black oaks (72 trees, 3% of the total), and buckeyes (14 trees, <1% of the total). See **Appendix E** for survey results and individual tree details.

4.9. Nesting Bird Survey Results

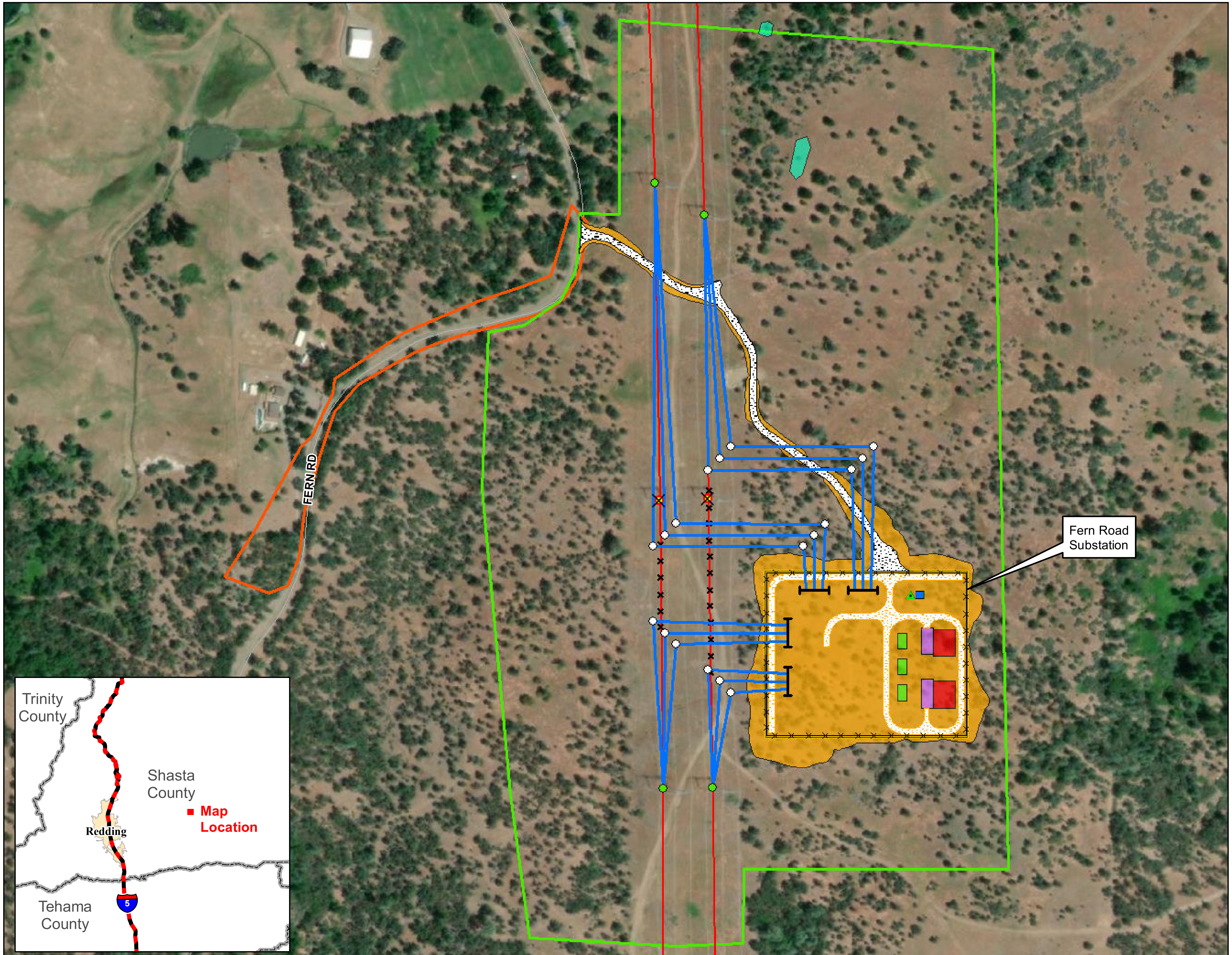
Nesting bird surveys were conducted within the original 42-acre Survey Area (See **Figure 7**) on April 24, May 22, and June 26, 2020 (Foster, 2020a). While several assumed breeding pairs of passerines were observed (see species list in **Appendix H**), no active bird nests were located within the Survey Area. Additionally, 16 large non-active stick nests were observed in the 500-kV transmission towers located within the Survey Area (**Figure 7**). These nests were the primary focus during the follow up surveys in May and June 2020. During the April surveys, a pair of red-tailed hawks was observed inspecting two of the nests (one within the Survey Area, one outside the Survey Area to the south), but they did not end up using any of the nests during the three visits and did not display any nest building behaviors. These inactive nests could be occupied again and actively nesting birds could use the Survey Area and Proposed Project area in the future.

Details including weather conditions, timing and notes are included on the survey forms in **Appendix F**.

LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 6 Botanical Survey Results

Shasta County, CA



LEGEND

Project Components

- New 3-Pole Dead-End Pole
- Existing Structure to be Removed
- Microwave Tower
- Control Enclosure
- Project Tie Line
- Existing 500kV Transmission Line to be Removed
- Fern Road Substation Bay
- Substation Fence
- Transformer
- Reactor
- Converter & Control Enclosure
- Interior Access Road
- Exterior Access Road
- Graded Area
- Site Boundary - Approx. 7.5 Acres
- Botanical Resources Survey Area / Limits of Construction
- Distribution Overland Travel

Botanical Resources Survey Results

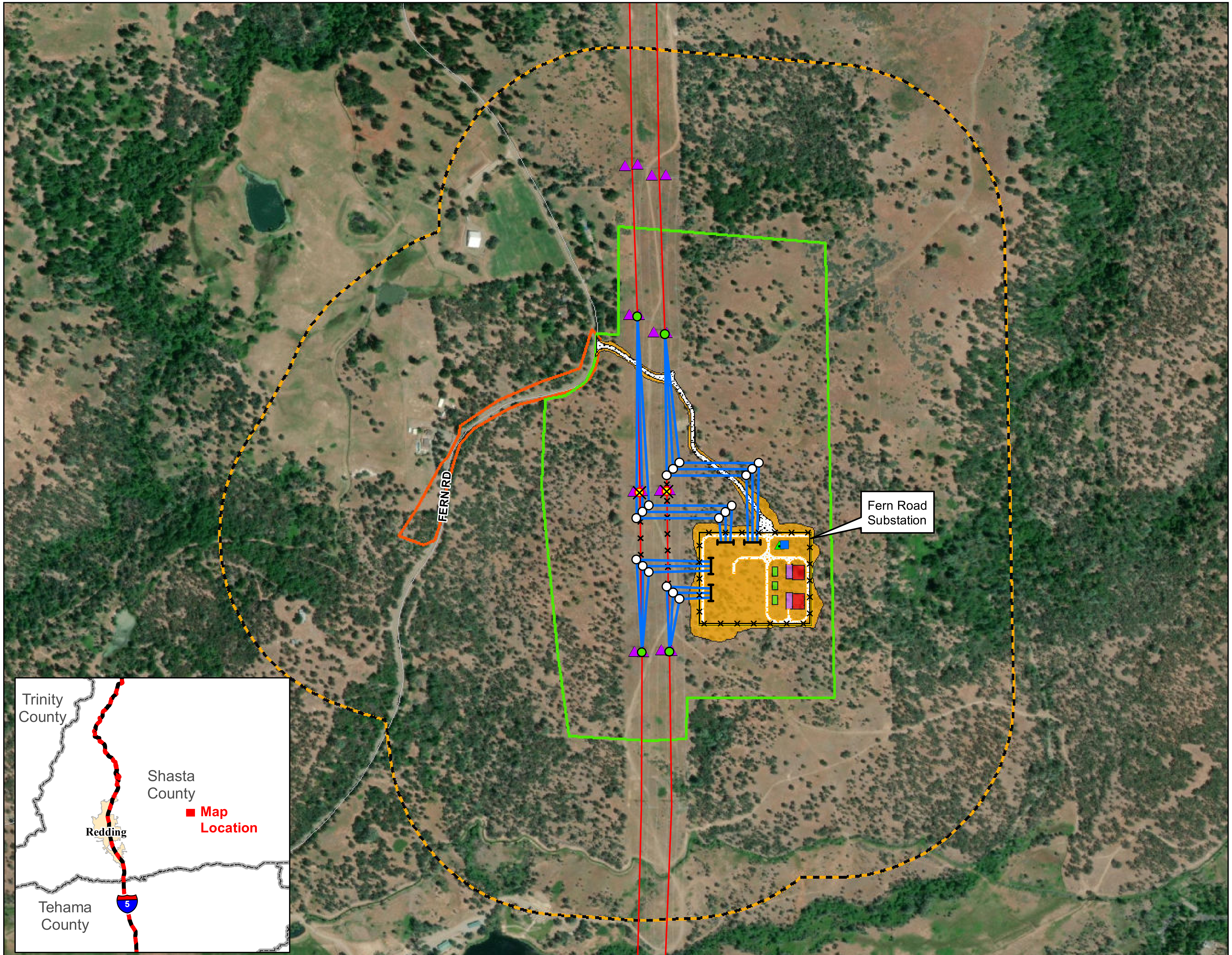
- *Thermopsis californica var. argentata* Observations

General Features

- Existing Structure
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 100 200 300 400 500
Feet

Data Sources: ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\Biology\Figure 6 Botanical Survey Results 032822.mxd
SJW 4-03-2022



LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 7 Nesting Bird Survey

Shasta County, CA

LEGEND

Project Components

- New 3-Pole Dead-End Pole
- Existing Structure to be Removed
- Microwave Tower
- Control Enclosure
- Project Tie Line
- Existing 500kV Transmission Line to be Removed
- Fern Road Substation Bay
- Substation Fence
- Transformer
- Reactor
- Converter & Control Enclosure
- Interior Access Road
- Exterior Access Road
- Graded Area
- Site Boundary - Approx. 7.5 Acres
- Limits of Construction
- Distribution Overland Travel

Biological Resources

- Biological Resource Survey Area

Nesting Bird Survey

- Inactive Stick Nest

General Features

- Existing Structure
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 250 500 750 1,000
Feet

Data Sources: ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\Biology\Figure 7 Nesting Bird Survey 032822.mxd
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4.10. Aquatic Resources and Jurisdictional Waters

An aquatic resources delineation survey was conducted on April 7 and April 24, 2020 (Foster, 2020b) and on March 4 and March 10, 2021 (Foster, 2021b) for the Proposed Project work area. NWI maps were reviewed for the area (USFWS, 2021a), and there are several NWI drainages that are mapped within the 1,000-foot buffer Survey Area (**Figure 8**). These features were verified in the field within the Project parcel (several of the features exist on private land northeast of the Project for which access was not granted). A total of 0.274 acres of potentially jurisdictional aquatic resources were identified in the Proposed Project work area consisting of seven small stream segments and four small seasonal wetlands.

Three unnamed intermittent stream segments (INT-1 through INT-3 in **Table 3** and on **Figure 9**) were identified in the Proposed Project work area and were determined to be intermittent based on their size, defined channel, presence of flowing water during the site visits, aquatic insects, frogs, and the presence of continuous and distinct OHWM indicators. These stream segments dry up in late spring or early summer in typical years and are influenced by groundwater from the surrounding landscape. Limited vegetation was associated with these stream segments, mostly consisting of small intermediate patches of non-riparian facultative hydrophytic plants. Photographs in **Appendix A** show segments of each intermittent stream and the surrounding areas (Foster, 2021b).

Four unnamed ephemeral stream segments (EPH-1 through EPH-4 in **Table 3** and on **Figure 9**) were identified in the Proposed Project work area and were determined to be ephemeral based on their size, less defined channel, limited amount of flowing water two days after rains and less pronounced OHWM indicators. These stream segments contained areas of very low flow and standing water in some segments during the April 7, 2020 and March 10, 2021 site visits. These segments do not appear to be influenced by ground water and were dry during the April 24, 2020 and March 4, 2021 site visits. Additionally, only facultative upland and upland plant species were observed adjacent to these stream segments.

Two seasonal wetlands totaling 0.063 acre were identified in the Proposed Project work area, comprised of four small depressional areas (W-1 through W-4 in **Table 3** and on **Figure 9**). Seaside barley (*Hordeum marinum*) and navarretia (*Navarretia intertexta*) are the dominant species for W-1 and W-2 while yellow monkey flower (*Erythranthe guttata*), seaside barley, and navarretia are the dominant species for W-3 and W-4. Both of these areas had other facultative wetland species intermixed within the shallow depressional areas. Data forms (included in **Appendix G**) provide information on these two sets of wetlands. Photographs in **Appendix A** also show the seasonal wetlands.

The streams and wetlands described above meet the criteria to be considered jurisdictional under both current state and federal clean water act laws and under CDFW's Lake and Streambed Alteration Program. It is recommended to obtain a verification of this report and drawing with all applicable agencies prior to any earth moving activities in potential waters of the U.S. or State.

In summary, the stream segments located in the Proposed Project work area flow offsite and enter an irrigation canal that receives its water from Old Cow Creek and then returns to Old Cow Creek downstream. Old Cow Creek is a tributary to Cow Creek, a tributary to the Sacramento River, which is a tributary to the San Francisco Bay and Pacific Ocean.

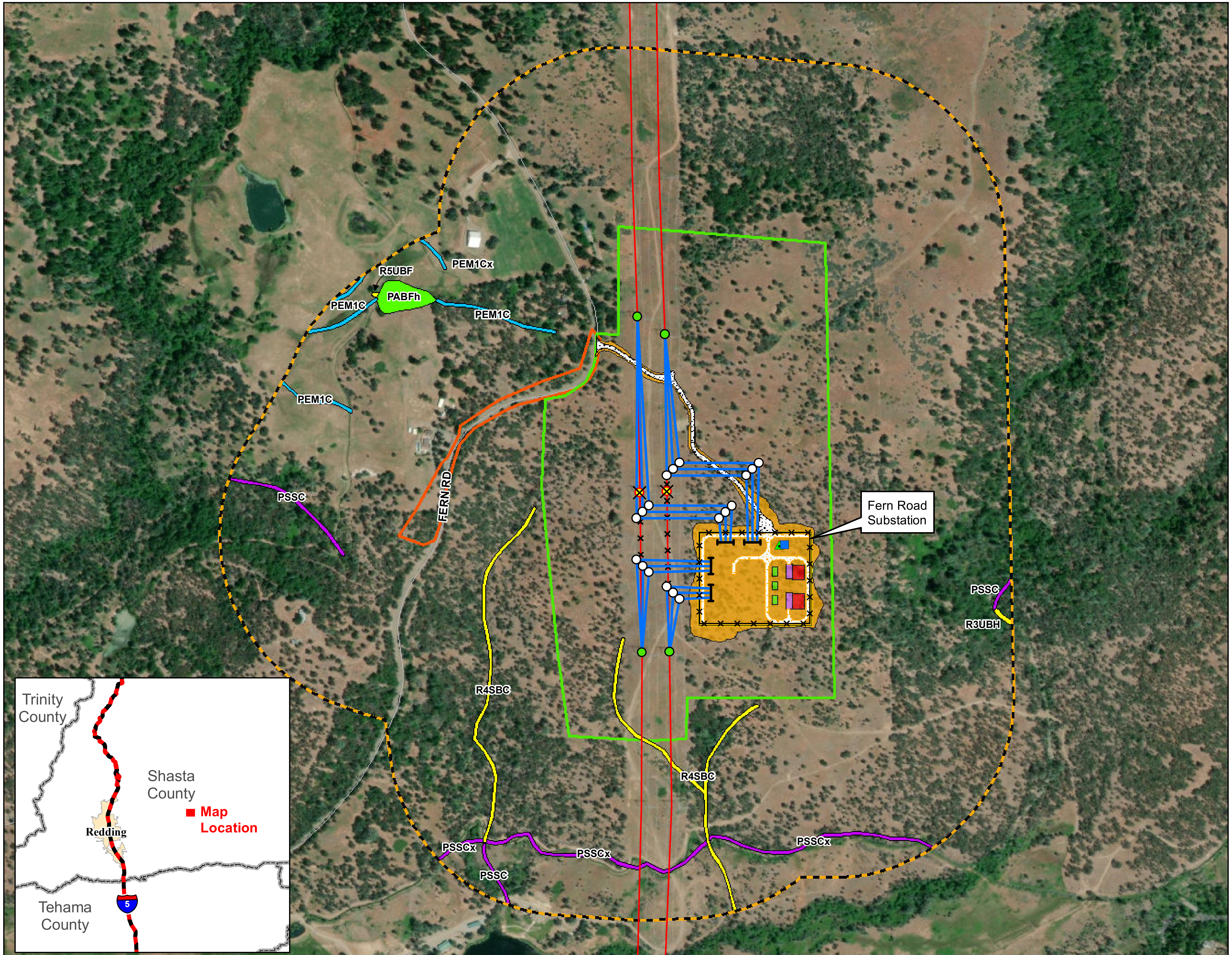
Table 3 – Aquatic Resources Identified in the Survey Area

Label	Feature Type	Cowardin Type	Area (Acres)	Average Width (Feet)	Length (Feet)	Depth (Inches)
W-1	Seasonal Wetland	PAB3	0.033	n/a	n/a	1-2
W-2	Seasonal Wetland	PAB3	0.005	n/a	n/a	1-4
W-3	Seasonal Wetland	PAB3	0.020	n/a	n/a	1-2
W-4	Seasonal Wetland	PAB3	0.005	n/a	n/a	1-3
Int-1	Intermittent Stream	R4SB3	0.067	3	976	1-3
Int-2	Intermittent Stream	R4SB3	0.039	4	423	1-4
Int-3	Intermittent Stream	R4SB3	0.083	5	724	1-6
Eph-1	Ephemeral Stream	R4SB3	0.003	3	46	0-2
Eph-2	Ephemeral Stream	R4SB3	0.010	1	450	0-2
Eph-3	Ephemeral Stream	R4SB3	0.006	1	256	0-2
Eph-4	Ephemeral Stream	R4SB3	0.003	1	140	0-3
Totals			**0.274**		**3,015**	

LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 8 NWI Wetlands

Shasta County, CA



LEGEND

Project Components
- New 3-Pole Dead-End Pole
- Existing Structure to be Removed
- Microwave Tower
- Control Enclosure
- Project Tie Line
- Existing 500kV Transmission Line to be Removed
- Fern Road Substation Bay
- Substation Fence
- Transformer
- Reactor
- Converter & Control Enclosure
- Interior Access Road
- Exterior Access Road
- Graded Area
- Site Boundary - Approx. 7.5 Acres
- Limits of Construction
- Distribution Overland Travel

Biological Resources
- Biological Resource Survey Area

NWI Wetlands
- Freshwater Emergent Wetland
- Freshwater Forested / Shrub Wetland
- Freshwater Pond
- Riverine

General Features
- Existing Structure
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 250 500 750 1,000
Feet

Data Sources: ESRI, Shasta Co., USDA, USFWS, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\Biology\Figure 8 NWI Wetlands 032822.mxd
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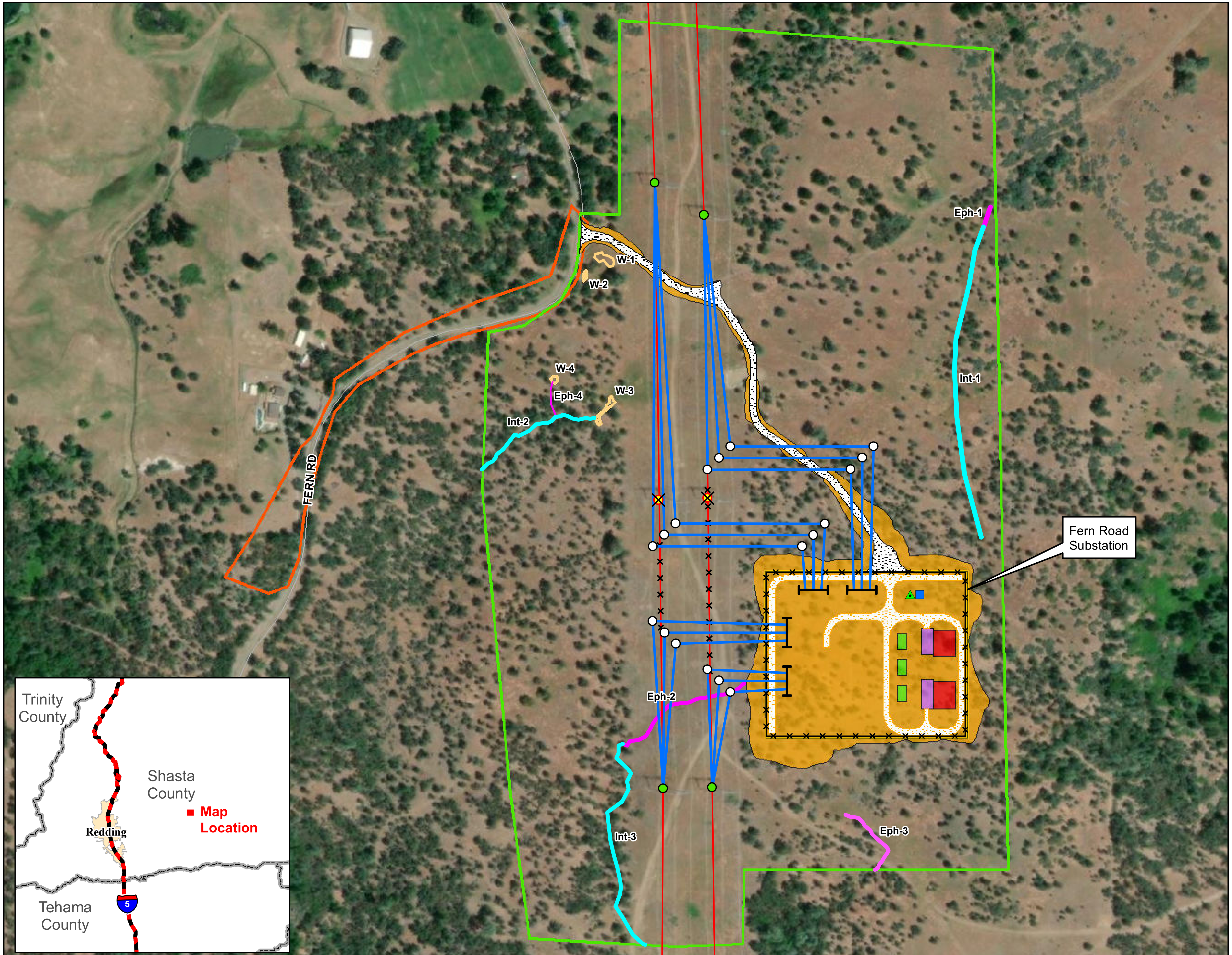

LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 9 Aquatic Resources

Shasta County, CA

LEGEND

Project Components

- New 3-Pole Dead-End Pole
- Existing Structure to be Removed
- Microwave Tower
- Control Enclosure
- Project Tie Line
- Existing 500kV Transmission Line to be Removed
- Fern Road Substation Bay
- Substation Fence
- Transformer
- Reactor
- Converter & Control Enclosure
- Interior Access Road
- Exterior Access Road
- Graded Area
- Site Boundary - Approx. 7.5 Acres
- Limits of Construction
- Distribution Overland Travel

Aquatic Resources

- Eph - Ephemeral Stream
- Int - Imittent Stream
- W - Seasonal Wetland

General Features

- Existing Structure
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 100 200 300 400 500
Feet

Data Sources: ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
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SJW 4-03-2022

4.11. Native Wildlife Migration Corridors and Nursery Sites

Wildlife migration corridors are areas that connect suitable wildlife habitats in a region that would otherwise be fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features (e.g., canyon drainages, ridgelines, or areas with vegetation cover) provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population or high-density areas; and facilitate genetic diversity. CEQA guidelines require that project proponents disclose and mitigate for significant impacts on wildlife corridors. Impacts to wildlife corridors, such as human disturbance and development, can cause harm to migrating species, cause species to exceed population thresholds in fragmented patches, or prevent healthy gene flow between populations. Wildlife species migrate through both upland areas and drainage areas, depending on the species. Species that need protective cover from predators (e.g., mammals, reptiles, and smaller avian species) tend to migrate along natural drainages and riparian corridors that have high vegetative cover. These areas also serve as important sources of food resources (e.g., insects and seeds) for these species. The California Essential Habitat Connectivity Project (CEHC) maintains a statewide Essential Habitat Connectivity Map, which broadly depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas) (Spencer et al., 2010). The Survey Area and five-mile buffer Proposed Project region lie outside of any of these Natural Landscape Blocks and Essential Connectivity Areas (CDFW, 2021d).

No significant riparian corridors or other potential terrestrial wildlife migration corridors exist within the Proposed Project site or Survey Area. Several significant riparian corridors exist within the five-mile Proposed Project region that could potentially be used by terrestrial wildlife as movement corridors. Dry Clover Creek (0.35 mile northwest of the Proposed Project Area), Clover Creek (4.5 miles northwest), Old Cow Creek (0.5 miles south), South Cow Creek (3.7 miles south) and their tributaries all flow through the five-mile Proposed Project region, and all contain significant natural riparian vegetation and could act as local migration corridors for various terrestrial species. The existence of the Round Mountain – Table Mountain #1 and #2 500 kV transmission lines, Fern Road, and several private residences within the Survey Area and the grazed nature of the land reduce the possibility of the Proposed Project area and Survey Area being used as a migration corridor or as a potential nursery site. Terrestrial wildlife may still use the area as a local migration corridor since natural habitats exist within the five-mile Proposed Project region in all directions.

The Proposed Project lies within the Pacific Flyway–an important north-south migration corridor that runs along the Pacific coast of the Americas from Alaska to Patagonia, including all of North America lying west of the Rocky Mountains. The Pacific Flyway links breeding grounds to the north with wintering areas to the south and is used by many different species of birds during migration. Many birds (especially waterfowl) use locations in California’s Sacramento Valley as a stopover point or wintering area. The Survey Area does not contain significant water resources for migrating waterfowl but does contain potential foraging areas during migration for a variety of bird species.

The Proposed Project area and Survey Area may provide potential wildlife nursery sites within oak woodland and seasonal wetland habitat types. Neither of these habitats contain dense vegetation and they are actively grazed by cattle, reducing this possibility. It is unlikely that the Proposed Project would affect nursery sites.

4.12. Designated Critical Habitat Areas

The USFWS designates critical habitat for endangered and threatened species under the ESA. Critical habitat is designated for the survival and recovery of federally listed endangered or threatened species. Protected habitat includes areas for foraging, breeding, roosting, shelter, and movement or migration. There are no designated or proposed critical habitats located within the Survey Area or within the five-mile Proposed Project region (USFWS, 2021b).

5. Applicant Proposed Measures and Potential Impacts

5.1. Significance Criteria

According to Section 15002(g) of the CEQA Guidelines, "a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by a proposed project." As stated in Section 15064(b) of the guidelines, the significance of an activity may vary with the setting. The potential significance of impacts caused by the Proposed Project on biological resources were evaluated using the applicable criteria from the CEQA Guidelines (CPUC, 2019), as discussed in the following sections.

5.2. Impact Definitions

The following discussion describes the Proposed Project's potential to affect special-status biological resources during construction and ongoing maintenance and operation activities. Direct and indirect impacts may be either permanent or temporary. These impact categories are defined below.

Direct: Direct impacts are caused by a project and occur at the same time and place as the project. Any alteration, disturbance, or destruction of biological resources caused by project activities is considered a direct impact. Direct impacts include loss of native habitats, potential jurisdictional waters, wetlands, and special-status species; diverted flows from natural surface waters are also included. Direct impacts could include injury, death, or harassment of listed or special-status species. Direct impacts could also include the destruction of habitats necessary for species breeding, feeding, or sheltering. Direct impacts on plants can include crushing of adult plants, bulbs, or seeds.

Indirect: As a result of project activities, biological resources may also be affected in a manner that is not direct. Indirect impacts may occur later in time or at a place that is farther removed in distance from the project than direct impacts, but indirect impacts are still reasonably foreseeable and attributable to project activities. Examples include habitat fragmentation; elevated noise, dust, and lighting levels; changes in hydrology, runoff, and sedimentation; decreased water quality; soil compaction; increased human activity; and the introduction of invasive wildlife (domestic cats and dogs) and plants.

Permanent: All impacts that result in the irreversible removal of biological resources are considered permanent. For the purposes of the Proposed Project, impacts are irreversible if filling activities result in an elevation (gradient) change or an impervious surface. Examples include constructing a building or permanent road on an area that contains biological resources.

Temporary: Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction or removal of vegetation for pipeline trenching activities, then allowing the natural vegetation to recolonize the impact area.

5.3. Recommended Applicant-Proposed Measures

The following recommended applicant-proposed measures (APMs) will meet existing regulations and requirements or are standard practices to avoid, minimize, or mitigate potential impacts on biological resources that would be less than significant (**Table 3**).

Table 3 – Recommended Applicant-Proposed Measures

APM Number	Description
APM-BIO-1	Speed of vehicles driving along proposed access roads and on the Proposed Project site during construction and operation would be limited to 15 miles per hour. In addition, construction and maintenance employees would be required to stay on established and clearly marked and existing roads except when not feasible due to physical or safety constraints and would be advised that care should be exercised when commuting to and from the Proposed Project area to reduce accidents and animal road mortality.
APM-BIO-2	Conductors and ground wires would be spaced sufficiently apart so that raptors cannot contact two conductors or one conductor and a ground wire causing electrocution (Avian Power Line Interaction Committee (APLIC), 2006), subject to PG&E consent for application of such measures to its components of the Proposed Project.
APM-BIO-3	Appropriate methods to reduce the risks of avian collisions would be incorporated into Proposed Project design (APLIC, 2012), subject to PG&E consent for application of such measures to its components of the Proposed Project.
APM-BIO-4	If feasible, the Applicant would avoid construction and vegetation trimming/removal during the migratory bird nesting or breeding season. When it is not feasible to avoid construction during the nesting or breeding season, the Applicant would perform a survey in the area where the work is to occur. This survey would be performed to determine the presence or absence of nesting birds. If an active nest (i.e., containing eggs or young) is identified, a suitable construction buffer would be implemented to ensure that the nesting or breeding activities are not substantially adversely affected. If the nesting or breeding activities are being conducted by a federal or state-listed species, the Applicant would consult with the USFWS and CDFW as necessary. Monitoring of the nest would continue until the birds have fledged or construction is no longer occurring on the site.
APM-BIO-5	If a raptor nest is observed during pre-construction surveys, a qualified biologist would determine if it is active. If the nest is determined to be active, the biological monitor would monitor the nest to ensure that nesting or breeding activities are not substantially adversely affected. If the biological monitor determines that activities associated with the Proposed Project are disturbing or disrupting nesting or breeding activities, the monitor would make recommendations to reduce noise or disturbance in the vicinity of the nest. If the nest is determined to be inactive, the nest would be removed under direct supervision of the qualified biologist.
APM-BIO-6	All excavated holes/trenches that are not filled at the end of a work day would be covered or a wildlife escape ramp would be installed to prevent the inadvertent entrapment of wildlife species.
APM-BIO-7	The use of outdoor lighting during construction and O&M would be minimized whenever practicable. Photocell controlled lighting (motion detection) would be provided at a level sufficient to provide safe entry and exit to the Fern Road Substation and control building. All lighting would selectively placed, shielded, and directed

	downward to the maximum extent practicable. Night work would be avoided to the maximum extent.
APM-BIO-8	A Workers Environmental Awareness Program (WEAP) would be implemented to educate all construction and operations workers on site-specific biological and non-biological resources and proper work practices to avoid harming wildlife during construction or O&M activities.
APM-BIO-9	Prior to initial vegetation clearance and ground-disturbing activities, a qualified biologist would conduct pre-construction sweeps of the Proposed Project work area for special-status wildlife and plants. In the event of the discovery of a previously unknown special-status plant, the area would be marked as a sensitive area and would be avoided to the maximum extent practicable. If avoidance is not possible, USFWS and/or CDFW would be consulted. Any other construction activities that may impact sensitive biological resources including movement of construction equipment and other activities outside of the fenced/paved areas within wildlife habitat would be monitored by a qualified biologist. The monitor/inspector would have the authority to stop work activities upon the discovery of sensitive biological resources and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive resources.
APM-BIO-10	All sensitive biological areas (including the populations of silvery false lupine and ephemeral and intermittent streams and seasonal wetlands) within the Proposed Project work area would be clearly marked prior to construction commencing to restrict construction activities and equipment from entering these areas. At least a 5-foot buffer from all construction activities would be established around these areas. These buffers would be inspected regularly to ensure that they remain in place.
APM-BIO-11	Vegetation and tree removal would be avoided to the maximum extent.
APM-BIO-12	All areas that are temporarily disturbed by the Proposed Project activities would be restored to approximate pre-construction conditions. Areas that are disturbed by grading, augering, or equipment movement would be restored to their original contours and drainage patterns. Work areas would be decompacted, and salvaged topsoil materials would be re-spread following recontouring to aid in restoration of temporary disturbed areas. A project-specific Restoration and Revegetation Plan would be prepared for the Proposed Project and submitted to the CPUC for approval prior to the start of construction activities. This Plan would include procedures for restoration activities, including plant species to be planted, procedures to reduce weed encroachment, and expected timeframes for restoration and revegetation. Revegetation activities would be conducted in accordance with the Proposed Project SWPPP and APMs. Restoration could include recontouring, reseeding, and planting replacement vegetation, as appropriate. Temporarily disturbed areas would be revegetated with appropriate weed-free native seed mixes or species that are characteristic of the plant community that was disturbed.
APM-BIO-13	All vehicles will be cleaned prior to arrival on the Project site to avoid spread of noxious weeds and non-native invasive plant species.
APM-WQ-1	Because the Proposed Project involves more than an acre of soil disturbance, a SWPPP would be prepared as required by the state NPDES General Permit for Discharges of Stormwater Associated with Construction Activity. This plan would be prepared in accordance with the Water Board guidelines and other applicable erosion and sediment control best management practices (BMPs). Implementation of the plan would help stabilize disturbed areas and would reduce erosion and sedimentation. The SWPPP would designate BMPs that would be followed during and after construction of the

	Proposed Project, examples of which may include the following erosion-minimizing measures: • Using drainage control structures (e.g., straw wattles or silt fencing) to direct surface runoff away from disturbed areas; • Strictly controlling vehicular traffic; • Implementing a dust-control program during construction; • Restricting access to sensitive areas (such as the intermittent streams and seasonal wetland areas); • Using vehicle mats in wet areas; or • Revegetating disturbed areas, where applicable, following construction. In areas where soils are to be temporarily stockpiled, soils would be placed in a controlled area and would be managed with similar erosion control techniques. Where construction activities occur near a surface waterbody or drainage channel and drainage from these areas flows towards a waterbody or wetland, stockpiles would be placed at least 100 feet from the waterbody or would be properly contained (such as beaming or covering to minimize risk of sediment transport to the drainage). Mulching or other suitable stabilization measures would be used to protect exposed areas during and after construction activities. Erosion-control measures would be installed, as necessary, before any clearing during the wet season and before the onset of winter rains. Temporary measures, such as silt fences or wattles intended to minimize erosion from temporarily disturbed areas, would remain in place until disturbed areas have stabilized.

5.4. Potential Impacts

Potential Project impacts on biological resources were evaluated against the CEQA significance criteria (CPUC, 2019) and are discussed in further detail in the following paragraphs.

The impact analysis includes both temporary and permanent impacts associated with construction of the Proposed Project. The temporary and permanent impacts by vegetation community are shown in **Table 4**. Permanent impacts would include the following components which would impact approximately 11.6 acres:

- Fern Road Substation and ancillary Project components (includes two STATCOM units, 500 kV switchyard and associated facilities [including four 500kV take-off towers and microwave tower]) – approximately 7.50 acres.
- Graded area – approximately 2.90 acres
- Exterior access road – approximately 1.0 acres
- PG&E 500 kV interconnection upgrade work areas – 18 additional 110 - 130-foot tall tubular steel pole (TSP) dead-end structures and removal of two existing 130-foot tall lattice steel structures – approximately 0.15 acres.
- PG&E distribution upgrades – approximately 0.004 acres

Temporary and short-term impacts associated with Project construction would include the following components which would impact approximately 3.4 acres:

- Temporary construction staging area – approximately 1.40 acres.
- Temporary construction staging area access road – approximately 0.10 acres.
- PG&E 500 kV interconnection upgrade temporary work areas – approximately 1.80 acres.
- PG&E distribution upgrades – approximately 0.054 acres

Table 4: Impacts by Vegetation Community		
Vegetation Community of Land Cover Type Name	**Temporary Impact Acreage**	**Permanent Impact Acreage**
Blue Oak Woodland: *Quercus douglasii* Forest and Woodland Alliance (S4)	2.06	10.66
Annual Grassland: *Bromus tectorum-Taeniatherum caput-medusae* Herbaceous Semi-Natural Alliance (SNA)	1.20	0.51
Seasonal Wetlands: Baltic and Mexican Rush Marshes: *Juncus arcticus* (var. *balticus, mexicanus*) (S4)	0	0
Disturbed	0.15	0.43
Total	**3.4**	**11.6**

5.4.1. Impacts to Special-Status Species

5.4.1.1. Special-Status Plant Species and Sensitive Vegetation Communities

Direct impacts to special-status plant species and sensitive vegetation communities could include destruction of individual plants and indirect impacts could include loss of areas that contain suitable microhabitat conditions for special-status plants and introduction of non-native weed species that may out-compete these plants. Only one special-status plant species was observed during field surveys in 2021; two populations of silvery false lupine; a CRPR 4.3 plant species (Quercus, 2021). The areas where the populations of silvery false lupine exist are not expected to be impacted by the Proposed Project (**Figure 7**). There are no sensitive vegetation communities within the Survey Area. Therefore, the Proposed Project would not cause the loss of special-status plants or sensitive vegetation communities but could cause a loss of areas that contain suitable microhabitat conditions for the special-status plants discussed in **Section 4.4** and **Table 2**. The populations of silvery false lupine, intermittent streams and seasonal wetland features and habitat would be avoided by construction activities (**APM-BIO-10)**; vegetation removal would be kept to a minimum (**APM-BIO-11);** pre-construction sweeps would occur within disturbance areas (**APM-BIO-9**); and vehicles would be cleaned prior to arriving onsite (**APM-BIO-13)** limiting the potential spread of noxious weeds within the Proposed Project area. Therefore, with the implementation of mitigation measures, direct and indirect impacts on special-status plant species and sensitive vegetation communities will be less than significant.

5.4.1.2. Special-Status Wildlife Species

Osprey, red-tailed hawks and turkey vultures (raptors; MBTA and CFGC protected species) were the only special-status species that were observed in the Survey Area during field surveys.

The current level of disturbance and human activity associated with the existing 500 kV transmission lines and grazing activities in the area is moderate. The ROW surrounding the 500 kV transmission lines is routinely cleared of tall vegetation, maintaining an annual grassland habitat. The whole area is also actively grazed by cattle, reducing the likelihood for established burrows or nursery sites. All foreseeable direct impacts to special-status species would not increase significantly during construction compared to background levels. The temporary and small-scale nature of the Proposed Project would not significantly increase the levels of disturbance and human activity that may indirectly impact wildlife species. The level of disturbance associated with long-term operation would be higher than the disturbance associated with the existing 500 kV transmission lines and grazing activities, but not by a significant amount. There is a large amount of similar habitat in the area (in all directions of the Proposed Project) so that the permanent loss of approximately 11.6 acres and temporary loss of 3.4 acres of potentially suitable habitat for special-status wildlife species is not significant. **APMs BIO-1** through **BIO-13** are recommended to further reduce any less-than-significant direct and indirect risks to special-status wildlife species. Specific impacts are discussed below.

5.4.1.2.1. Bat Species

Direct impacts that may be caused by the Proposed Project to the special-status bat species (Townsend's big-eared bat, western red bat, hoary bat, and little brown myotis) would result from removal of vegetation that houses roosting sites during construction and vegetation clearing activities, collision risk from powerlines and other Proposed Project structures during construction and operation, and permanent loss of approximately 11.6 acres, and temporary loss of approximately 3.4 acres of potentially suitable foraging habitat and potential roosting habitat for some species (western red bat, hoary bat, and little brown myotis may use trees for roosting purposes, though the chances of this on the Proposed Project site are very low). These potential direct impacts would be less than significant and avoided or further minimized by the implementation of **APMs BIO-1, BIO-3, BIO-7, BIO-8, BIO-9, BIO-10, BIO-11**, and **BIO-12**.

The permanent loss of approximately 11.6 acres of potentially suitable habitat for the bat species listed above is unavoidable but temporary impact areas (3.4 acres) would be restored (**APM-BIO-12)**. The high quantity of similar habitat (oak woodlands, seasonal wetlands, and annual grassland) in the region would minimize the potential for impacts to special-status bats caused by this loss of habitat for foraging and roosting. Pre-construction sweeps (**APM-BIO-9**) would help to identify any trees or other vegetation that may be housing roosting sites for those bat species that may use trees in the Survey Area as roosting sites (western red bat, hoary bat, and little brown myotis). Vegetation removal would also be minimized (**APM-BIO-11)**. No night work is anticipated (**APM-BIO-7**), reducing the risk of vehicle strikes to a level less than significant. The existing 500 kV transmission lines and tower structures already create collision risks for bat species, and the number of tall towers and other potential obstacles in the area would be increased by the construction of the Proposed Project. The risks of collision with Proposed Project components associated with this increase would be minimized (**APM BIO-3)**.

Indirect impacts to special-status bat species during construction could include decreased suitability of habitat in the vicinity of the Proposed Project caused by factors such as increased noise and light from construction activities, vehicles, and O&M activities, as well as increased human activity. Indirect impacts would be less than significant and would be avoided or further minimized by the implementation of **APMs BIO-7, BIO-8,** and **BIO-12**. Noise during construction activities is expected to be short-term in nature and minimal and would be even lower during operation. No night work is anticipated and **APM-BIO-7** would help reduce the potential for noise and light pollution during construction and O&M activities that could negatively impact bat species. Night lighting would be motion-activated or manually controlled so that there would not be 24-hour lights at the substation.

The above measures would also help reduce any potential risk to other bat species that have a low potential to occur within the Survey Area (spotted bat, silver-haired bat, long-eared myotis, fringed myotis, and long-legged myotis).

5.4.1.2.2. American Badger

Direct impacts that may be caused by the Proposed Project to American badger would come from potential vehicle strikes during construction and operation, destruction of burrows or dens during construction and vegetation clearing activities, entrapment in excavations, permanent loss of approximately 11.6 acres of suitable oak woodland and annual grassland habitats, and temporary loss of approximately 3.4 acres of potentially suitable foraging and denning habitat. These potential direct impacts would be less than significant and avoided or further minimized by the implementation of **APMs BIO-1, BIO-6, BIO-8, BIO-9, BIO-10, BIO-11**, and **BIO-12**.

The permanent loss of approximately 11.6 acres of potentially suitable foraging habitat is unavoidable, but temporary impact areas (3.4 acres) would be restored (**APM-BIO-12)**. The high quantity of similar habitat (oak woodlands, annual grassland, and seasonal wetlands) in the region would help minimize the potential for impacts to American badgers caused by this loss of habitat. Pre-construction sweeps (**APM-BIO-9**) would help to identify any burrows (none were observed in the Survey Area during biological surveys in 2020 or 2021) that may be used for denning purposes. The number of vehicles during construction would be higher than during operation; very few vehicles would access the Proposed Project site during operation. Throughout construction and operation, vehicles would stay on established roadways and the speed limit would be 15 mph (**APM-BIO-1)**, minimizing the risk of vehicle strikes. In addition, the active construction and staging area would be fenced at all times, as would the Proposed Project during operations, reducing the potential for vehicle strikes during construction and operation activities. American badgers would likely avoid the construction area during construction activities due to the increased noise and activity.

Indirect impacts to American badgers during construction could include decreased suitability of habitat in the vicinity of the Proposed Project caused by factors such as increased noise from construction activities, vehicles, and O&M activities, as well as increased human activity. Indirect impacts would be less than significant and would be avoided or further minimized by the implementation of **APMs BIO-7, BIO-8,** and **BIO-12**. Noise from construction activities can affect wildlife in multiple ways, such as depressing breeding success by acoustical masking and interfering with hunting activities. Construction activities could disrupt breeding and foraging activities or cause badgers to vacate their dens, endangering young. Noise during construction activities is expected to be short-term in nature and minimal and would be even lower during operation. No suitable badger burrows were observed during field surveys in 2020 or 2021.

5.4.1.2.3. Bird Species

Direct impacts to the special-status bird species (Nuttal's woodpecker, oak titmouse, peregrine falcon, rufous hummingbird, and raptors) could include potential vehicle strikes during construction and operation, removal of vegetation or transmission poles that houses nests during construction and vegetation clearing activities, collision and electrocution risk from powerlines and other Proposed Project structures during construction and operation, permanent loss of approximately 11.6 acres, and temporary loss of approximately 3.4 acres of potentially suitable foraging and nesting habitat. Nuttall's woodpecker and oak titmouse may use cavities in oak trees within the Survey Area for nesting and raptor species may use trees or transmission poles. All of the bird species listed above may use the Survey Area for foraging purposes. Potential direct impacts would be less than significant and avoided or further minimized by the implementation of **APMs BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-8, BIO-9, BIO-10, BIO-11**, and **BIO-12**.

The permanent loss of approximately 11.6 acres of potentially suitable foraging habitat for all special-status bird species listed above and nesting habitat for Nuttal's woodpecker, oak titmouse, and raptor species is unavoidable, but temporary impact areas (3.4 acres) would be restored (**APM-BIO-12)**. The high quantity of similar habitat (oak woodlands, annual grassland, and seasonal wetlands) in the region would help minimize the potential for impacts to special-status bird species caused by this loss of these habitats. Additional similar tree nesting sites for Nuttal's woodpecker, oak titmouse and raptor species exist within these habitats and additional similar nesting habitat for raptors exists on transmission line towers north and south of the Proposed Project. Pre-construction sweeps (**APM-BIO-9**) would help to identify any trees or other vegetation that may be housing nests. Vegetation removal would also be minimized **(APM-BIO-11)**.

Several inactive stick nests were observed on transmission line towers (Foster, 2020a, **Figure 7**) that would be removed during construction activities. These nests would be monitored for activity and if they are determined to be inactive, would be removed under the supervision of a qualified biologist, **(APM-BIO-5)** in order to discourage nesting during construction.

The number of vehicles during construction would be higher than during operation; very few vehicles would access the Proposed Project site during operation. Throughout construction and operation, vehicles would stay on established roadways and the speed limit would be 15 mph (**APM-BIO-1)**, minimizing the risk of vehicle strikes or crushing of ground-nesting bird nests. In addition, the active construction and staging area would be fenced at all times, as would the Proposed Project during operations, reducing the potential for vehicle strikes during construction and operation activities. Bird species would likely temporarily avoid the work area during construction activities due to the increased noise and activity. The existing 500 kV transmission lines and towers already create collision risks for avian species, and the number of tall towers in the area would be increased by the construction of the Proposed Project (approximately 23 additional 110 to 199-foot-tall poles/structures and associated powerlines would be installed and two lattice structures would be removed and 8 wooden poles would be replaced). The risks of collision and electrocution associated with this increase would be minimized by **APMs BIO-2** and **BIO-3**.

Indirect impacts to special-status bird species during construction and operation could include decreased suitability of habitat in the vicinity of the Proposed Project caused by factors such as increased noise from construction activities and vehicles, as well as increased human activity. Indirect impacts would be less than significant and would be avoided or further minimized by the implementation of **APMs BIO-7**, **BIO-8**, and **BIO-12**. Noise from construction activities can affect avian species in multiple ways, such as depressing breeding success by acoustical masking, interfering with intra-specific communication, and interfering with the detection of predators. Construction activities could disrupt breeding and foraging activities, prevent birds from tending to nests, or cause birds to flush from their nests, endangering eggs and chicks. Noise during construction activities is expected to be short-term in nature and minimal and would be even lower during operation. The sixteen inactive nests that were discovered during nesting bird surveys (and any other active nests that may be discovered during pre-construction surveys) would be monitored and avoided or removed per **APMs BIO-4** and **BIO-5**. These impacts would be minimized by implementation of **APMs BIO-7** and **BIO-8**.

The above measures would also help reduce any potential risk to other bird species that have a low potential to occur within the Survey Area (bank swallow, Swainson's hawk, golden eagle, osprey, greater sandhill crane, California thrasher, spotted towhee) to less than significant.

5.4.2. Impacts to Aquatic and Jurisdictional Resources

All of the aquatic or jurisdictional resources in the Survey Area (the ephemeral and intermittent streams and seasonal wetlands) would be avoided by construction activities (**APM-BIO-10** and **APM-WQ-1**). The Proposed Project would be graded in order to drain stormwater directly offsite. Stormwater runoff would sheet flow to the adjacent land surface during storm events. Stormwater runoff during construction and O&M activities would be managed according to a stormwater management plan and BMPs established in the associated Stormwater Pollution Prevention Plan (SWPPP)(**APM WQ-1**). No aquatic or jurisdictional resources would be directly or indirectly impacted by the Proposed Project.

5.4.3. Impacts to Native Wildlife Migration Corridors and Nursery Sites

The Proposed Project would be located within the Pacific Flyway, but no other significant migration corridors or nursery sites exist in the Survey Area.

Four tall take-off towers or lightning shield mast structures and the 199-foot-tall microwave tower would be installed during construction, as well as numerous shorter structures associated with the PG&E distribution line upgrades, STATCOM and switchyard and the 18 new 110- to 130-foot-tall TSPs. These structures would be located in close proximity to the existing Round Mountain – Table Mountain #1 and #2 500 kV transmission lines, which are as tall as the tallest proposed structures for the Proposed Project. Additionally, eight 50-foot tall wooden poles would be replaced in association with the PG&E distribution line upgrades. The existence of these tall transmission structures and lines in the area means that the addition of structures associated with the Proposed Project is unlikely to have an additional impact on migrating birds such as rerouting migration paths. The very small scale of the Proposed Project (11.6 acres of permanent impacts and 3.4 acres of temporary impacts) would have minimal potential for new impacts to bird migration corridors and wildlife movement within the region generally, and impacts would be less than significant. The proposed **APMs BIO-1, BIO-2, BIO-3, BIO-4, BIO-7, BIO-8**, and **BIO-12** would also help to further reduce any potential impacts to migration corridors.

No known nursery sites exist in the Survey Area and none are anticipated to be impacted by the Proposed Project. The proposed measures would help reduce any potential risk.

5.4.4. Impacts to Designated Critical Habitat Areas

No USFWS designated or proposed critical habitats would be directly or indirect impacted because none of these habitats are located within 5 miles of the Proposed Project.

5.4.5. Conflicts with Local Policies or Ordinance

Because the CPUC has exclusive jurisdiction over its siting, design, and construction, the Proposed Project is not subject to local land use and zoning regulations or discretionary permits. However, local regulations relating to biological resources were reviewed to ensure that the Proposed Project would not be in conflict with local policies or ordinances protecting biological resources. One of the Shasta County General Plan Fish and Wildlife Resource Group Policies (Shasta, 2004a) (Section 6.7) calls for "Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U.S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species." The Proposed Project is being designed in a way that complies with this local policy. Implementation of the Proposed Project would not conflict with local policies or ordinances relating to biological resources. Therefore, no impacts would occur.

5.4.6. Conflicts with an Approved Habitat Conservation Plan

The Proposed Project lies within the PG&E Multiple Region Operations and Maintenance Habitat Conservation Plan (MRHCP) within the Sacramento Valley and Foothills Region (ICF, 2019). This Habitat Conservation Plan (HCP) is intended to achieve the following purposes:

- Avoid, minimize, and mitigate temporary and permanent impacts on threatened and endangered species resulting from PG&E's O&M and minor new construction activities in the Plan Area.
- Provide the basis for incidental take authorization pursuant to the ESA for PG&E's current and future O&M activities, and minor new construction in the Plan Area.

This MRHCP does not cover the type of activities that are associated with the Proposed Project. This MRHCP covers two of the species that were analyzed within this report: the California red-legged frog and foothill yellow-legged frog. These species are not expected to occur within the

Survey Area and the Proposed Project's APMs align with the measures that are proposed to reduce impacts to these species in the MRHCP; no conflicts with approved HCPs would occur.

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Appendix A – Photo Log

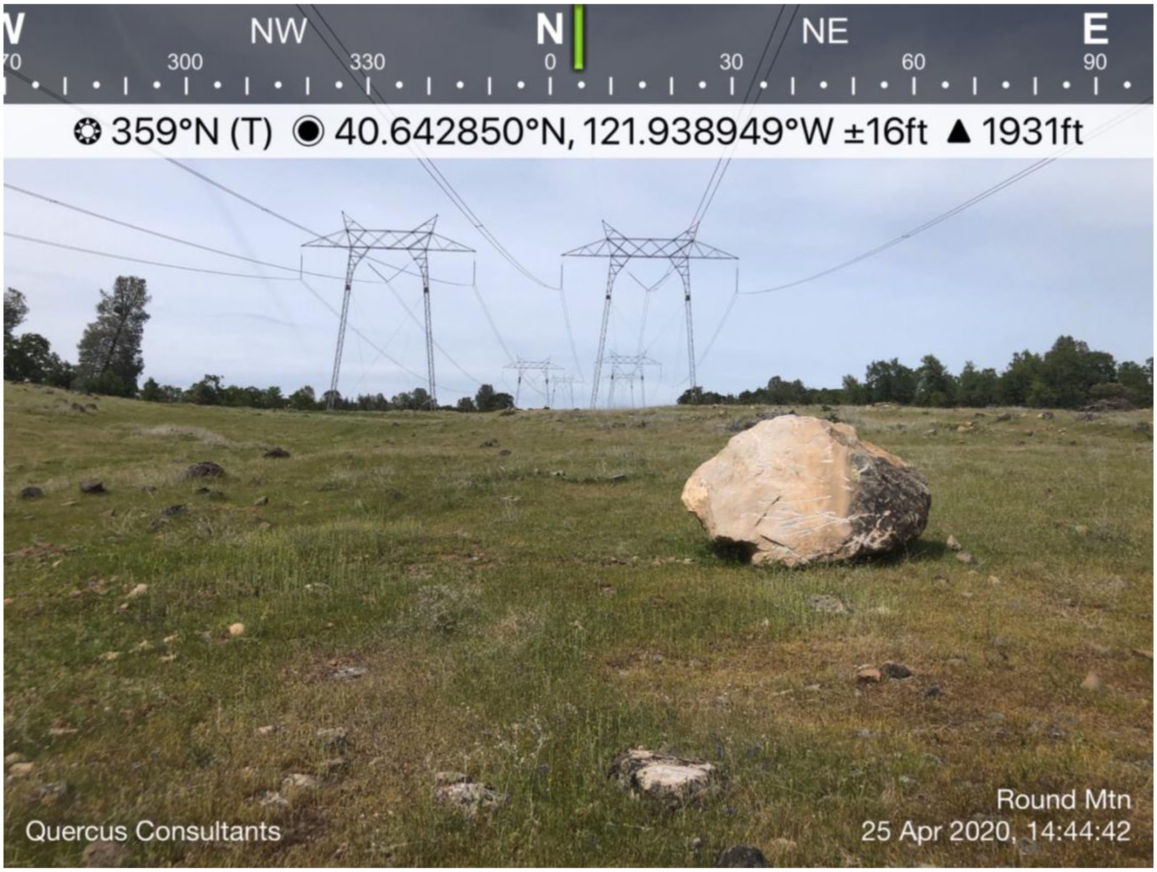


Photo 1: Annual grassland habitat in the central portion of the work area under the existing 500 kV transmission lines (photograph taken in April). This area is actively grazed and vegetation is managed by PG&E for fire safety purposes.


Photo 2: Annual grassland habitat within the central portion of the work area under the existing 500 kV transmission lines (photograph taken in July). Blue oak woodland habitat exists in the background of this photo.

Photo 3: Facing west. Blue oak woodland habitat within the central portion of the work area immediately north of the Proposed Project area.

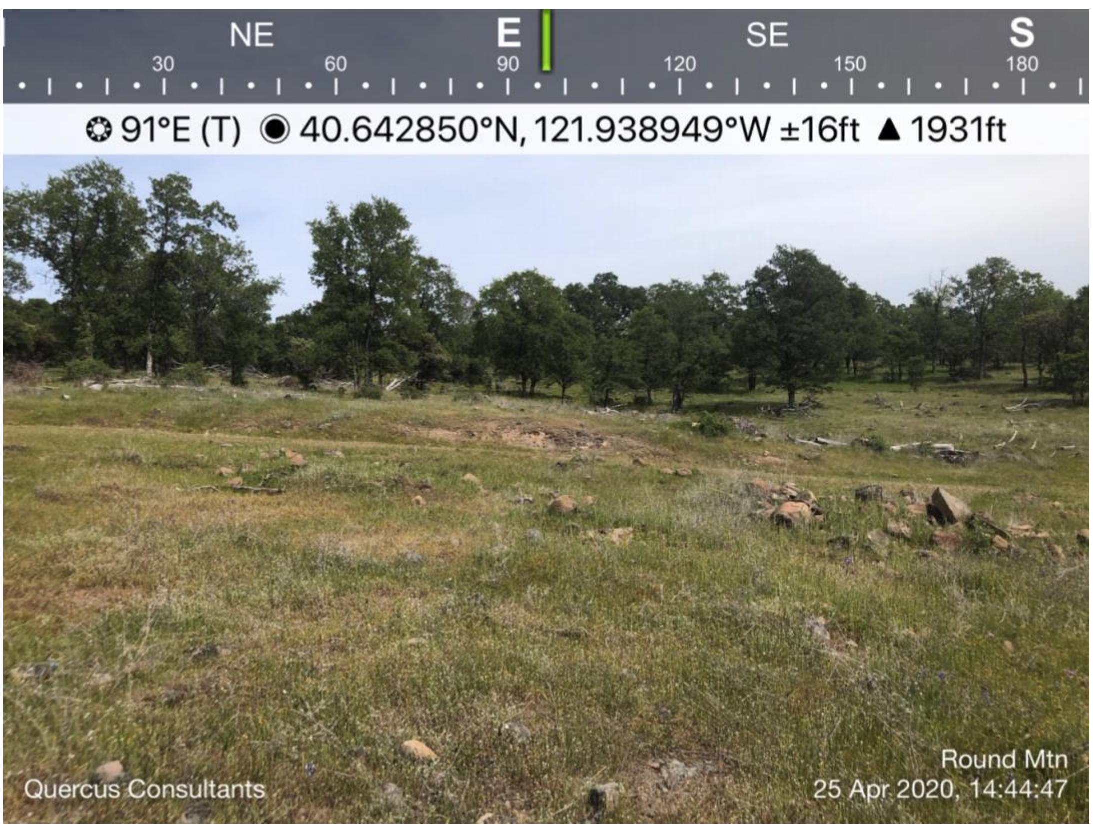


Photo 4: Facing east towards the Proposed Project area (Fern Road Substation). Annual grassland habitat beneath the transmission lines in the north-central portion of the work area. Blue oak woodland habitat is shown in the background in the approximate Fern Road Substation location.

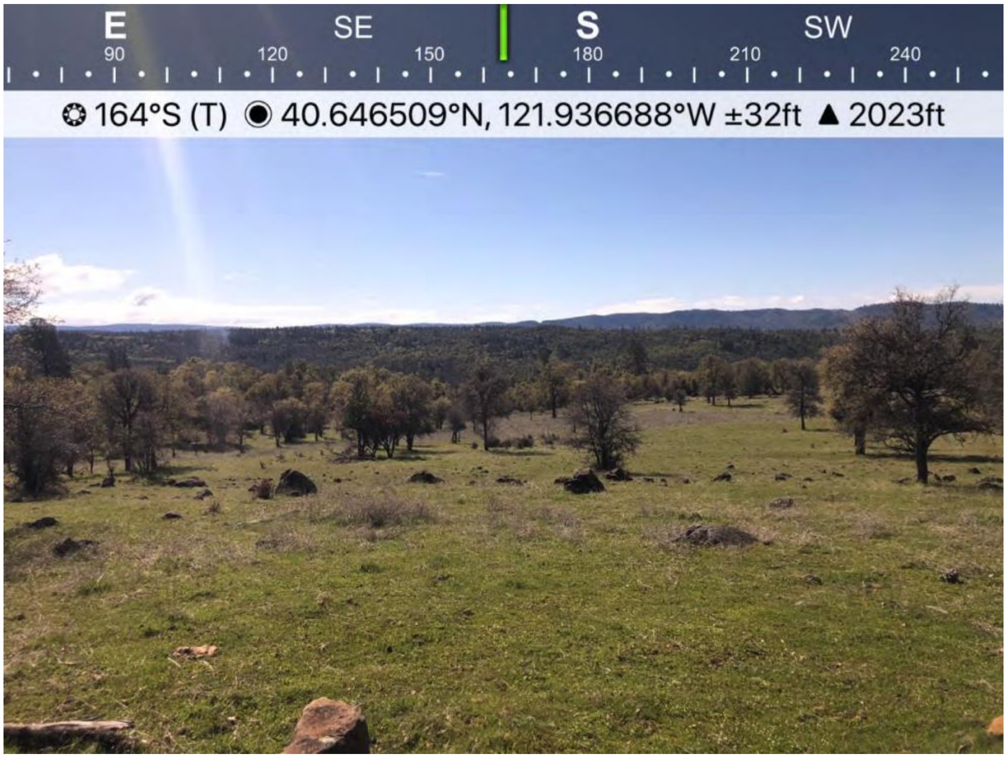


Photo 5: Facing south-southeast. Grazed blue oak woodland in the central portion of the Survey Area. This area does not contain as dense of woodland as the areas in the background.

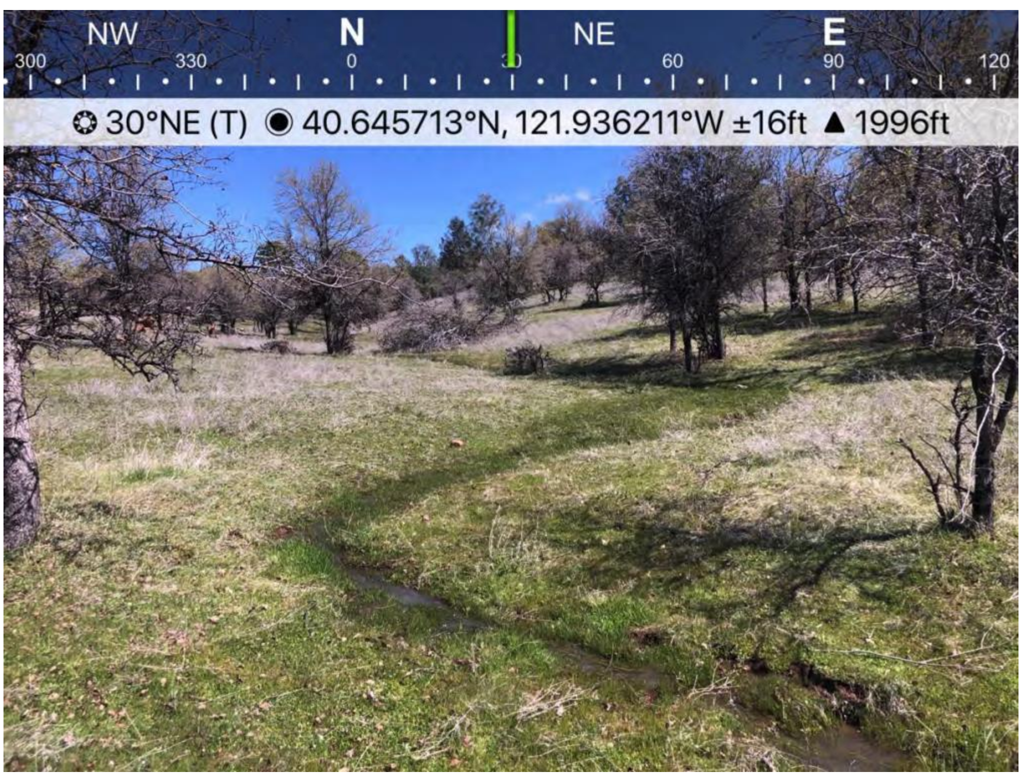


Photo 6: Intermittent stream (Int-1) and seasonal wetland habitat on the east edge of the Survey Area. The stream has low flow following storms that occurred 2 days prior.

Photo 7: Seasonal wetland (W-2) and seasonal wetland habitat along the western edge of the work area; this wetland will not be impacted by construction activities. Some standing water is present following rains.

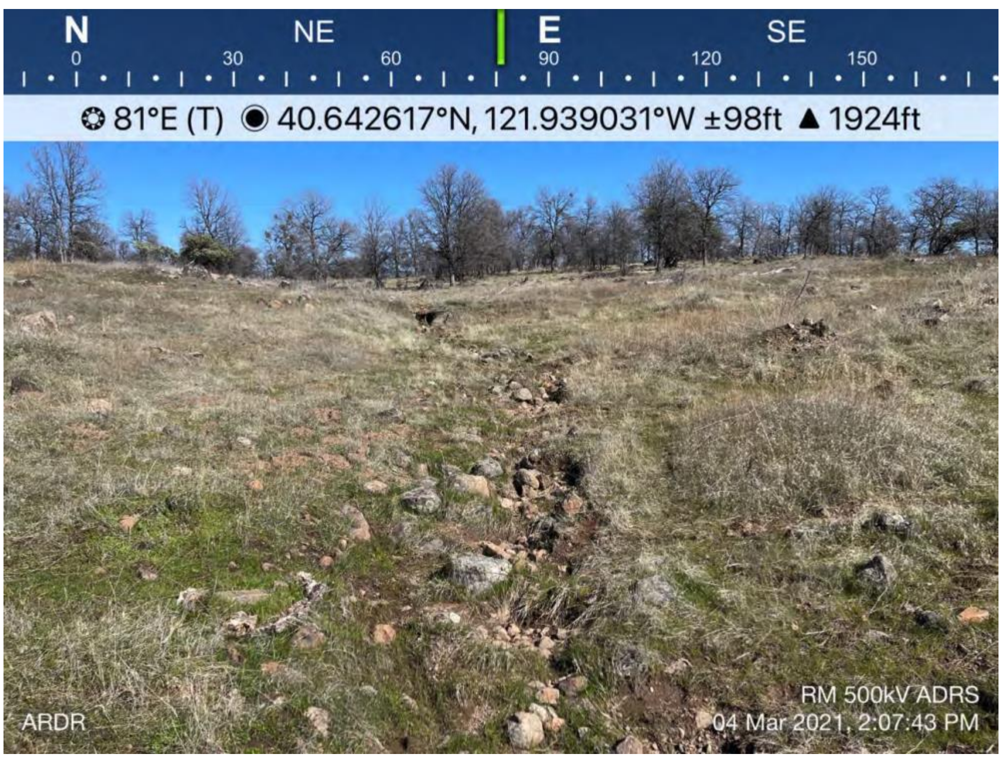


Photo 8: Ephemeral stream (EPH-2) and culvert facing upstream towards the utility line maintenance road in the south-central portion of the work area; this feature will not be impacted by construction activities. No water is present.

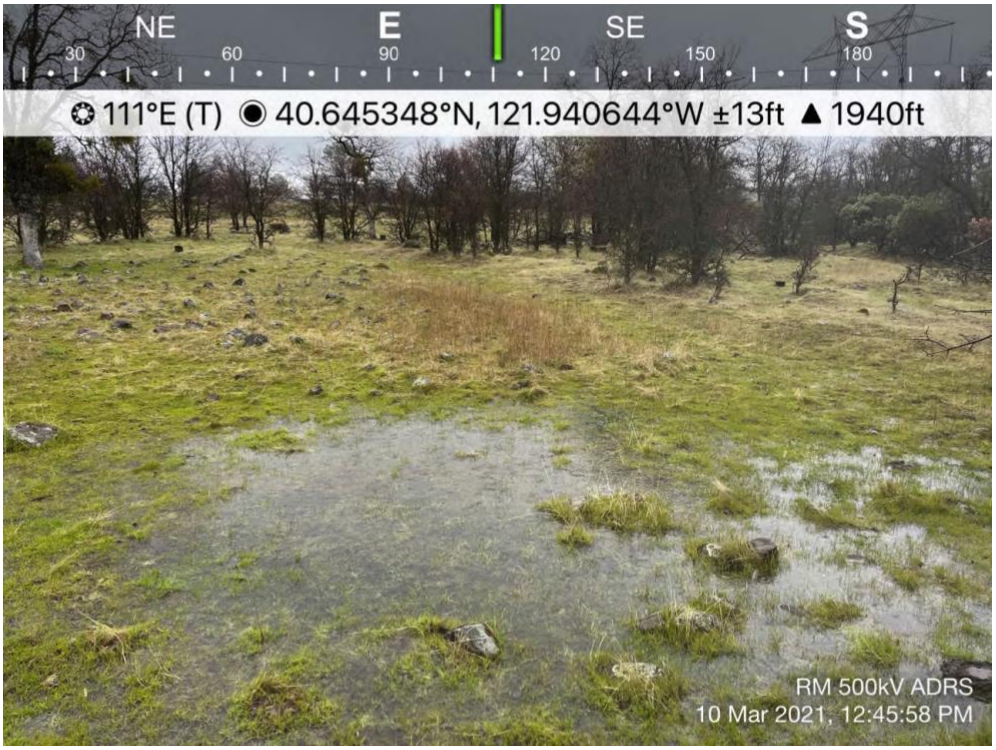


Photo 9: Seasonal wetland (W-4) and seasonal wetland habitat in the western portion of the work area during a rain event. This wetland will not be impacted by construction activities.

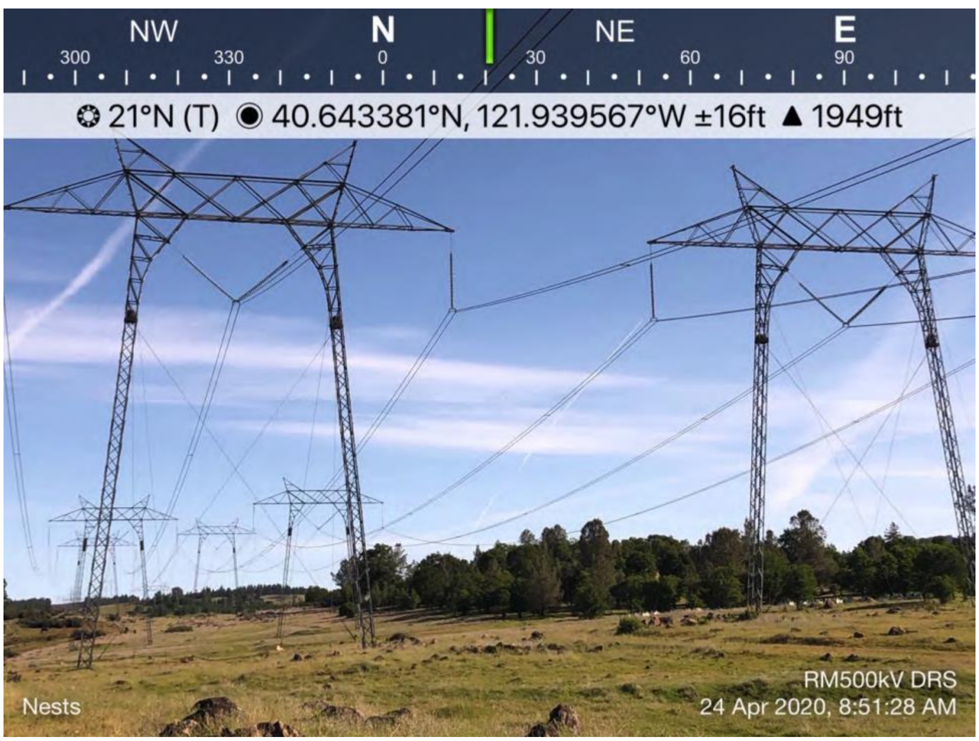


Photo 10: Facing north-northeast from within the work area immediately west of the proposed substation. Shows inactive stick nests on the existing 500-kV transmission line structures 11/58 (background) and 11/59 (foreground). The 11/59 structures in the foreground are the structures that will be removed during construction activities.

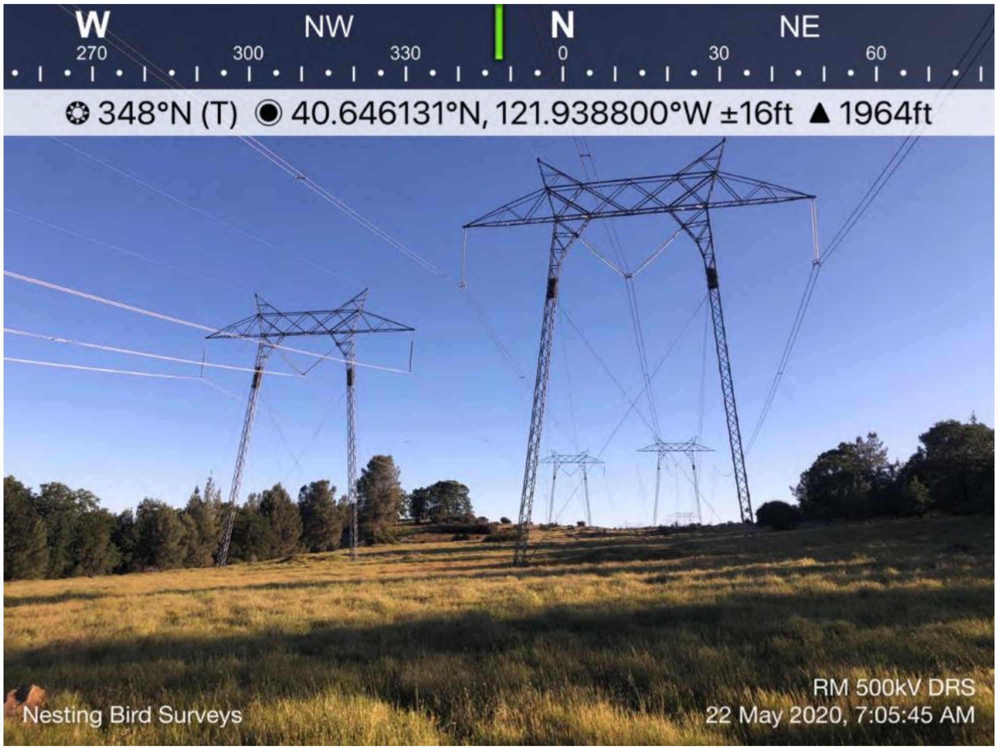


Photo 11: Facing north-northwest from within the north-central portion of the work area. Shows inactive stick nests on the existing 500-kV transmission line structures 11/57 (background) and 11/58 (foreground). These structures would not be removed during construction activities.

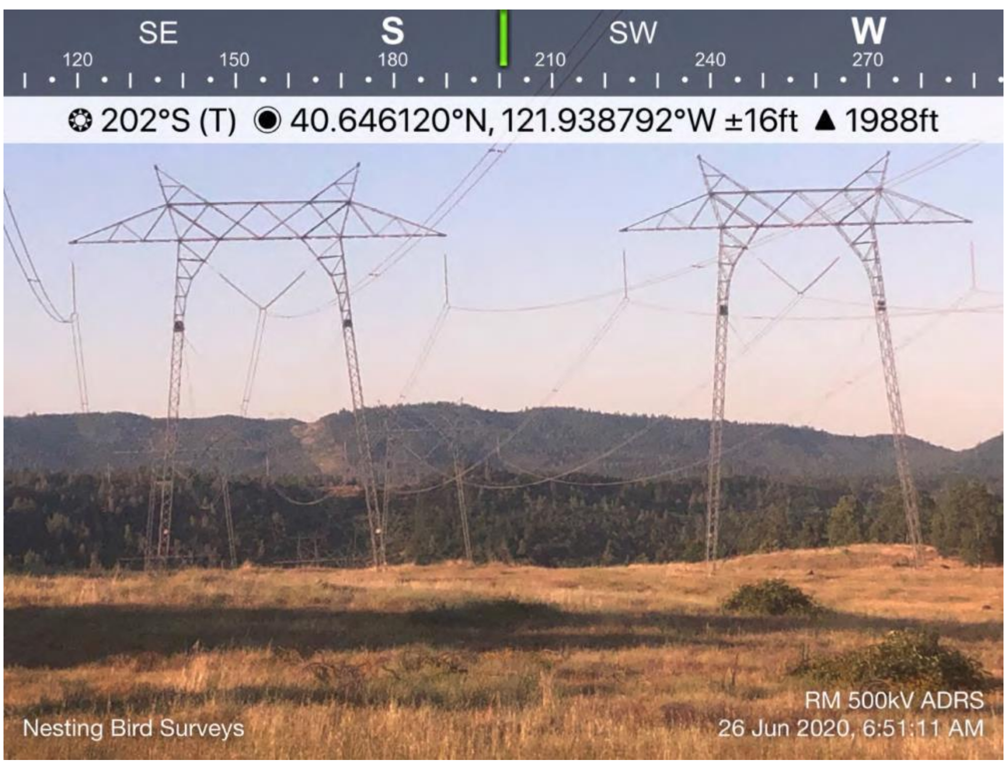


Photo 12: Facing south-southwest from within the north-central portion of the work area. Shows inactive stick nests on the existing 500-kV transmission line structures 11/59 (foreground) and 11/60 (background). The 11/59 structures in the foreground are the structures that will be removed during construction activities.

Appendix B – IPaC Search Results

IPaC **U.S. Fish & Wildlife Service**

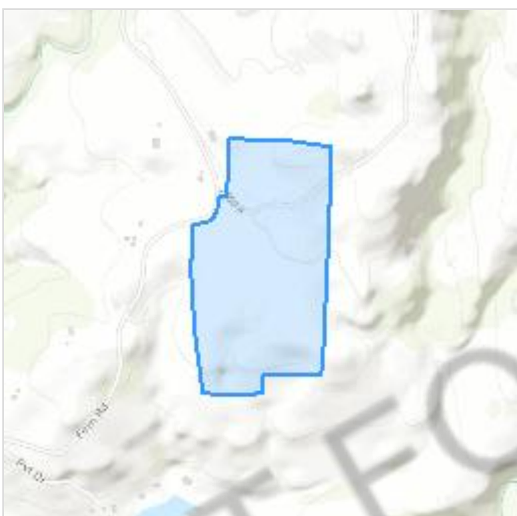
IPaC resource list

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

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

Location

Shasta County, California



Local office

Sacramento Fish And Wildlife Office

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

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

Endangered species

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

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

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

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

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

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

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

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

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

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

https://ecos.fws.gov/ecp/species/498

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

- Nationwide conservation measures for birds
http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

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

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Probability of Presence Summary

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

Probability of Presence (■)

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

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

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

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

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

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

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

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

Survey Timeframe

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

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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

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

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

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

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

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

This location overlaps the following wetlands:

RIVERINE

R4SBC

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

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

Appendix C – Bumble Bee Survey Report

Crotch Bumble Bee and Western Bumble Bee Adult Presence Survey Report

December 2020

Prepared For:
LS Power Grid California (LSPGC)
California Department of Fish and Wildlife (CDFW)

Prepared By:
Heritage Environmental Consultants, LLC

Table of Contents

INTRODUCTION

LS Power Grid California (LSPGC) proposes to construct, own, and operate the Round Mountain 500kV Area Dynamic Reactive Support Project (Project) in Shasta County, California. The Project site is located approximately 24 miles east of the City of Redding and approximately 1.2 miles northwest of the unincorporated community of Whitmore. **Figure 1** shows the general location of the Project site. The Project would include a switchyard as well as a STATCOM (Static Synchronous Compensator) providing reactive support, continuous and controlled capability, as well as dynamic support to the grid. The Project would require a single 500 kilovolt (kV) connection to the 500 kV bus at the existing Round Mountain Substation, which is approximately 20 miles north of the proposed Project site. The 40-acre Survey Area consists of relatively undisturbed blue oak/gray pine woodlands and open forb/grasslands (**Figure 2**).

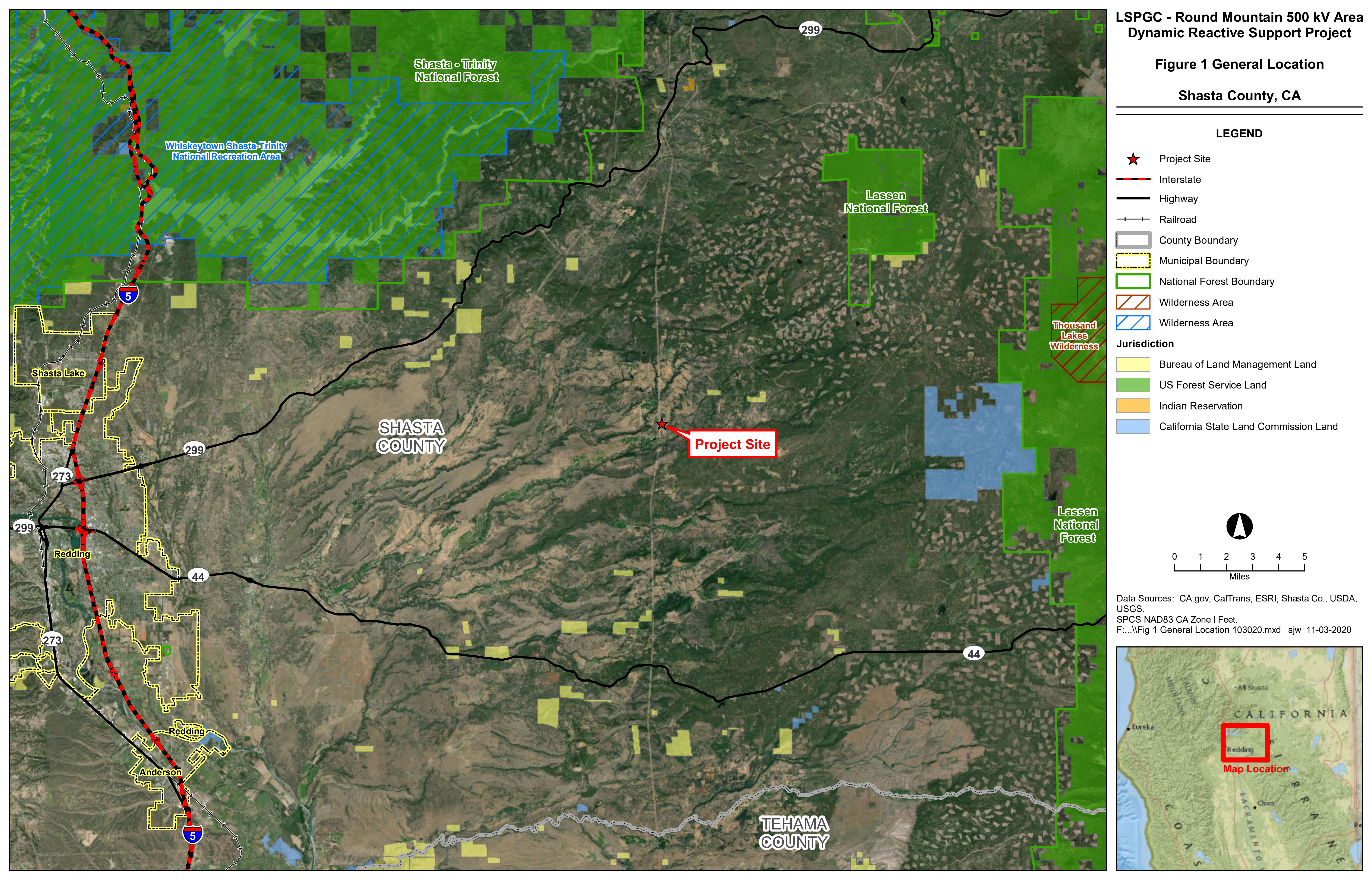
Bumble Bee Survey Plan

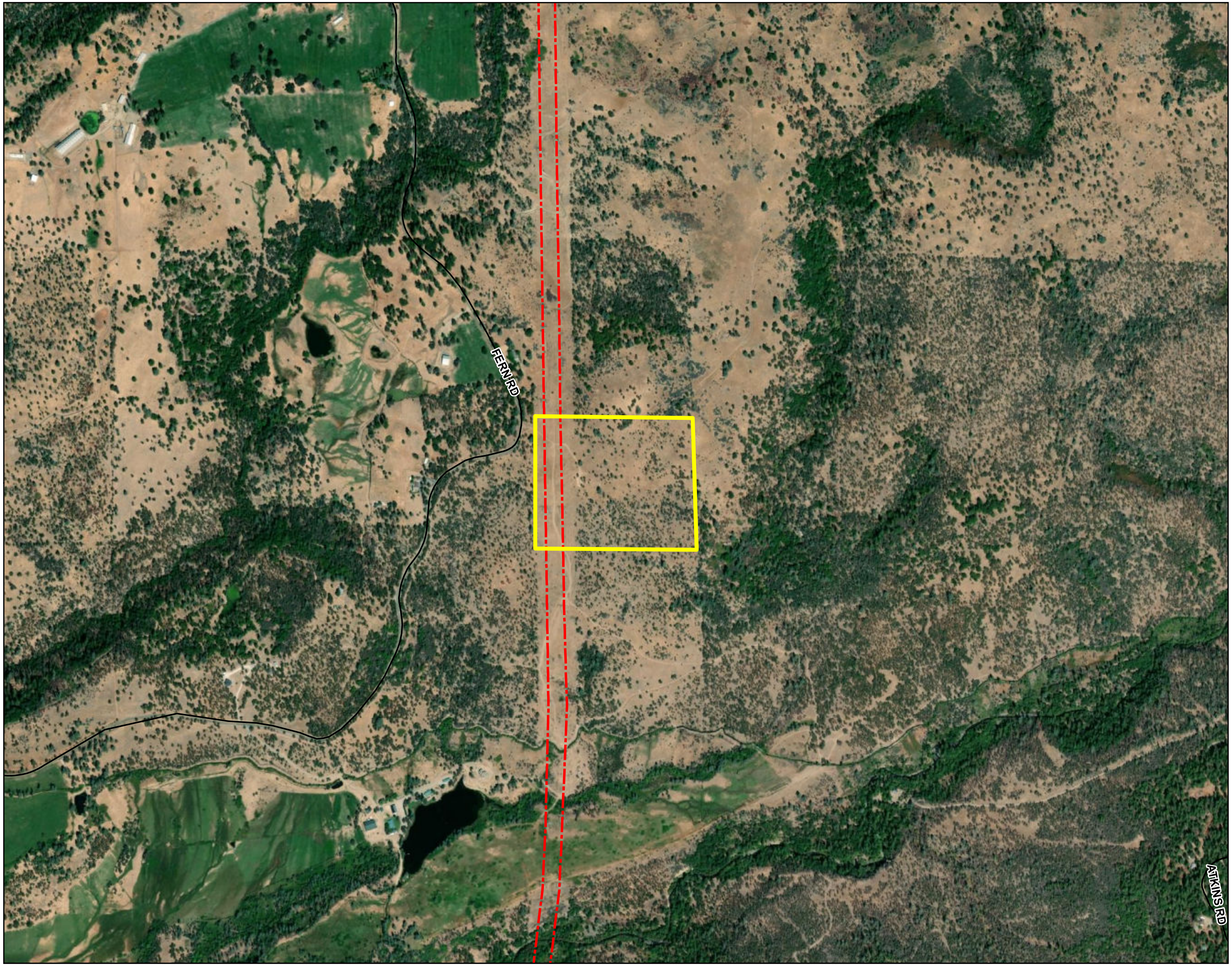
A bumble bee survey plan was prepared in consultation with the California Department of Fish and Wildlife (CDFW). The plan was approved by CDFW in June 2020 (**Appendix 3**). Crotch bumble bee (*Bombus crotchii*) and western bumble bee (*Bombus occidentalis occidentalis*) were identified as species of concern. CDFW requested that adult bumble bee presence surveys be conducted to determine the presence of the two species within the proposed Project area.

Background Information

Bombus occidentalis occidentalis was historically broadly distributed and has been documented in Shasta County. Currently, western bumble bee populations are largely restricted to high elevation sites in the Sierra Nevada, though there have been a few observations on the northern California coast (Xerces 2018). Western bumble bee require habitat with rich supplies of floral resources with continuous blooming from spring to autumn (Evans et al. 2008). This subspecies occurs at much higher elevations than the Project site (which ranges from approximately 1,970 – 2,045 feet above mean sea level) and therefore has an extremely low potential to occur within the Survey Area.

The distribution of *Bombus crotchii* is coastal California east towards the Sierra-Cascade crest. Crotch bumble bee inhabits open grassland and scrub habitats within many ecoregions including adjacent foothills. A large California based analysis reports that plant families most commonly associated with observations of this species are *Leguminosae, Labiatae, Hydrophyllaceae, Asclepiadaceae* and *Compositae* (Thorp et al. 1983). Williams et al. (2014) also reports the food plants *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* as example food plants for *Bombus crotchii*. These floral associations do not necessarily represent this *Bombus* species' preference, but rather may present the prevalence of these flowers in the landscape where this species occurs. The Survey Area represent potentially suitable habitat for Crotch bumble bee and they have a low to medium potential to occur.


LSPGC - Round Mountain 500 kV Area
Dynamic Reactive Support Project
Figure 1 General Location
Shasta County, CA
LEGEND
Project Site
Interstate
Highway
Railroad
County Boundary
Municipal Boundary
National Forest Boundary
Wilderness Area
Wilderness Area
Jurisdiction
Bureau of Land Management Land
US Forest Service Land
Indian Reservation
California State Land Commission Land
0 1 2 3 4 5
Miles
Data Sources: CA.gov, CalTrans, ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\\Fig 1 General Location 103020.mxd sjw 11-03-2020
Shasta - Trinity
National Forest
Whiskeytown Shasta-Trinity
National Recreation Area
Lassen
National Forest
Thousand
Lakes
Wilderness
Lassen
National
Forest
SHASTA
COUNTY
Project Site
TEHAMA
COUNTY
Shasta Lake
Redding
Redding
Anderson
299
299
299
273
273
44
44
5
5
Mt Shasta
CALIFORNIA
Eureka
Redding
Map Location
Chico
SIERRA
SACRAMENTO
COAST



LSPGC - Round Mountain 500 kV Area Dynamic Reactive Support Project

Figure 2 Survey Area

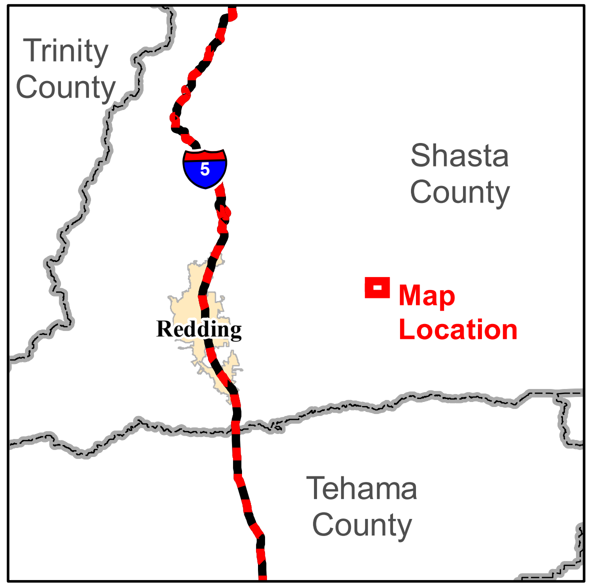
Shasta County, CA

LEGEND

- Project Site Boundary (Preliminary 40 Acre Site)
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- Municipal Boundary

0 500 1,000 1,500 2,000
Feet

Data Sources: CA.gov, CalTrans, ESRI, Shasta Co., USDA, USGS.
SPCS NAD83 CA Zone I Feet.
F:...\\Fig 2 Survey Area 103020.mxd sjw 11-03-2020



METHODS

Habitat/Host Plant Survey

One (1) habitat assessment survey was conducted to determine if the six (6) most associated bumble bee host plant genera (shown below) or any other flowering plants were present in the Survey Area. Surveying with transects is recommended to adequately cover the highest quality habitat at the site (USFWS 2019). Transects were spaced 10 meters apart, heading north to south to achieve 100% coverage of the entire 40-acre Survey Area. A handheld GPS unit was used to record any host plant observations and track transects. This survey was conducted prior to performing photograph-only surveys to determine suitable habitat and host plant locations and extents.

- *Asclepias*
- *Chaenactis*
- *Lupinus*
- *Medicago*
- *Phacelia*
- *Salvia*

Photograph-Only Survey

Following USFWS protocol recommendations (**Appendix 3**), two (2) photograph-only surveys were conducted after habitat/host plant surveys to determine adult bumble bee presence/absence. This survey method is suitable for areas with low to high probability of species occurrence (USFWS 2019). Two photograph-only surveys were performed from mid-June to mid-August for the highest detection probability and to reduce potential impacts to *Bombus crotchii* and *Bombus occidentalis occidentalis* queens. Photograph-only surveys included walking meandering transects through the entire 40-acre Survey Area (with preference given to suitable habitat with flowering plants). Photographs of *Bombus* individuals would be taken using a DSLR camera and locations would be recorded with a handheld GPS unit.

RESULTS

Habitat/Host Plant Survey

A total of 7 miles of transects were surveyed within the 40-acre Project site on June 23, 2020 by a qualified biologist who is familiar with bumble bees. Transects were walked at 10-meter spacing in a north-south direction. The Survey Area is characterized by blue oak/gray pine woodlands except under the electric transmission lines where an open forb/grassland is maintained by ongoing vegetation management. Blue oak (*Quercus douglasii*) is the dominant tree species with a gray pine (*Pinus sabiniana*) and buckeye (*Aesculus californica*) subcomponent. Associated shrub species include poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), and whiteleaf manzanita (*Arctostaphylos viscida*). The ground cover consists of forbs (predominantly: big heron bill (*Erodium botrys*), common butter cup (*Ranunculucs californicus*), yellow star-thistle (*Centaurea solstitalis*), butter n' eggs (*Triphysaria eriantha*), and rose clover (*Trifolium hirtum*); and annual grasses (predominantly bulbous bluegrass (*Poa bulbosa*), seaside barley (*Hordeum marinum*), and medusa head (*Elymus caput-medusae*).

Flowering plants within the survey consisted of both annual and perennial herbs which included yellow star-thistle, Fitch spikeweed (*Centromadia fitchii*), St. John's wort (*Hypericum perforatum*), harvest brodiaea (*Brodiaea elegans*), Queen Anne's lace (*Daucus carota*), slender centaury (*Centarium tenuiflorum*), field bindweed (*Convolvulus arvensis*), and solidstem burnet-saxifrage (*Pimpinella saxifrage*). See **Appendix 2** for a full list of observed flowering plants and their nativity status.

Numerous honey bee (*Apis sp.*) boxes were observed during habitat/host plant surveys. These boxes were located in an enclosed pen at the center of the Survey Area under the transmission lines.

No *Bombus occidentalis occidentalis, Bombus crotchii, or other Bombus* individuals, or any of the 6 host plants were observed within the Survey Area during the habitat/host plant survey or incidentally while in the Project area. Potentially suitable flowering plants for both species were observed during this survey and are shown in **Appendix 2**.

Photograph-Only Survey

A total of two (2) photograph-only surveys were conducted after the habitat/host plant survey. The first survey was conducted on July 29, 2020 and the second was conducted on August 10, 2020. Surveys were performed when temperatures were above 60 °F (15.5°C) and were not conducted during wet conditions (e.g., foggy, raining, and drizzling) (**Table 1**). Surveys were conducted at least 2 hours after sunrise and 3 hours before sunset by a qualified biologist who is familiar with bumble bees.

No *Bombus occidentalis occidentalis, Bombus crotchii, or other Bombus* individuals were observed or photographed within the Survey Area during the two photograph-only field surveys.

Table 1 – Weather Conditions

Survey	Date	Temperatures (ºF)	Wind	Notes
Habitat/Host Plant Survey	6/23/20	81-102	0-5 mph - NE	Clear skies
Photograph-only Survey #1	7/29/20	83-100	0-5 mph - N	Clear skies
Photograph-only Survey #2	8/10/20	90-105	5-10 mph - N	Clear skies

Discussion

No *Bombus occidentalis occidentalis, Bombus crotchii*, or other *Bombus* individuals were observed or photographed within the Survey Area during the habitat/host survey or during the two photograph-only field surveys. None of the bumble bee host plant species were observed, though other potentially suitable flowering plants were observed (**Appendix 2**). The potential for occurrence for the two bumble bee species is low due to the elevation, lack of bumble bee host plant species, and the lack of *Bombus* individuals observed during field surveys.

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Appendix 1 – Photo Log

Northwestern Survey Area beneath the transmission lines. Facing west. Open forb/grassland area with blue oak-gray pine woodlands in the background along the western boundary of the Survey Area.

South-central Survey Area. Facing south. Dense blue oak-gray pine woodland habitat.

West-central Survey Area. Facing west. Numerous honey bee boxes in an enclosure beneath the transmission lines.

Yellow star-thistle (*Centaurea solstitialis*)

Fitch spikeweed (*Centromadia fitchii*)

St. John's wort (*Hypericum perforatum*)

Harvest brodiaea (*Brodiaea elegans*)

Queen Anne's lace (*Daucus carota*)

Slender centaury (*Centarium tenuiflorum*)

Field bindweed (*Convolvulus arvensis*)

Solidstem burnet-saxifrage (*Pimpinella saxifrage*)

Appendix 2 – List of Flowering Plants

Scientific Name	Common Name	Native or Non-native to CA
Hypericum perforatum	St. John's wort	Non-native
Brodiaea elegans	Harvest brodiaea	Native
Daucus carota	Queen Anne's lace	Non-native
Centarium tenuiflorum	Slender centaury	Non-native
Convolvulus arvensis	Field bindweed	Non-native
Pimpinella saxifrage	Solidstem burnet-saxifrage	Non-native
Centaurea solstitalis	Yellow star-thistle	Non-native
Centromadia fitchii	Fitch spikeweed	Native

Appendix 3 – CDFW-Approved Study Plan and Agency Correspondence

June 16, 2020

Ms. Amy Henderson
California Department of Fish and Wildlife
Region 1 - Northern Region
601 Locust Street
Redding, California 96001

Subject: Crotch bumble bee (*Bombus crotchii)* and western bumble bee (*Bombus occidentalis)* adult presence survey plan for LS Power Grid California's (LSPGC) Round Mountain 500kV Area Dynamic Reactive Support Project, Located in Shasta County, California.

Dear Ms. Henderson,

Heritage Environmental Consultants, LLC (Heritage), on behalf of LSPGC, is pleased to provide the California Department of Fish and Wildlife (CDFW) with this Crotch bumble bee (*Bombus crotchii)* and western bumble bee (*Bombus occidentalis occidentalis)* adult presence survey plan (Plan) for the Round Mountain 500kV Area Dynamic Reactive Support Project (Project) located in Shasta County, California. The Plan has been prepared in response to CDFW's request for adult bumble bee presence surveys received via email on May 15, 2020 (from Ms. Amy Henderson of CDFW). This plan provides a proposed survey plan including methods for conducting bumble bee presence surveys; it is focused mainly on Crotch bumble bee because western bumble bee occurs at much higher elevations and has an extremely low potential to occur in the Project area. We kindly request written approval of the survey methodology discussed herein. We have reviewed current information on the biology of the species' and their status in the region. CDFW does not currently have a recommended survey protocol; therefore, we propose a study design that follows current recommendations for similar species. We kindly request written approval of the survey methodology discussed herein.

1 Project Description

The Project site is situated in Shasta, County, approximately 24 miles east of the City of Redding and approximately 1.2 miles northwest of the unincorporated community of Whitmore. The attached figure shows the general location of the site. LSPGC (the applicant) proposes to construct a dynamic reactive support system (similar in appearance to a small substation) on the property. Construction would affect approximately 40-acres of relatively undisturbed Blue Oak-Foothill Pine Woodlands and annual grasslands. The development of reactive power support project on the site would include a switchyard as well as a STATCOM (Static Synchronous Compensator) providing reactive support continuous and controlled capability as well as dynamic support to the grid.

2 Proposed 2020 Survey Methodology

CDFW requested that the Project conduct presence surveys instead of focused surveys to ascertain whether bumble bees are present on site. Scientific recovery permits would be needed for authorized capture of bees for identification. Based on feedback from CDFW, we recommend photograph surveys. Photograph surveys are recommended for biologists who will not be handling bumble bees. The survey methodology includes walking transects through the entire site and photographing any *Bombus* individuals opportunistically. This survey method is suitable for areas with low to high probability of species occurrence (USFWS 2019).

2.1 Habitat/Host Plant Survey

Bombus occidentalis require habitat with rich supplies of floral resources with continuous blooming from spring to autumn (Evans et al. 2008). *Bombus crotchii* inhabits open grassland and scrub habitats that include the following food plants: *Ascelpias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* (Hatfield et al. 2015), though they may use any flowering plant.

A habitat assessment survey will be conducted to determine if the five most preferable host plants or any flowering plants are present at the Project. Surveying with transects is recommended to adequately cover the highest quality habitat at the site (USFWS 2019). Transects will be spaced 10 meters apart, heading north to south. Approximately 5 miles of transects will be surveyed within the 40-acre site. A GPS unit will be used to record host plant observations and track transects. If host plants or other flowering plants are present, additional photograph-only surveys will be conducted.

2.2 Photograph Only Survey

Following USFWS protocol recommendations, photograph-only surveys will be conducted to determine adult bumble bee presence. Surveys shall be undertaken from mid-June to mid-August, for the highest detection probability and to reduce potential impacts to *Bombus crotchii* and *Bombus occidentalis* queens. Surveys will take place when temperatures are above 60 °F (15.5°C) and not during wet conditions (e.g., foggy, raining, and drizzling). Surveys will be conducted at least 2 hours after sunrise and 3 hours before sunset.

Recommended photograph techniques and protocols include:

- Type of camera - Point and shoot digital cameras, DLSR and phones with cameras (>= 8 megapixels) will be used.
- To properly identify a bumble bee, photos that clearly show the entire top side of the abdomen, the side of the thorax/abdomen and the face/head will be taken. If possible, several photos of each specimen will be taken.
- Hair color patterns vary with lighting. Attempts will be made to ensure that coloration is clear and that shadows and the underlying integument are not creating deceptive color patterns.
- Photos would be submitted to Bumble Bee Watch (www.bumblebeewatch.org), BeeSpotter (https://beespotter.org), or a similar website that employs bumble bee experts to verify the identifications. Qualified scientific experts at UC Davis may also be used to verify photographic records.
- Only good photographs showing key characteristics will be verified.
- CDFW would be notified as soon as possible if Crotch bumble bees or western bumble bees are observed.
- If possible, all Crotch bumble bee and Western bumble bee will be photographed and numbers of individuals will be estimated.
- The presence or absences of preferred host plants will be documented and the species of plants that the *Bombus* is using will be noted.h

Heritage would conduct the habitat survey and first photograph survey this June (preferably next week). If host plants are present, we propose to conduct additional photograph surveys in mid-July and mid-August.

3 Reporting

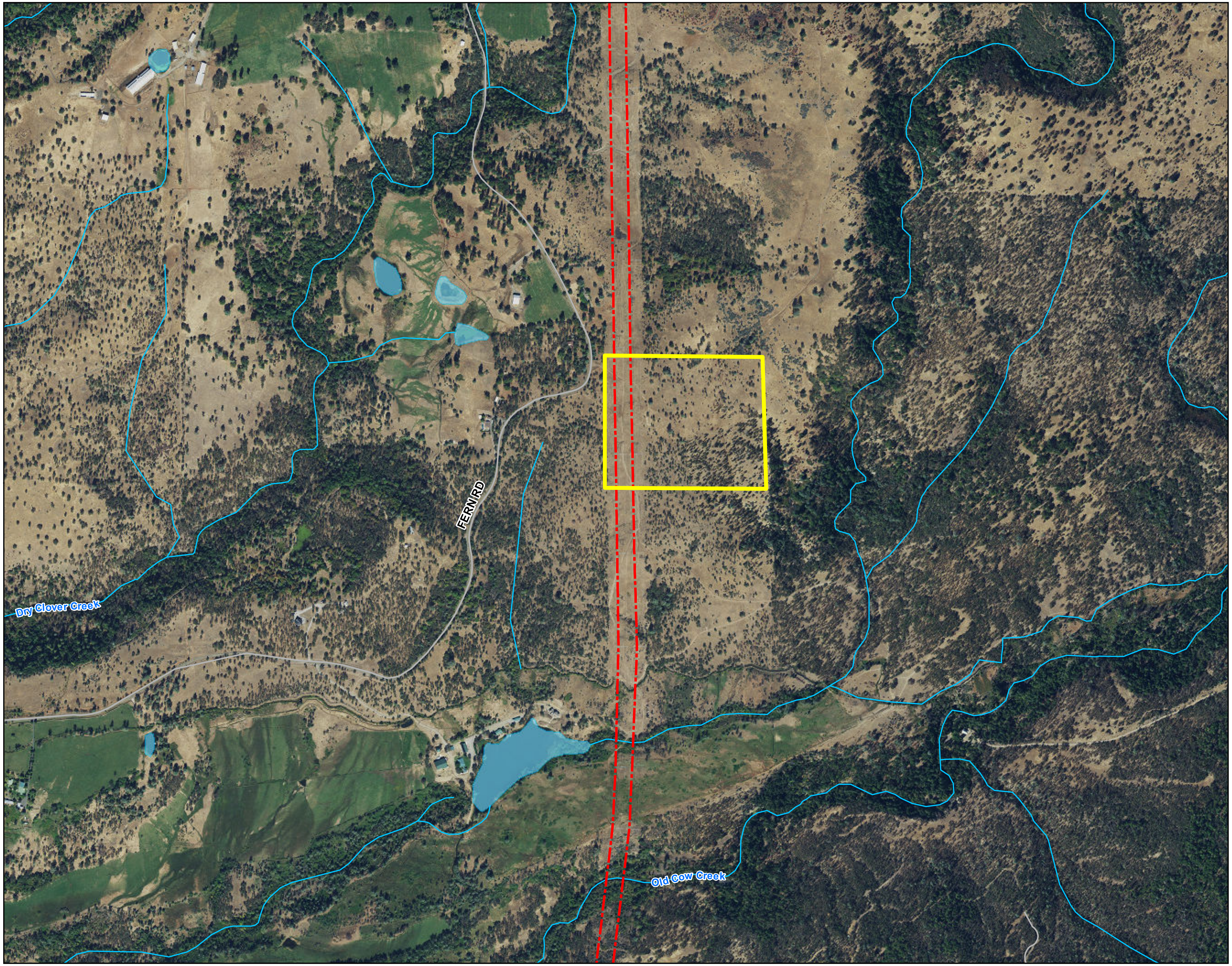
Upon completion of the photograph surveys, results will be documented and summarized in a survey report and provided to CDFW. In the unlikely event that bumble bees are observed, Heritage will notify and send observations to the California Natural Diversity Database (CNDDB) (https://wildlife.ca.gov/Data/CNDDB/Submitting-Data) and consult with the CDFW regarding the results and the appropriate approach to move forward. No work activities would occur before consultation with CDFW to avoid the potential for take, and to ensure take avoidance measures as specified by CDFW are implemented or an Incidental Take Permit is obtained.

Thank you in advance for your review and approval of this Plan in support of LS Powers' Round Mountain 500kV Area Dynamic Reactive Support Project. We kindly request a written approval of the adult bumble bee presence surveys proposed above for the Project. If you have any questions or comments regarding this information, please contact Patrick Golden (Principal Biologist) at (303) 618-7910.

Sincerely,

Patrick F. Golden

Patrick Golden, Principal
Heritage Environmental Consultants



LSPGC - Round Mountain 500 kV Dynamic Reactive Support Project

Preliminary Project Location

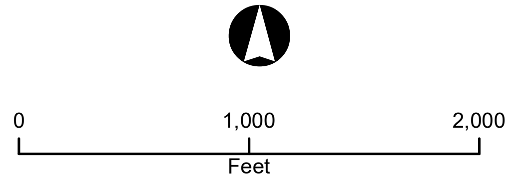
Shasta County, CA

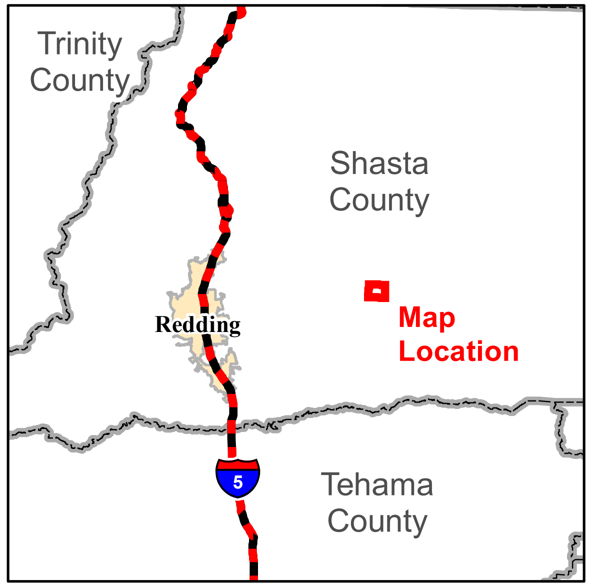
LEGEND

- Project Site
- Existing 500kV Transmission Line
- Interstate
- Road
- County Boundary
- River/Stream
- Waterbody
- Municipal Boundary

CONFIDENTIAL

Date: 03/25/2020





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From: **Henderson, Amy@Wildlife** Amy.Henderson@wildlife.ca.gov
Subject: Re: Bumble bee surveys
Date: June 17, 2020 at 7:41 AM
To: Patrick Golden pgolden@heritage-ec.com

AH

The email is fine to use as written approval but please "attach" in its entirety to protocol.

Thank you,

Amy Henderson
California Department of Fish and Wildlife
Senior Environmental Scientist (Specialist)
530-598-7194 (cell)

> On Jun 16, 2020, at 3:41 PM, Patrick Golden <pgolden@heritage-ec.com> wrote:
>
> **Warning:** This email originated from outside of CDFW and should be treated with extra caution.
>
> Amy,
>
> Thanks for the QUICK turn! Understood about the plant species - we will look for any flowering plants and report on all of them. Would you like me to revise the plan, or just use this email as the approval and the amendment?
>
> Many thanks,
>
> Pat
>
> Patrick Golden
> Heritage Environmental Consultants
> (303) 618-7910
> pgolden@heritage-ec.com
> www.heritage-ec.com
>
>> On Jun 16, 2020, at 3:44 PM, Henderson, Amy@Wildlife <Amy.Henderson@wildlife.ca.gov> wrote:
>>
>> Patrick,
>>
>> This protocol looks fine and is exactly what I was looking for in terms of initial surveys. A few things I would like to point out:
>>
>> 1. Plant genera listed for Crotch's bumblebees are most likely a sample of plant species utilized by the Crotch's bumblebees but not the only species. The way it is worded is if these specific genera are not present, then no additional surveys. Based on my conversations with Rich Hatfield of the Xerces Society, I do not believe there have been enough surveys conducted on this species to say they only use these specific genera and nothing else.
>> 2. The candidate species for the western bumblebee is a subspecies of the western bumblebee. The subspecies (*Bombus occidentalis occidentalis*) occurs at much higher elevations and therefore has an extremely low potential to occur on this specific site.
>> 3. Please send in your observations to CNDDB if you do find one of the special status bumblebee species -https://wildlife.ca.gov/Data/CNDDB/Submitting-Data

Please call or email if you have any further questions or concerns.

Thank you,

Amy Henderson
Senior Environmental Scientist (Specialist)
Interior Conservation and Cannabis Planning
California Department of Fish and Wildlife Northern Region
601 Locust St.
Redding, CA 96001
530-225-2779 (office)
530-598-7194 (cell)
Amy.Henderson@wildlife.ca.gov

Every Californian should conserve water. Find out how at:

<image001.jpg>
SaveOurWater.com · Drought.CA.gov

From: Patrick Golden <pgolden@heritage-ec.com>
Sent: Tuesday, June 16, 2020 10:18 AM
To: Henderson, Amy@Wildlife <Amy.Henderson@wildlife.ca.gov>
Cc: McKannay, Adam@Wildlife <Adam.McKannay@wildlife.ca.gov>
Subject: Re: Bumble bee surveys

Warning: This email originated from outside of CDFW and should be treated with extra caution.

Amy,

Please see the attached bumble bee study plan. It's short so I'm hoping you have time to look at it this week. We could get out there as early as next Monday if you are able to turn it around that quickly. Call with questions.

Thanks,

Pat

Patrick Golden
Heritage Environmental Consultants
(303) 618-7910
pgolden@heritage-ec.com
www.heritage-ec.com

On May 15, 2020, at 12:44 PM, Henderson, Amy@Wildlife <Amy.Henderson@wildlife.ca.gov> wrote:

Hi Pat,

I apologize for the wait on getting back to you regarding bumble bee surveys.

As you are aware, on June 28, 2019, the Fish and Game Commission published findings of its decision to advance Crotch bumble bee (*Bombus crotchi*i) and Western bumble bee (*Bombus occidentalis occidentalis*) to candidacy as endangered. The Department has initiated a status review report to inform the Commission's decision on whether listing of these species, pursuant to CESA, is warranted. During the candidacy period, consistent with CEQA Guidelines, section 15380, the status of these species as an endangered candidate species under CESA qualifies it as an endangered, rare, or threatened species under CEQA.

The distribution of Crotch's bumble bee is coastal California east towards the Sierra-Cascade crest. They are known to inhabit open grassland and scrub habitats within many ecoregions including adjacent foothills. The proposed project occurs in adjacent foothills and Crotch's bumble bee have been documented south and west of the project site. The Department feels there is a low to medium probability of occurrence for this species to occur on the project site.

Western bumble bee was historically broadly distributed and has been documented in Shasta County. It appears from information in the petition by the Xerces Society that the Western bumble bee populations are largely restricted to high elevation sites in the Sierra Nevada now although there have been a couple of observations on the northern California coast (Xerces 2018). This species is found in "meadows and grasslands with abundant floral resources" (Xerces 2018). There is a low probability of this species occurring on the project site.

Although there is likely a low probability of either of these species occurring on the project site, the Department would nonetheless recommend adult bumble bee presence surveys to be conducted. If present, focused surveys may need to be done; however, we would like to start with the simplest of surveys to ascertain whether bumble bees are present on the site before we have the project applicant spend additional resources on focused surveys.

Surveys should be conducted by a qualified biologist familiar with bumble bees and would be able to identify bumble bees versus flies that mimic bumble bees.

Should you have any questions or concerns, please do not hesitate to call my cell or to email.

Best,

Amy Henderson
Senior Environmental Scientist (Specialist)
Interior Conservation and Cannabis Planning
California Department of Fish and Wildlife Northern Region
601 Locust St.
Redding, CA 96001
530-225-2779 (office)
530-598-7194 (cell)
Amy.Henderson@wildlife.ca.gov

Appendix D – Botanical Survey Reports

Botanical Survey Report

Round Mountain 500kV Area Dynamic Reactive Support Project
Shasta County, California

Prepared by:

Quercus Consultants, Inc.
PO Box 465
Mt. Shasta, CA 96067

July 2020

Table of Contents

1.0 Introduction

Quercus Consultants, Inc. (Quercus) conducted floristic, protocol-level rare plant surveys to document sensitive biological habitats and special-status plant species that have the potential to be affected by the proposed Round Mountain 500kV Area Dynamic Reactive Support Project located in Shasta County, California. Surveys were conducted on April 25, and May 31, 2020, by Botanists Diane Chakos and Bob Damschroeder to correspond with the peak bloom periods for the majority of species that were considered to have the potential to occur in the Survey Area.

2.0 Project Location and Description

The Round Mountain 500kV Area Dynamic Reactive Support Project is located adjacent to Fern Road approximately 1.5 miles northwest of the town of Whitmore on privately-owned land in rural Shasta County. The approximately 42-acre Survey Area consists of the proposed project's building areas, which encompasses the minimum area necessary to complete and meet the project's purpose and need. It is located within portions of Sections 11 and 12, Township 32 North, Range 01 West, Mount Diablo Base and Meridian of the Whitmore U.S.G.S. 7.5-minute quadrangle (**Figure 1**). Elevations in the Survey Area range from approximately 1,970 to 2,045 feet above mean sea level and the aspects are generally south and southeast with some variation due to topography. Representative photographs are provided in **Appendix A**.

3.0 Regulatory Overview

The following laws and regulations were identified as possible constraints to development within the Survey Area for protected plant species:

3.1 Federal

Federal Endangered Species Act
The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) have jurisdiction over species listed as threatened or endangered under Section 9 of the federal Endangered Species Act (ESA). The 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, Under Section 7 of the ESA, a federal agency must consult with the USFWS and NOAA Fisheries if the agency's action may affect a threatened or endangered species and/or its critical habitat under the authority of each agency. Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present within the Survey Area and vicinity and determine whether the proposed project will have a potentially significant impact upon such species. Under the ESA, habitat loss is

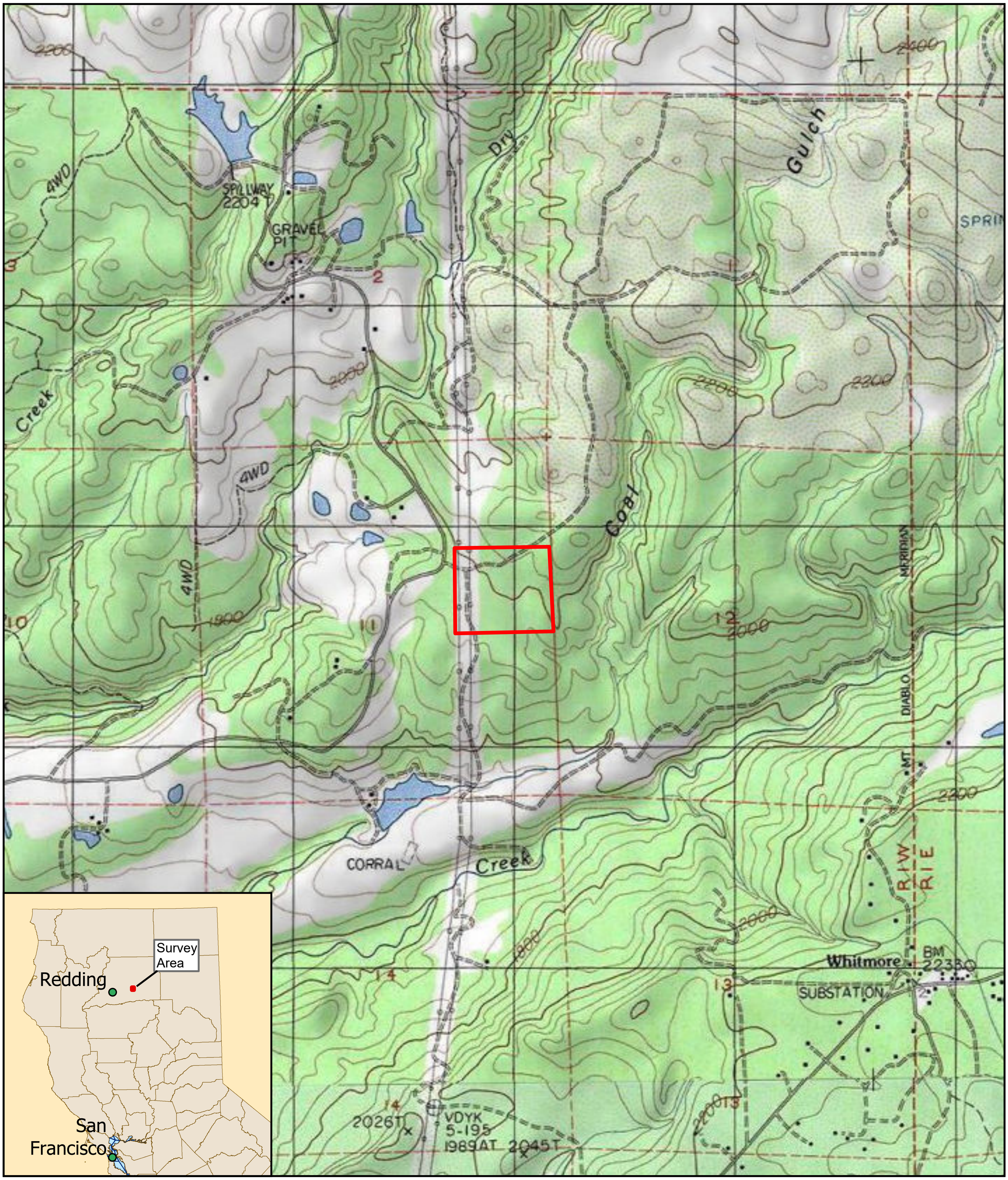

Figure 1: Project Location/Vicinity Map

N

0 500 1,000 2,000 Feet

Scale: 1:24,000

Legend

Survey Area (41.668 total acre)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Coordinates: 121°56'14"W 40°38'42"N

considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would be considered significant and require mitigation.

3.2 State

California Endangered Species Act
The California Endangered Species Act (CESA) prohibits the take of State-listed threatened and endangered species. Under the CESA, State agencies are required to consult with the California Department of Fish and Wildlife (CDFW) when preparing CEQA documents. Under the CESA, the CDFW is responsible for maintaining a list of rare, threatened, and endangered species designated under State law (California Fish and Game Code 2070-2079). The CDFW also maintains lists of candidate species and species of special concern. Candidate species are those taxa which have been formally recognized by the CDFW and are under review for addition to the State threatened and endangered list. Species of special concern are those taxa, which are considered sensitive and this list serves as a "watch list". Pursuant to the requirements of the CESA, agencies reviewing proposed projects within their jurisdictions must determine whether any State-listed species have the potential to occur within a proposed project site and if the proposed project would have any significant impacts upon such species. Project-related impacts to species on the CESA's rare, threatened, and endangered list would be considered significant and require mitigation. The CDFW can authorize take if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with the ESA, or if the director of the CDFW issues a permit under Section 2081 in those cases where it is demonstrated that the impacts are minimized and fully mitigated.

California Environmental Quality Act
Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. Section 15380 defines "endangered" species of plants, fish, or wildlife as those whose survival and reproduction in the wild are in immediate jeopardy and "rare" species as those who are in such low numbers that they could become endangered if their environment worsens. Therefore, a project will normally have a significant effect on the environment if it will substantially affect a rare or endangered species or the habitat of the species. The significance of impacts to a species under CEQA must be based on analyzing actual rarity and threat of extinction despite legal status or lack thereof.

California Native Plant Protection Act
The Native Plant Protection Act (CFG Code Sec. 1900-1913) prohibits the taking, possessing, or sale within the state of any rare, threatened, or endangered plants as

defined by the CDFW. This applies to any plants with a state designation of rare, threatened, or endangered.

Natural Community Conservation Planning Act
The NCCPA allows for the development of ecosystem-level plans for the protection of biological diversity. Natural communities can be conserved while accommodating compatible land use whereby some plants may be "taken".

4.0 Methods

4.1 Literature Review/Informal Agency Consultation

Quercus staff consulted the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), the California Native Plant Society (CNPS) rare plant inventory, and California Natural Diversity Database (CNDDB), a positive-sighting database managed by the CDFW, to identify potential and/or known occurrences of special-status species within the Survey Area. Prior to plant surveys, staff consulted with CDFW for reference population phenology.

For purposes of this evaluation, special-status plant species are plants that are (1) listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (i.e., "listed species"); or (2) are proposed for listing as rare, threatened, or endangered; and/or (3) are state or federal candidates for listing as threatened or endangered; and/or (4) are listed as Species of Concern by the (USFWS); and/or (5) are included on the California Native Plant Society (CNPS) List 1A, 1B, 2, 3, and 4 (Skinner and Pavlik 1994).

The USFWS maintains a website, IPaC, which lists the federally listed species that occur in or may be affected by projects in or near a Survey Area. This database was searched to acquire a list of special-status plant species that have the potential to occur on the site. During IPaC review, no listed plants or critical habitats are expected to be affected by activities within the Survey Area.

The California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2020) was queried for occurrence records for the Whitmore and the eight adjacent U.S. Geological Survey (USGS) quadrangles: Devil's Rock, Montgomery Creek, Hatchet Mountain Pass, Oak Run, Miller Mountain, Clough Gulch, Inwood, and Hagaman Gulch. The CNDDB is a state-maintained database consisting of historic observations of special-status plant species, wildlife species, and special plant communities. The CNDDB is limited to reported sightings and is not a comprehensive list of floral and faunal species that may occur in a particular area.

A database search was also performed using CNPS's Electronic Inventory, which allows users to query the Inventory of Rare and Endangered Plants of California (California Native Plant Society 2020) using a set of search criteria (e.g., quadrangle map name, habitat type, etc.). Because the Inventory of Rare and Endangered Plants of California is also limited to reported sightings, it is not a comprehensive list of plant species that may occur in a particular area. However, it is useful in refining the list of special-status plant species that have the potential to occur on a site.

A table listing all plants with habitat descriptions and rationale for potential to occur considered during the biological analysis for the project based on the above queries are found in **Appendix B**. Of forty-one total plant species, twenty-two have low or no potential to occur in the Survey Area and are eliminated from further consideration in this document; the following nineteen plant species have moderate to high potential to occur:

- Rattlesnake fern (*Botrypus virginianus*)
- Callahan's mariposa-lily (*Calochortus syntrophus*)
- Butte County morning glory (*Calystegia atripicifolia* ssp. *buttensis*)
- Shasta clarkia (*Clarkia borealis* ssp. *arida*)
- Northern clarkia (*Clarkia borealis* ssp. *borealis*)
- Castelgar hawthorne (*Crageaegus castlegarensis*)
- Silky cryptantha (*Cryptantha crinita*)
- Shasta fawn lily *(Erythonium shastense)*
- Butte County fritillary *(Fritillaria eastwoodiae)*
- Jepson's horkelia *(Horkelia daucifolia* var. *indicta)*
- Finger rush *(Juncus digitatus)*
- Bellinger's meadowfoam *(Limnanthes floccosa* ssp. *bellingeriana)*
- Woolly meadowfoam *(Limnanthes floccosa* ssp. *floccosa)*
- Shasta snow wreath *(Neviusia cliftonii)*
- Bidwell's knotweed *(Polygonum bidwelliae)*
- Long-fruited jewel-flower *(Streptanthus longisiliquus)*
- Maverick clover *(Trifoilum piorkoskii)*
- Siskiyou clover *(Trifolium siskiyouense)*
- Shasta huckleberry *(Vacciniumm shastense* ssp. *shastense)*

4.2 Field Surveys

Field surveys were conducted on April 25, and May 31, 2020. The Survey Area was systematically surveyed on foot in accordance with the 2018, CDFW Plant and Vegetation Survey Protocols (CDFW 2018), to ensure complete coverage and optimal bloom time. A reference population for Butte County Fritillary (*F. eastwoodiae*) was visited on April 25, 2020, prior to initiating the surveys to determine the bloom time for this species. This species in particular has been observed at several locations near the Survey Area (CNDDB 2020). There was one plant at the reference population site located at an elevation of 2,620 feet, approximately 4 miles east of the Survey Area. The plant was in full bloom, indicating that it was appropriate to proceed with the first round of surveys. During the field surveys attention was given to identifying areas on the site with the potential for supporting special-status species and sensitive habitats. Field personnel recorded incidental observations of plant species and characterized biological communities occurring on-site. Plants observed within the Survey Area are identified in **Appendix C**.

4.3 Surveyor Qualifications

The botanical field surveyors who conducted the surveys each have formal training in botany and have extensive experience working in Northern California. The qualifications of the team are summarized below.

Diane Chakos, B.S., Staff Botanist. Ms. Chakos received a Bachelor of Science degree in Biology with an emphasis in Ecology, Evolution, and Marine Biology from The University of California, Santa Barbara where she completed plant physiology and plant identification classes. She has completed botanical inventories throughout the western United States and has conducted vegetation inventories in nearly every National Forest in the state of California. In Northern California she has completed vegetation inventories and rare plant and invasive species surveys for agency, utility and private clients.

Bob Damschroeder, B.S., Staff Biologist. Mr. Damschroeder received a Bachelor of Science degree in Natural Resource Planning from Humboldt State University where he completed coursework in plant taxonomy and botany. In his long career, he has completed botanical inventories throughout the western United States. He has conducted vegetation inventories in every National Forest in the State of California and completed vegetation inventories, rare plant and invasive species surveys, and habitat assessments for agency, utility, and private clients in every county in Northern California.

5.0 Environmental Background

5.1 Environmental Setting

The Survey Area is located in rural Shasta County, California. The site is characterized by blue oak/gray pine woodland except under the electric transmission lines where an open forb/grassland is maintained by ongoing vegetation management. Project elevations range from approximately 1,970 to 2,045 feet above mean sea level and topography consists of a gentle slope from the northern to southern boundary of the entire Survey Area. There is an intermittent stream on the eastern side of the Survey Area that flows north to south. The stream bed is approximately two feet wide with boulders, grass, and rocky substrate with a half inch to one inch of standing water in a few locations. The stream had residual pools during surveys, and mesic conditions exist along the course of the stream (**Figure 2**).

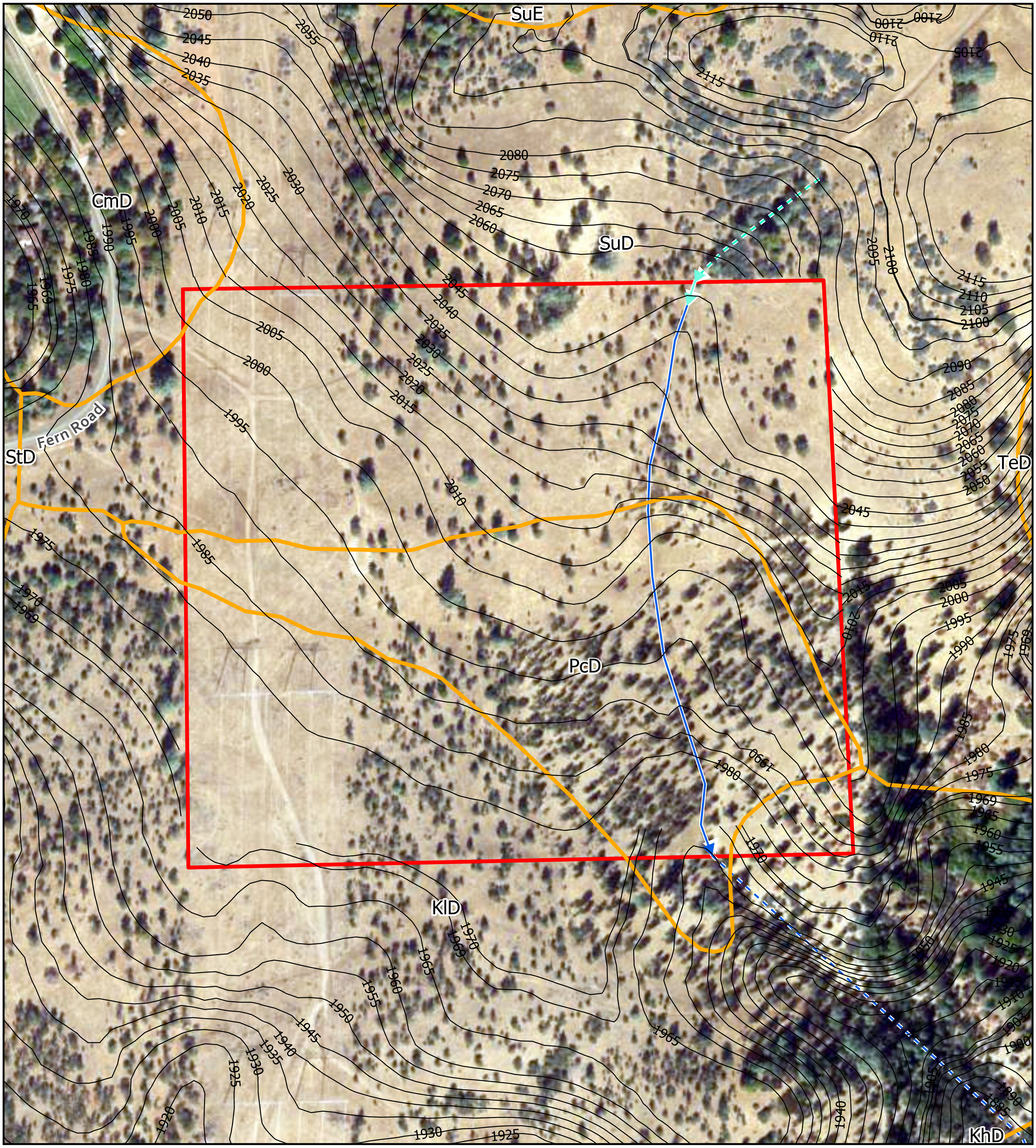

Figure 2. Survey Area and Aquatic Resources

Legend

- Survey Area (41.668 total acres)
- Soils
- Intermittent Stream
- Intermittent Stream out of survey area
- Ephemeral Stream
- Ephemeral Stream out of survey area

Round Mountain 500kV Area Dynamic Reactive Support Project Rare Plant Survey Area
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Contours derived from 3DEP
Aerial photo 2018 NAIP
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet

1 inch equals 300 feet

5.2 Soil Types

The Survey area is comprised of the following four soil types: Cohasset stony loam, 0-30 percent slopes; Supan very stony loam, 0-30 percent slopes; Kilarc very stony sandy clay loam, 10-30 percent slopes; and Parish loam, 8-30 percent slopes. The hydric soil rating for each soil type is negative. The soil types are described in detail below.

CmD—Cohasset stony loam, 0 to 30 percent slopes
This soil is found on summit, shoulders and mountain flanks of mountain landforms with parent material from residuum weathered from volcanic rock. Depth to water table is more than 80 inches. Depth to restrictive feature is 60 to 64 inches to paralithic bedrock. The soil type is well drained with a medium runoff class and a very low to moderately low capacity of the most limiting layer to transmit water. The soil profile is typically stony loam from 0 to 18 inches, stony clay loam from 18 to 60 inches, and weathered bedrock from 60 to 79 inches. This is not a hydric soil. (NRCS, 2020)

SuD—Supan very stony loam, 0-30 percent slopes
This soil is found on backslopes, shoulders, and side slopes of hill landforms with parent material from residuum weathered from tuff breccia. Depth to water table is more than 80 inches. Depth to restrictive feature is 33 to 37 inches to lithic bedrock. The soil type is well drained with a high runoff class and a low to moderately high capacity of the most limiting layer to transmit water. The soil profile is typically very stony loam from 0 to 10 inches, clay loam from 10 to 33 inches, and unweathered bedrock from 33 to 43 inches. This is not a hydric soil. (NRCS, 2020)

KlD—Kilarc very stony sandy clay loam, 10-30 percent slopes
This soil is found on backslopes, shoulders and mountain flanks of mountain landforms with parent material from residuum weathered from sedimentary rock. Depth to water table is more than 80 inches. Depth to restrictive feature is about 9 inches to abrupt textural change and 44 to 48 inches to paralithic bedrock. The soil type is moderately well drained with a very high runoff class and a moderately low to moderately high capacity of the most limiting layer to transmit water. The soil profile is typically very stony sandy clay loam from 0 to 9 inches, clay from 9-22 inches, clay loam from 22 to 44 inches, and weathered bedrock from 44 to 48 inches. This is not a hydric soil. (NRCS, 2020)

PcD—Parish loam, 8-30 percent slopes
This soil is found on shoulders and backslopes of mountain landforms with parent material from residuum weathered from metamorphic and sedimentary rock. Depth to water table is more than 80 inches. Depth to restrictive feature is 38 to 42 inches to lithic bedrock. The soil type is well drained with a very high runoff class and a very low to moderately low capacity of the most limiting layer to transmit water. The soil profile is typically loam from 0 to 9 inches, gravelly clay loam from 9 to 30 inches, gravelly loam from30 to 38 inches, and unweathered bedrock from 38 to 42 inches. This is not a hydric soil. (NRCS, 2020)

5.3 Precipitation

The water year of 2019-2020 is considered a drought year and Shasta County, California, where the Survey Area lies is currently experiencing moderate drought conditions (National Integrated Drought Information System). Table 1 below shows rainfall for the 2019-2020 water year using precipitation data from the Climate Analysis for Wetlands Tables (known as WETS tables) from the nearest station with continuous records.

The Buckhorn climate station is approximately 16 miles north northeast of the Survey Area and has recorded precipitation since 1948. Prior to surveys, the average annual precipitation was 63.55 inches, with the majority (50.12 inches) occurring during the typical wet season from November to March; in the 2019-2020 water year starting in October, precipitation was measured at 82 percent of normal (USDA 2020b).

Table 1: Precipitation for 2019-2020 Water Year Prior to the Survey Dates (Buckhorn Station)

Month	Average Rainfall (inches)	2019-2020 Water Year Rainfall (inches)	Percent of Average
October	4.41	0.57	13%
November	8.93	0.92	10%
December	12.09	16.1	133%
January	11.07	13.03	118%
February	9.16	0.02	0%
March	8.87	9.11	103%
April	5.56	1.86	33%
May	3.46	8.49	245%
Total	**63.55**	**50.1**	**82%**

6.0 Results

6.1 Habitat Characterization

Quercus botanists surveyed the extent of all habitat types in the Survey Area and observed blue oak woodland, annual grassland, and seasonal wetland inclusions associated with the intermittent stream. Descriptions and names of plant communities were based on field observations and on descriptions in the CNPS Manual of California Vegetation Online (MCV). Natural communities are evaluated using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the CNDDB. Sensitive natural communities are Natural Communities with ranks of S1-S3. The natural communities observed in the Survey Area are ranked S4 and SNA (semi-natural stands dominated by non-native species). No sensitive natural communities were observed in the Survey Area.

Blue oak woodland: *Quercus douglasii* Forest and Woodland Alliance (S4)

This habitat includes both hardwoods and conifers and comprises the majority of the Survey area. Blue oak (*Quercus douglasii*) is the dominant tree species with a gray pine (*Pinus sabiniana*) and buckeye (*Aesculus californica*) subcomponent. Associated shrub species include poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), and whiteleaf manzanita (*Arctostaphylos viscida*). The ground cover consists of forbs (predominantly: big heron bill (*Erodium botrys*), common butter cup (*Ranunculucs californicus*), and rose clover (*Trifolium hirtum*); and annual grasses (predominantly bulbous bluegrass (*Poa bulbosa*), seaside barley (*Hordeum marinum*), and medusa head (*Elymus caput-medusae*).

Annual Grassland: *Bromus tectorum-Taeniatherum caput-medusae* Herbaceous Semi-Natural Alliance (SNA)

Non-native annual grasses such as seaside barley, medusa head, and bulbous bluegrass are the dominant grass species and big heron bill, star thistle (*Centaurea solstitalis*), and butter n' eggs (*Triphysaria eriantha*) are the dominant forb species in this habitat. Annual grassland was observed under the powerlines and is a result of ongoing vegetation management.

Seasonal wetland inclusions: *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance (S4)

The seasonal wetland inclusion areas are along the intermittent stream and the dominant species in this habitat are wire rush (*Juncus balticus*), yellow monkey flower (*Erythranthe guttata*), and annual beard grass (*Polypogon monspeliensis*).

6.2 Special-status Plants

The criteria for inclusion as a special-status plant were provided in Section 4.1. A list of special-status plant species with the potential to occur on the site was developed through interpretation of the CNDDB, CNPS, and USFWS query results, and knowledge of the special-status plant species in the vicinity of the project (**Appendix B**). CNDDB records of special-status plant species occurrences within five miles of the Survey Area are depicted in **Figure 3**. No special-status plants were observed during the field surveys which were timed to occur during the optimal flowering periods for the target species. No state or federally listed plant species are known to occur in the project vicinity. The nineteen special-status plant species with high to moderate potential to occur on the property and the habitat types where they typically would be found if they occurred in the Survey Area are discussed below.

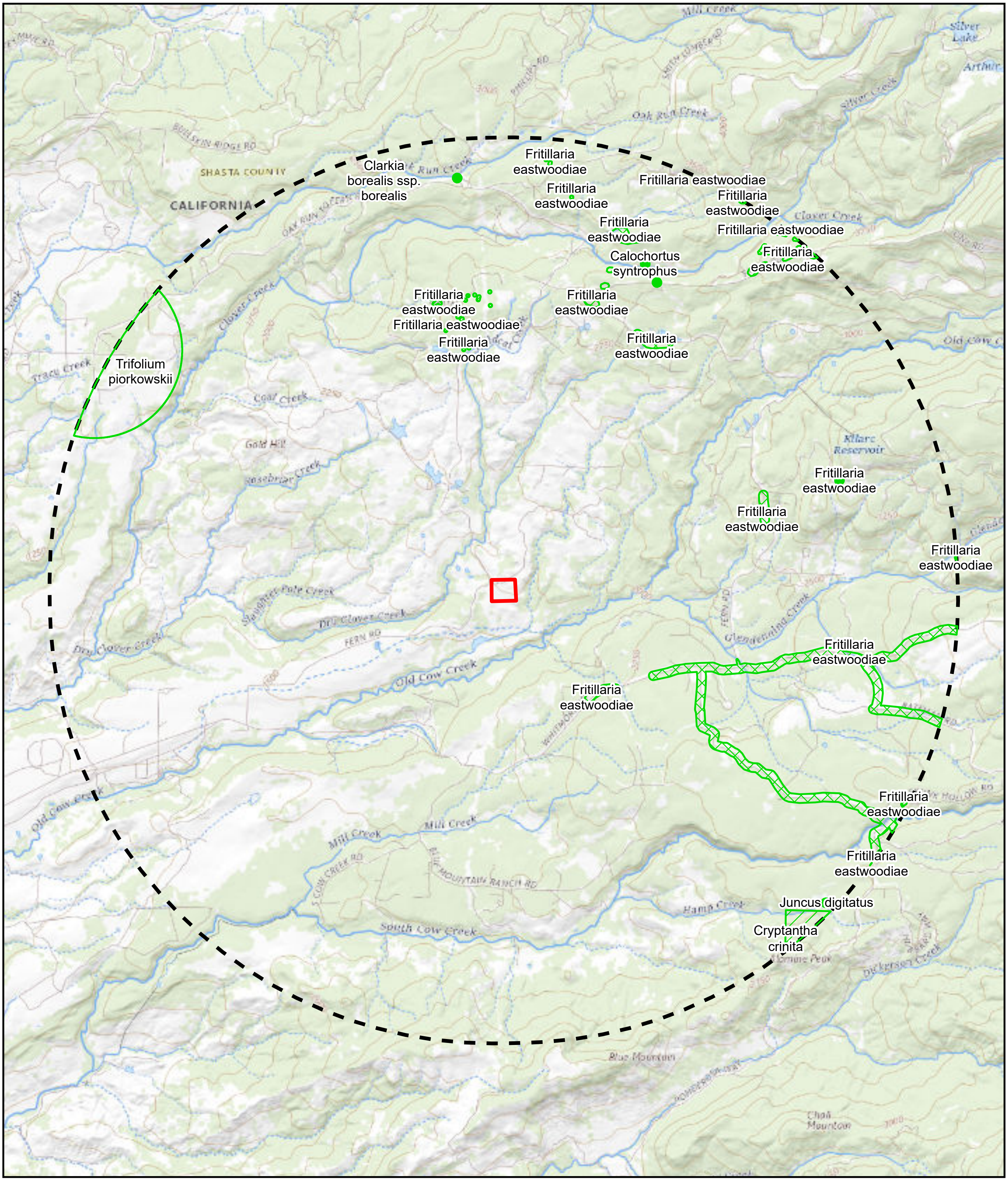

Figure 3. 5-Mile Radius CNDDB Search Results

Legend

Survey Area (41.668 total acre)

5-Mile Buffer

CNDDB

Plant (80m)

Plant (specific)

Plant (non-specific)

Plant (circular)

Round Mountain 500kV Area Dynamic
Reactive Support Project
Whitmore, Oak Run, Miller Mountain,
Hagaman Gulch, Inwood, Clough Gulch
7.5' USGS Quadrangles
Coordinates: 121°56'14"W 40°38'42"N

N

0 2,000 4,000 8,000 Feet

Scale: 1:96,436

Twelve CNPS List 1B plants (plants rare, threatened or endangered in California or elsewhere) with potential to occur in the Survey Area are Callahan's mariposa-lily (*Calochortus syntrophus*), Shasta clarkia (*Clarkia borealis* ssp. *arida*), northern clarkia (*Clarkia borealis* ssp. *borealis*), silky cryptantha (*Cryptantha crinita*), Shasta fawn lily (*Erythronium shastense*), Jepson's horkelia (*Horkelia daucifolia* var. *indicta*), finger rush (*Juncus digitatus*), Bellinger's meadowfoam (*Limnanthes floccosa* ssp. *bellingeriana*), Shasta snow-wreath (*Neviusia cliftonii*), maverick clover (*Trifolium piorkowskii*), Siskiyou clover (*Trifolium siskiyouense*), and Shasta huckleberry (*Vaccinium shastense* ssp. *shastense*). Finger rush, Bellinger's meadowfoam, maverick clover and Siskiyou clover would likely have been found along the intermittent stream and the other eight plants listed above would likely have been found in the annual grassland or blue oak woodland. These plants meet the definitions of the California Endangered Species Act and are eligible for listing.

One CNPS list 2 plant (plants rare, threatened, or endangered in California but more common elsewhere) - rattlesnake fern (*Botrypus virginianus*) - would likely have been found along the intermittent stream. CNPS List 2 species are afforded protection under the California Environmental Quality Act (CEQA) at the discretion of CEQA lead agencies.

Two CNPS list 3 plants (plants about which more information is needed to assign them to another rank or to reject them) - Castlegar hawthorne (*Crataegus castlegarensis*) and Butte County fritillary (*Fritillaria eastwoodiae*) - had potential to occur in the Survey Area; Castelgar hawthorne would likely have been found along the intermittent stream and Butte County fritillary would likely have been found in the blue oak woodland. List 3 plants were analyzed since they potentially meet the definitions of the California Endangered Species Act; however information is lacking to assign them to another rank.

Four CNPS list 4 plants (plants of limited distribution and should be monitored regularly) Butte County morning-glory (*Calystegia atriplicifolia* ssp. *buttensis*), woolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*), Bidwell's knotweed (*Polygonum bidwelliae*), and long-fruited jewel flower (*Streptanthus longisiliquus*) were considered in this analysis. Butte County morning glory, Bidwell's knotweed, and long-fruited jewel flower would likely have been found in the grassland or blue oak woodland, and woolly meadowfoam would likely have been found along the intermittent stream. Potential impacts to these plants were considered due to the recommendation that California rank 4 plants be evaluated for impact significance during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, based on CEQA Guidelines §15125 (c) and/or §15380.

7.0 Potential Impacts and Mitigation

No special-status plants were observed during the surveys. There is potential for a false negative survey due to current drought conditions, meaning that some plants that need more water may not have bloomed this year, or may have bloomed earlier than during a non-drought year. There was also evidence of cattle grazing in the Survey Area, meaning cattle may have eaten or trampled plants beyond an identifiable state. There is the presence of invasive plant species on site which could have an impact on native plant species, but this is not believed to be the reason for the absence of special-status plant species in the Survey Area. There are no local Habitat Conservation Plans, Natural Community Conservation Plans, or other local, regional, or state habitat conservation plans with which the project might conflict. The Survey Area could have habitat for sensitive species in the oak woodland and along the intermittent stream, but the plant communities in the Survey Area are not rare (there are no sensitive natural communities) and the area under the transmission lines is already disturbed by ongoing vegetation management, so additional ground and vegetation disturbance will have a minimal effect; therefore no mitigation measures are recommended for special-status plants.

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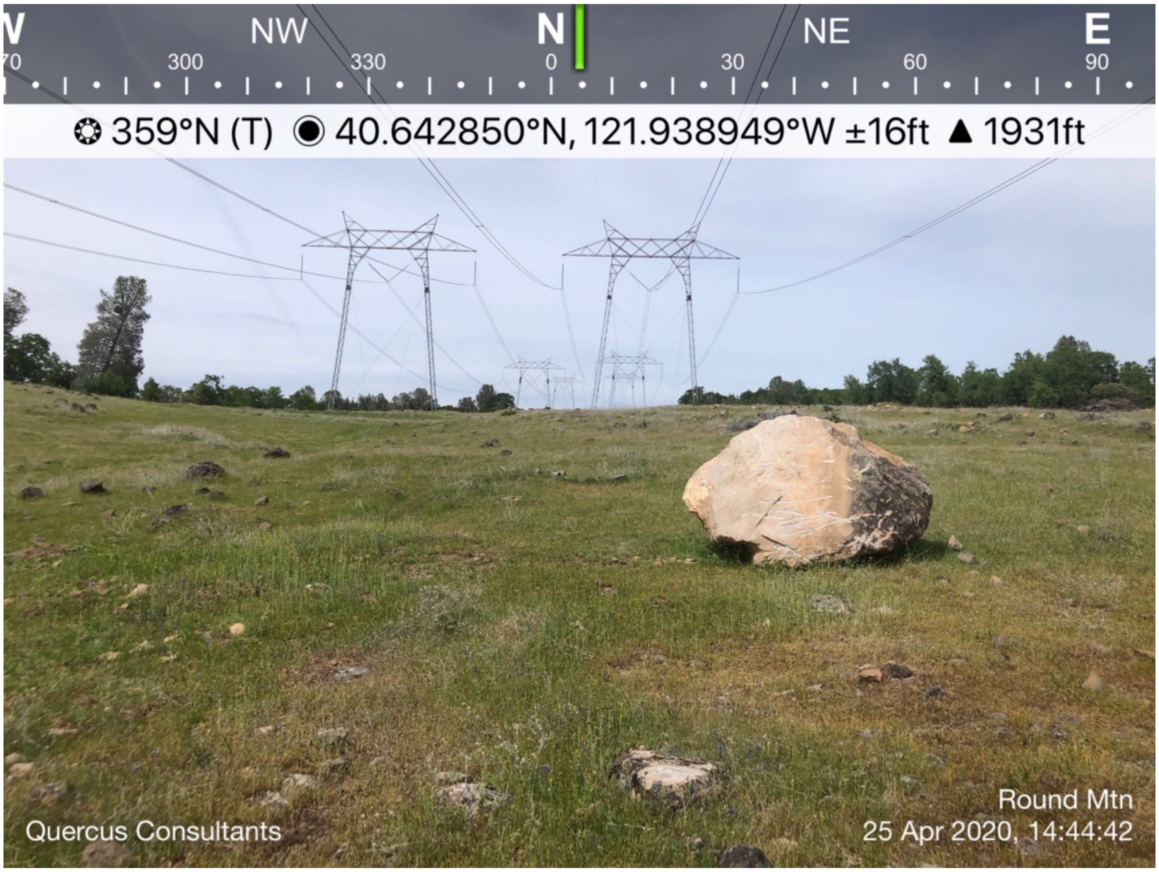
Appendix A

Representative Photographs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70
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30
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90
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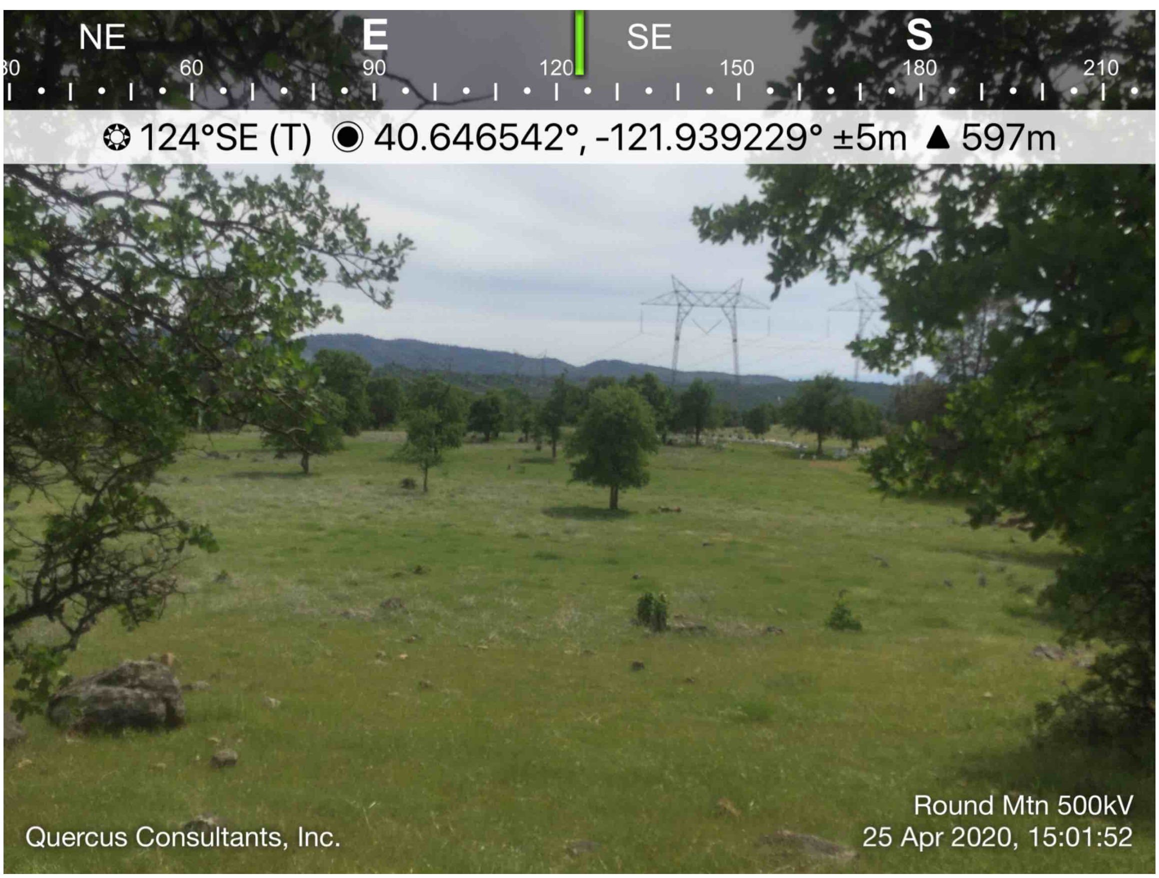
Round Mtn
25 Apr 2020, 14:44:42
Quercus Consultants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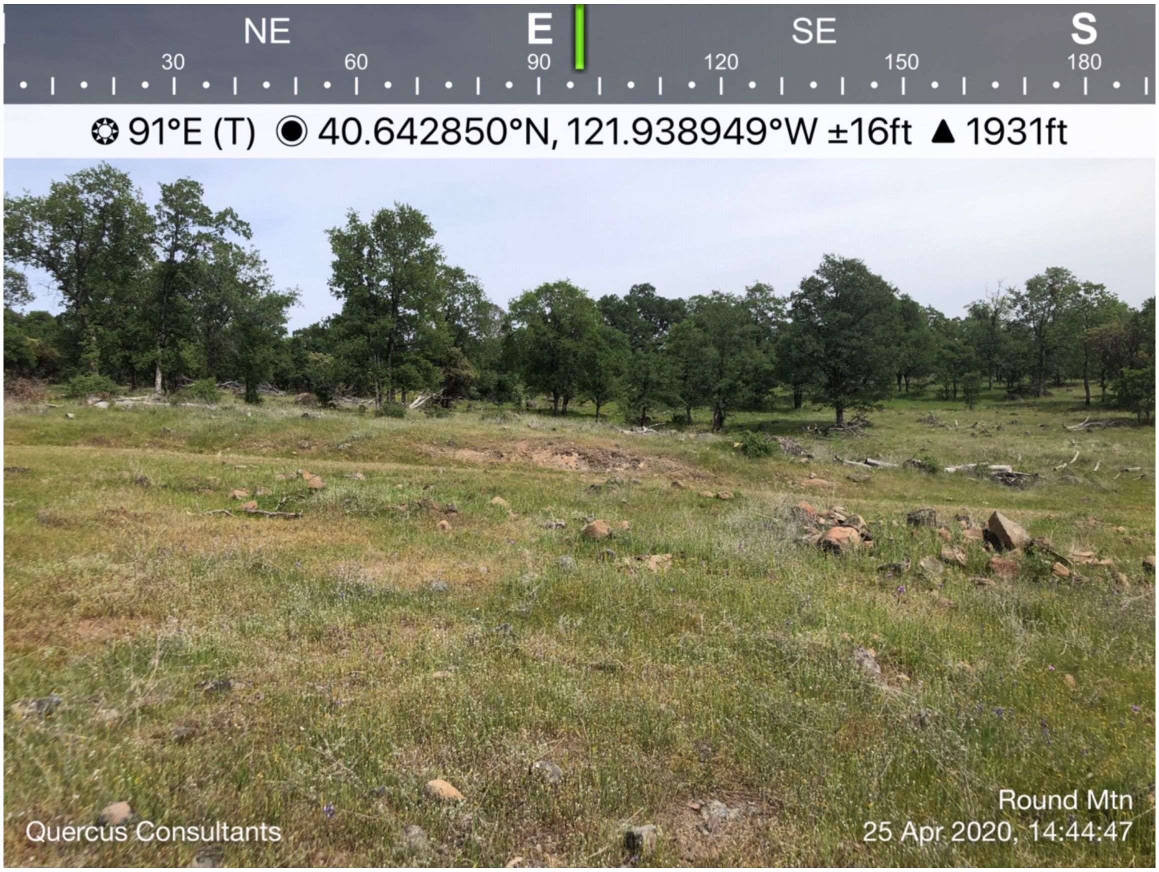
Quercus Consultants, Inc.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91°E (T) 40.642850°N, 121.938949°W ±16ft ▲ 1931ft
Quercus Consultants
Round Mtn
25 Apr 2020, 14:44:47


SE
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SW
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120
150
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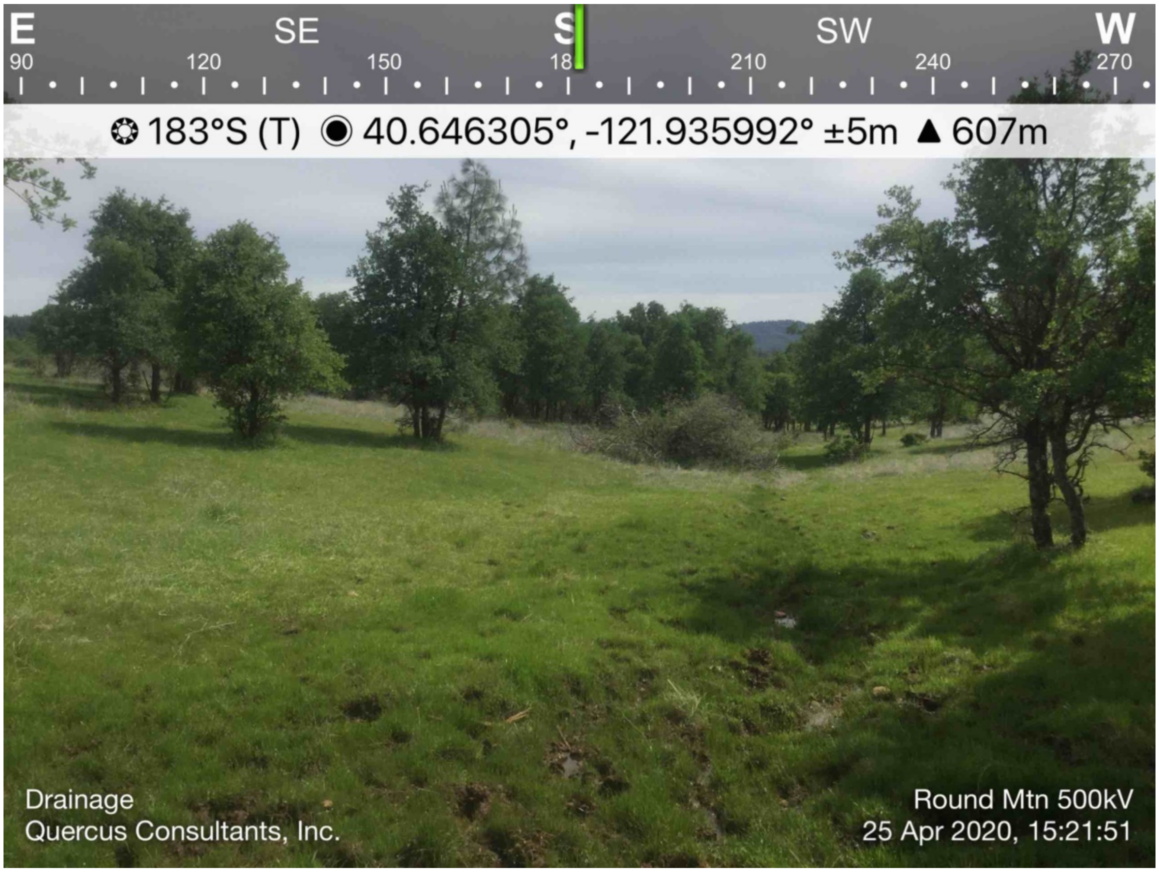
270
189°S (T) 40.645697°N, 121.936046°W ±213ft ▲ 1949ft
Intermittent stream
Quercus Consultants
Round Mtn 500kV
31 May 2020, 13:58:07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183°S (T) 40.646305°, -121.935992° ±5m 607m
Drainage
Quercus Consultants, Inc.
Round Mtn 500kV
25 Apr 2020, 15:21:51

Appendix B

Special-Status Species Table

Appendix B. Special-Status Species and Potential to Occur within Study Area

Scientific Name Common Name *FAMILY*	Status State/Federal/ CNPS	Habitat description	Flowering Period	Potential to Occur and Rationale
Adiantum shastense Shasta maidenhair fern *PTERIDACEAE*	--/--/4.3	Sometimes carbonate. Lower montane coniferous forest. <1600m	Apr - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Allium sanbornii Sanborn's onion *ALLIACEAE*	--/--/4.2	Usually serpentinite, gravelly. Chaparral, cismontane woodland, lower montane coniferous forest.	May - Sep	None. No suitable habitat present in the Survey Area. No serpentine soils present.
Ageratina shastensis Shasta ageratina *ASTERACEAE*	--/--/1B.2	Chaparral, lower montane coniferous forest. 400-1800m.	June - Oct	Low. Blue oak woodland, not coniferous forest is present in the Survey Area.
Agrostis hendersonii Hendrson's bent grass *POACEAE*	--/--/3.2	Valley and foothill grassland (Mesic), vernal pools. <300m.	Apr - June	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too high for this plant to occur.
Arctostaphylos malloryi Mallory's manzanita *ERICACEAE*	--/--/4.3	Volcanic, chaparral, lower montane coniferous forest. 650-1200m.	Apr - July	Low. Blue oak woodland, not coniferous forest is present in the Survey Area.
Botrychium crenulatum scalloped moonwort *OPHIOGLOSSACEAE*	--/--/2B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest, lower montane coniferous forest, marshes and swamps. 1500-3600m.	June - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Botrychium minganense Mingan moonwort *OPHIOGLOSSACEAE*	--/--/2B.2	Lower montane coniferous forest, upper montane coniferous forest, bogs and fens, meadows and seeps. 1500-3100m.	July - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Botrypus virginianus rattlesnake fern *OPHIOGLOSSACEAE*	--/--/2B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, riparian forest. 700-1200m.	(Apr) Jun, Aug, Sep	Moderate. Some suitable habitat occurs along the intermittent stream.
Brasenia schreberi watershield *CAMBOMBACEAE*	--/--/2B.3	Freshwater marshes and swamps. <2200m.	Jun - Sep	None. No freshwater marshes or swamps exist in the Survey Area.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Calochortus syntrophus Callahan's mariposa-lily *LILIACEAE*	--/--/1B.1	Cismontane woodland, valley and foothill grassland. 500-1700m.	May - June	High. Suitable grassland and woodland habitat exists in the Survey Area.
Calystegia atriplicifolia ssp. buttensis Butte County morning-glory *CONVOLVULACEAE*	--/--/4.2	Chaparral, lower montane coniferous forest, valley and foothill grassland. 600-1200m.	May - July	High. Suitable grassland and woodland habitat exists in the Survey Area.
Cardamine bellidifolia var. *pachyphylla* fleshy toothwort *BRASSICACEAE*	--/--/4.3	Rocky, talus, and scree. Alpine boulder and rock field, subalpine coniferous forest, and upper montane coniferous forest. 1800-2850m.	June-Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Clarkia borealis ssp. *arida* Shasta clarkia *ONAGRACEAE*	--/--/1B.1	Cismontane woodland, lower montane coniferous forest. 500m.	June - July	High. Suitable woodland habitat exists in the Survey Area.
Clarkia borealis ssp. *borealis* northern clarkia *ONAGRACEAE*	--/--/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 400-800m.	June - July	High. Suitable woodland habitat exists in the Survey Area.
Crataegus castlegarensis Castlegar hawthorne *ROSACEAE*	--/--/3	Riparian woodland, moist rocky loam. 900-1300m.	May - June (Jul)	Moderate. Suitable habitat exists along the intermittent stream.
Cryptantha crinita silky cryptantha *BORAGINACEAE*	--/--/1B.2	Cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland. 90-1120m.	Mar - June	High. Suitable grassland and woodland habitat exists in the Survey Area.
Erythranthe taylorii Shasta limestone monkeyflower *PHRYMACEAE*	--/--/1B.1	Lower montane coniferous forest, cismontane woodland. 900-1100m.	Apr - June	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Erythronium shastense Shasta fawn lily *LILIACEAE*	--/--/1B.2	Cismontane woodland, lower montane coniferous forest. 330-1020m.	Feb - Apr	High. Suitable woodland habitat exists in the Survey Area.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Fritillaria eastwoodiae Butte County fritillary *LILIACEAE*	--/--/3.2	Chaparral, cismontane woodland, lower montane coniferous forest. <1500m.	Mar - June	High. Suitable woodland habitat exists in the Survey Area.
Horkelia daucifolia var. *indicta* Jepson's horkelia *ROSACEAE*	--/--/1B.1	Cismontane woodland. 240-670m.	Apr - June	High. Suitable woodland habitat exists in the Survey Area.
Iliamna bakeri Baker's globe mallow *Malvaceae*	--/--/4.2	Chaparral, Great Basin scrub, pinyon and juniper woodland, lower montane coniferous forest. 1000-2500m.	June - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Juncus digitatus finger rush *JUNCACEAE*	--/--/1B.1	Cismontane woodland (openings), lower montane coniferous forest (openings), vernal pools. 650-800m.	May - June	Moderate. Suitable habitat exists along the intermittent stream.
Limnanthes floccosa ssp. *bellingeriana* Bellinger's meadowfoam *LIMNANTHACEAE*	--/--/1B.2	Mesic, cismontane woodland, meadows and seeps. 300-1100m.	Apr - June	Moderate. Suitable habitat exists along the intermittent stream.
Limnanthes floccosa ssp. *floccosa* woolly meadowfoam *Limnanthaceae*	--/--/4.2	Chaparral, cismontane woodland, valley and foothill grassland, vernal pools. <600	Mar - May (Jun)	Moderate. Suitable habitat exists along the intermittent stream.
Neviusia cliftonii Shasta snow-wreath *ROSACEAE*	--/--/1B.2	Cismontane woodland, lower montane coniferous forest, riparian woodland. 300-600m.	Apr - May	High. Suitable woodland habitat exists in the Survey Area.
Paronychia ahartii Ahart's paronychia *CARYOPHYLLACEAE*	--/--/1B.1	Valley and foothill grassland, vernal pools, cismontane woodland. <500m.	Mar - June	None. No suitable habitat present in the Survey Area. No vernal pools occur at the site
Penstemon heterodoxus var.*shastensis* Shasta beardtongue *PLANTAGINACEAE*	--/--/4.3	Volcanic clay, loam. Broadleafed upland forest, chaparral, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. 900-2400m.	May - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.

Scientific Name Common Name *FAMILY*	Status State/Federal/ CNPS	Habitat description	Flowering Period	Potential to Occur and Rationale
Poa sierrae Sierra blue grass *POACEAE*	--/--/1B.3	Lower montane coniferous forest. 350-1500m.	Apr - June	Low. Blue oak woodland, not coniferous forest is present in the Survey Area.
Polygonum bidwelliae Bidwell's knotweed *POLYGONACEAE*	--/--/4.3	Chaparral, cismontane woodland, valley and foothill grassland. 60-1200m.	Apr - July	High. Suitable woodland habitat exists in the Survey Area.
Sidalcea celata Redding checkerbloom *MALVACEAE*	--/---/3	Sometimes serpentine, cismontane woodland. 150-370m.	Apr - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too high for this plant to occur.
Sidalcea gigantea giant checkerbloom *MALVACEAE*	--/--/4.3	Moist to wet forested slopes, seeps, stream margins, meadows, mid to upper conifer forest. (640) 900-1650m.	(Jan - Jun) Jul-Oct	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Smilax jamesii English Peak greenbrier *SMILACEAE*	--/--/4.2	North coast coniferous forest, broadleafed upland forest, lower montane coniferous forest, upper montane coniferous forest, marshes and swamps. 1500-2500m.	May - July	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Streptanthus longisiliquus long-fruited jewel flower *BRASSICACEAE*	--/--/4.3	Openings, cismontane woodland, lower montane coniferous forest. 400-1700m.	Apr - Sep	High. Suitable woodland habitat exists in the Survey Area.
Stellaria longifolia long-leaved starwort *CARYOPHYLLACEAE*	--/--/2B.2	Bogs and fens, meadows and seeps, riparian woodland, upper montane coniferous forest. =/- 900m.	May - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Subularia aquatica ssp. americana water awlwort *BRASSICACEAE*	--/--/4.3	Lake margins, upper montane coniferous forest. 1800-3200m.	Jul - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Thermopsis californica var. argentata silvery false lupine *FABACEAE*	--/--/4.3	Cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland. 1200-2200m.	Apr - Oct	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Thermopsis gracilis slender false lupine *FABACEAE*	--/--/4.3	Sometimes roadsides, chaparral, cismontane woodland, lower montane woodland, lower montane coniferous forest, meadows and seeps, North coast coniferous forest. 100-1200m.	Mar - July	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Trifolium piorkowskii maverick clover *FABACEAE*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland (mesic), vernal pools.	Unknown (only 1 record)	Moderate. Suitable habitat exists along the intermittent stream.
Trifolium siskiyouense Siskiyou clover *FABACEAE*	--/--/1B.1	Meadows and seeps. 800-1400m.	June - July	Moderate. Suitable habitat exists along the intermittent stream.
Triteleia crocea var. crocea yellow triteleia *THEMIDACEAE*	--/--/4.3	Lower montane coniferous forest (granitic or serpentine).	May - June	None. No granitic or serpentine soils occur in the Survey Area.
Vaccinium shastense ssp. shastense Shasta huckleberry *ERICACEAE*	--/--/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, subalpine coniferous forest. 320-1225m.	Dec - May	High. Suitable woodland habitat exists in the Survey Area.

Appendix C

Plants Observed During Surveys

Appendix C: List of Vascular Plant Species Observed During the Round Mountain 500kV Area Dynamic Reactive Support Project Botanical Survey

Scientific Name	Common Name
Trees	
Aesculus californica	buckeye
Pinus sabiniana	gray pine
Quercus douglasii	blue oak
Quercus kelloggii	black oak
Quercus wislizeni	interior live oak
Shrubs and Vines	
Arctostaphylos viscida	whiteleaf manzanita
Ceanothus cuneatus	buck brush
Rhus aromatica	fragrant sumac
Rubus armeniacus	Himalayan blackberry
Solanum parishii	Parish's purple nightshade
Toxicodendron diversilobum	poison oak
Vitis Californica	California wild grape
Herbs	
Acmispon brachycarpus	short podded lotus
Allium sp. (not rare)	onion
Amsinckia menziesii	fiddleneck
Aristolochia californica	California pipevine
Athysanus pusillus	dwarf athysanus
Avena fatua	wild oats
Briza minor	little rattlesnake grass
Brodiaea elegans	elegant brodiaea
Bromus diandrus	ripgut brome
Calochortus superbus	Yellow mariposa
Calochortus tolmiei	hairy star tulip
Calystegia occidentalis ssp. *occidentalis*	chaparral false bindweed
Castilleja attenuata	narrow leaved owl's clover
Centaurea solstitialis	yellow star thistle
Cercis occidentalis	western redbud
Cerastium fontanum subsp. *vulgare*	common chickweed
Chlorogalum pomeridianum	soaproot
Clarkia gracilis	graceful clarkia
Clarkia purpurea	purple clarkia
Cryptantha intermedia	common cryptanth
Cynosurus echinatus	dogtail grass
Daucus carota	Queen Anne’s lace
Delphinium variegatum	royal larkspur
Dichelostemma capitatum	blue dicks
Dichelostemma congestum	fork toothed ookow
Elymus caput-medusae	medusa head
Erodium botrys	big heron bill
Erythranthe guttata	yellow monkey flower
Festuca perennis	Italian rye grass

Scientific Name	Common Name
Galium parisiense	wall bedstraw
Hemizonia fitchii	spikeweed
Hordeum marinum	seaside barley
Juncus balticus	wire rush
Lasthenia californica	goldfields
Lepidium nitidum	shining pepper grass
Lupinus bicolor	lupine
Madia citriodora	lemon scented tarweed
Micropus californicus	Q tips
Navarretia intertexa	interwoven navarretia
Navarretia tagetina	marigold navarretia
Parentucellia viscosa	yellow parentucelia
Pedicularis densiflora	Indian warrior
Phoradendron leucarpum	mistletoe
Plantago erecta	California plantain
Plantago lanceaolata	ribwort
Poa bulbosa	bulbous blue grass
Polypogon monspeliensis	annual beard grass
Ranunculus arvensis	field buttercup
Ranunculus californicus	common buttercup
Rumex crispus	curly doc
Sanicula bipinnatifida	purple sanicle
Serardia arvensis	field madder
Thysanocarpus curvipes	common fringe pod
Torilis arvensis	field hedge parsley
Trifolium arvense	rabbitfoot clover
Trifolium dubium	small hop clover
Trifolium hirtum	rose clover
Triphysaria eriantha	butter n' eggs
Triteleia hyacinthina	white hyacinth
Vicia villosa	hairy vetch
Wyethia angustifolia	narrow leaved mule ears
Zeltnera sp.	centaury

Botanical Survey Report

Round Mountain 500kV Area Dynamic Reactive Support Project
Shasta County, California

Prepared by:

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PO Box 465
Mt. Shasta, CA 96067

June 2021

Table of Contents

1.0 Introduction

Quercus Consultants, Inc. (Quercus) conducted floristic, protocol-level rare plant surveys to document sensitive biological habitats and special-status plant species that have the potential to be affected by the proposed Round Mountain 500kV Area Dynamic Reactive Support Project located in Shasta County, California. Surveys were conducted on April 11 and 12, and May 16 and 17, 2021 by Botanists Diane Chakos and Bob Damschroeder to correspond with the peak bloom periods for the species that were considered to have the potential to occur in the Survey Area. Quercus botanists were already familiar with the area having conducted rare plant surveys in 2020 on 42 acres that overlap the current Survey Area.

2.0 Project Location and Description

The Round Mountain 500kV Area Dynamic Reactive Support Project is located adjacent to Fern Road approximately 1.5 miles northwest of the town of Whitmore on privately-owned land in rural Shasta County. The approximately 86-acre Survey Area consists of the proposed project's building areas, which encompasses the minimum area necessary to complete and meet the project's purpose and need. It is located within portions of Sections 11 and 12, Township 32 North, Range 01 West, Mount Diablo Base and Meridian of the Whitmore U.S.G.S. 7.5-minute quadrangle (**Figure 1**). Elevations in the Survey Area range from approximately 1,830 to 2,090 feet above mean sea level and the aspects are generally south and southeast with some variation due to topography. Representative photographs are provided in **Appendix A**.

3.0 Regulatory Overview

The following laws and regulations were identified as possible constraints to development within the Survey Area for protected plant species:

3.1 Federal

Federal Endangered Species Act
The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) have jurisdiction over species listed as threatened or endangered under Section 9 of the federal Endangered Species Act (ESA). The 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, Under Section 7 of the ESA, a federal agency must consult with the USFWS and NOAA Fisheries if the agency's action may affect a threatened or endangered species and/or its critical habitat under the authority of each agency. Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present within

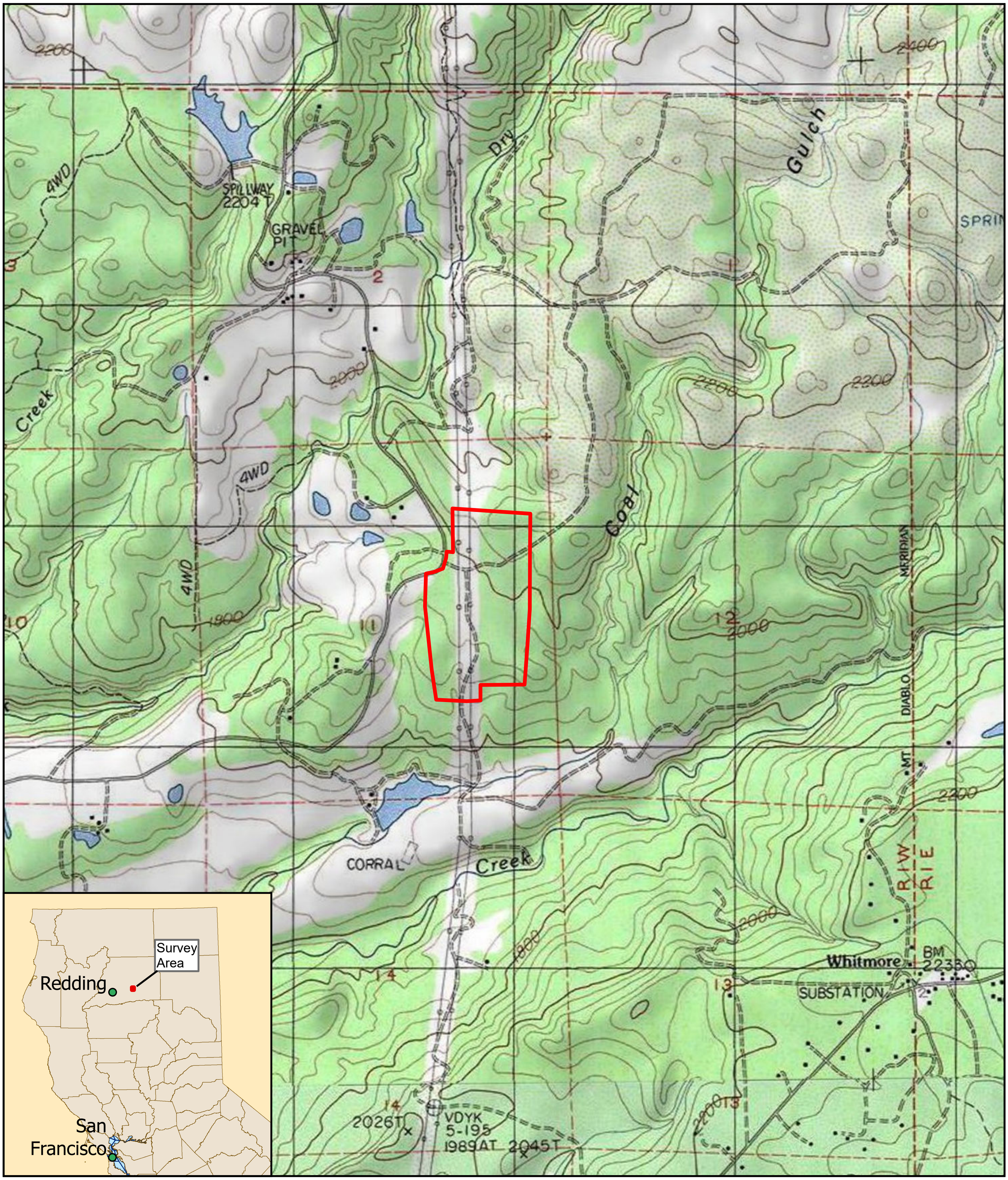

Figure 1. Project Location/Vicinity Map

Legend

Survey Area (85.688 total acre)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet

Scale: 1:24,000

the Survey Area and vicinity and determine whether the proposed project will have a potentially significant impact upon such species. Under the ESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would be considered significant and require mitigation.

3.2 State

California Endangered Species Act
The California Endangered Species Act (CESA) prohibits the take of State-listed threatened and endangered species. Under the CESA, State agencies are required to consult with the California Department of Fish and Wildlife (CDFW) when preparing CEQA documents. Under the CESA, the CDFW is responsible for maintaining a list of rare, threatened, and endangered species designated under State law (California Fish and Game Code 2070-2079). The CDFW also maintains lists of candidate species and species of special concern. Candidate species are those taxa which have been formally recognized by the CDFW and are under review for addition to the State threatened and endangered list. Species of special concern are those taxa, which are considered sensitive and this list serves as a "watch list". Pursuant to the requirements of the CESA, agencies reviewing proposed projects within their jurisdictions must determine whether any State-listed species have the potential to occur within a proposed project site and if the proposed project would have any significant impacts upon such species. Project-related impacts to species on the CESA's rare, threatened, and endangered list would be considered significant and require mitigation. The CDFW can authorize take if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with the ESA, or if the director of the CDFW issues a permit under Section 2081 in those cases where it is demonstrated that the impacts are minimized and fully mitigated.

California Environmental Quality Act
Section 15380(b) of the CEQA Guidelines provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. Section 15380 defines "endangered" species of plants, fish, or wildlife as those whose survival and reproduction in the wild are in immediate jeopardy and "rare" species as those who are in such low numbers that they could become endangered if their environment worsens. Therefore, a project will normally have a significant effect on the environment if it will substantially affect a rare or endangered species or the habitat of the species. The significance of impacts to a species under CEQA must be based on analyzing actual rarity and threat of extinction despite legal status or lack thereof.

California Native Plant Protection Act
The Native Plant Protection Act (CFG Code Sec. 1900-1913) prohibits the taking, possessing, or sale within the state of any rare, threatened, or endangered plants as defined by the CDFW. This applies to any plants with a state designation of rare, threatened, or endangered.

Natural Community Conservation Planning Act
The NCCPA allows for the development of ecosystem-level plans for the protection of biological diversity. Natural communities can be conserved while accommodating compatible land use whereby some plants may be "taken".

4.0 Methods

4.1 Literature Review/Informal Agency Consultation

Quercus staff consulted the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), the California Native Plant Society (CNPS) rare plant inventory, and California Natural Diversity Database (CNDDB), a positive-sighting database managed by the CDFW, to identify potential and/or known occurrences of special-status species within the Survey Area. Prior to plant surveys, staff consulted with CDFW for reference population phenology.

For purposes of this evaluation, special-status plant species are plants that are (1) listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (i.e., "listed species"); or (2) are proposed for listing as rare, threatened, or endangered; and/or (3) are state or federal candidates for listing as threatened or endangered; and/or (4) are listed as Species of Concern by the (USFWS); and/or (5) are included on the California Native Plant Society (CNPS) List 1A, 1B, 2, 3, and 4 (Skinner and Pavlik 1994).

The USFWS maintains a website, IPaC, which lists the federally listed species that occur in or may be affected by projects in or near a Survey Area. This database was searched to acquire a list of special-status plant species that have the potential to occur on the site. During IPaC review, no listed plants or critical habitats are expected to be affected by activities within the Survey Area.

The California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2020) was queried for occurrence records for the Whitmore and the eight adjacent U.S. Geological Survey (USGS) quadrangles: Devil's Rock, Montgomery Creek, Hatchet Mountain Pass, Oak Run, Miller Mountain, Clough Gulch, Inwood, and Hagaman Gulch. The CNDDB is a state-maintained database consisting of historic observations of special-status plant species, wildlife species, and special plant communities. The CNDDB is limited to reported sightings and is not a comprehensive list of floral and faunal species that may occur in a particular area.

A database search was also performed using CNPS's Electronic Inventory, which allows users to query the Inventory of Rare and Endangered Plants of California (California Native Plant Society 2021) using a set of search criteria (e.g., quadrangle map name, habitat type, etc.). Because the Inventory of Rare and Endangered Plants of California is also limited to reported sightings, it is not a comprehensive list of plant species that may occur in a particular area. However, it is useful in refining the list of special-status plant species that have the potential to occur on a site.

A table listing all plants with habitat descriptions and rationale for potential to occur considered during the biological analysis for the project based on the above queries are found in **Appendix B**. Of forty-one total plant species, twenty-two have low or no potential to occur in the Survey Area and are eliminated from further consideration in this document; the following nineteen plant species have moderate to high potential to occur:

- Rattlesnake fern (*Botrypus virginianus*)
- Callahan's mariposa-lily (*Calochortus syntrophus*)
- Butte County morning glory (*Calystegia atripicifolia* ssp. *buttensis*)
- Shasta clarkia (*Clarkia borealis* ssp. *arida*)
- Northern clarkia (*Clarkia borealis* ssp. *borealis*)
- Castelgar hawthorne (*Crageaegus castlegarensis*)
- Silky cryptantha (*Cryptantha crinita*)
- Butte County fritillary *(Fritillaria eastwoodiae)*
- Jepson's horkelia *(Horkelia daucifolia* var. *indicta)*
- Finger rush *(Juncus digitatus)*
- Bellinger's meadowfoam *(Limnanthes floccosa* ssp. *bellingeriana)*
- Woolly meadowfoam *(Limnanthes floccosa* ssp. *floccosa)*
- Bidwell's knotweed *(Polygonum bidwelliae)*
- Long-fruited jewel-flower *(Streptanthus longisiliquus)*
- Silvery false lupine *(Thermopsis californica* var. *argentata)*
- Slender false lupine *(Thermopsis gracilis)*
- Maverick clover *(Trifoilum piorkoskii)*
- Siskiyou clover *(Trifolium siskiyouense)*
- Shasta huckleberry *(Vacciniumm shastense* ssp. *shastense)*

4.2 Field Surveys

Field surveys were conducted on April 11 and 12, and May 16 and 17, 2021. The Survey Area was systematically surveyed on foot in accordance with the 2018, CDFW Plant and Vegetation Survey Protocols (CDFW 2018), to ensure complete coverage and optimal bloom time. During the field surveys attention was given to identifying areas on the site with the potential for supporting special-status species and sensitive habitats. Field personnel recorded incidental observations of plant species and characterized biological communities occurring on-site. Plants observed within the Survey Area are identified in **Appendix C**.

4.3 Surveyor Qualifications

The botanical field surveyors who conducted the surveys each have formal training in botany and have extensive experience working in Northern California. The qualifications of the team are summarized below.

Diane Chakos, B.S., Staff Botanist. Ms. Chakos received a Bachelor of Science degree in Biology with an emphasis in Ecology, Evolution, and Marine Biology from The University of California, Santa Barbara where she completed plant physiology and plant identification classes. She has completed botanical inventories throughout the western United States and has conducted vegetation inventories in nearly every National Forest in the state of California. In Northern California she has completed vegetation inventories and rare plant and invasive species surveys for agency, utility, and private clients.

Bob Damschroeder, B.S., Staff Biologist. Mr. Damschroeder received a Bachelor of Science degree in Natural Resource Planning from Humboldt State University where he completed coursework in plant taxonomy and botany. In his long career, he has completed botanical inventories throughout the western United States. He has conducted vegetation inventories in every National Forest in the State of California and completed vegetation inventories, rare plant and invasive species surveys, and habitat assessments for agency, utility, and private clients in every county in Northern California.

5.0 Environmental Background

5.1 Environmental Setting

The Survey Area is located in rural Shasta County, California. The site is characterized by blue oak/gray pine woodland except under the electric transmission lines where an open forb/grassland is maintained by ongoing vegetation management. Project elevations range from approximately 1,830 to 2,090 feet above mean sea level and topography consists of a gentle slope from the northern to southern boundary of the entire Survey Area. There is an intermittent stream in the eastern side of the Survey Area that flows north to south. The stream bed is approximately two feet wide with boulders, grass, and rocky substrate with less than half inch of standing water in a few locations. The stream had a couple residual pools during surveys, and mesic conditions exist along the course of the stream The stream had notably less water this year than during the surveys in 2020 and most of the stream bed was dry except for a few residual pools. A second intermittent stream is in the southwest corner of the Survey Area and flows northwest to southeast. The stream is approximately two feet wide with boulders and rocky substrate. It was dry during the surveys except for one residual pool (**Figure 2**).

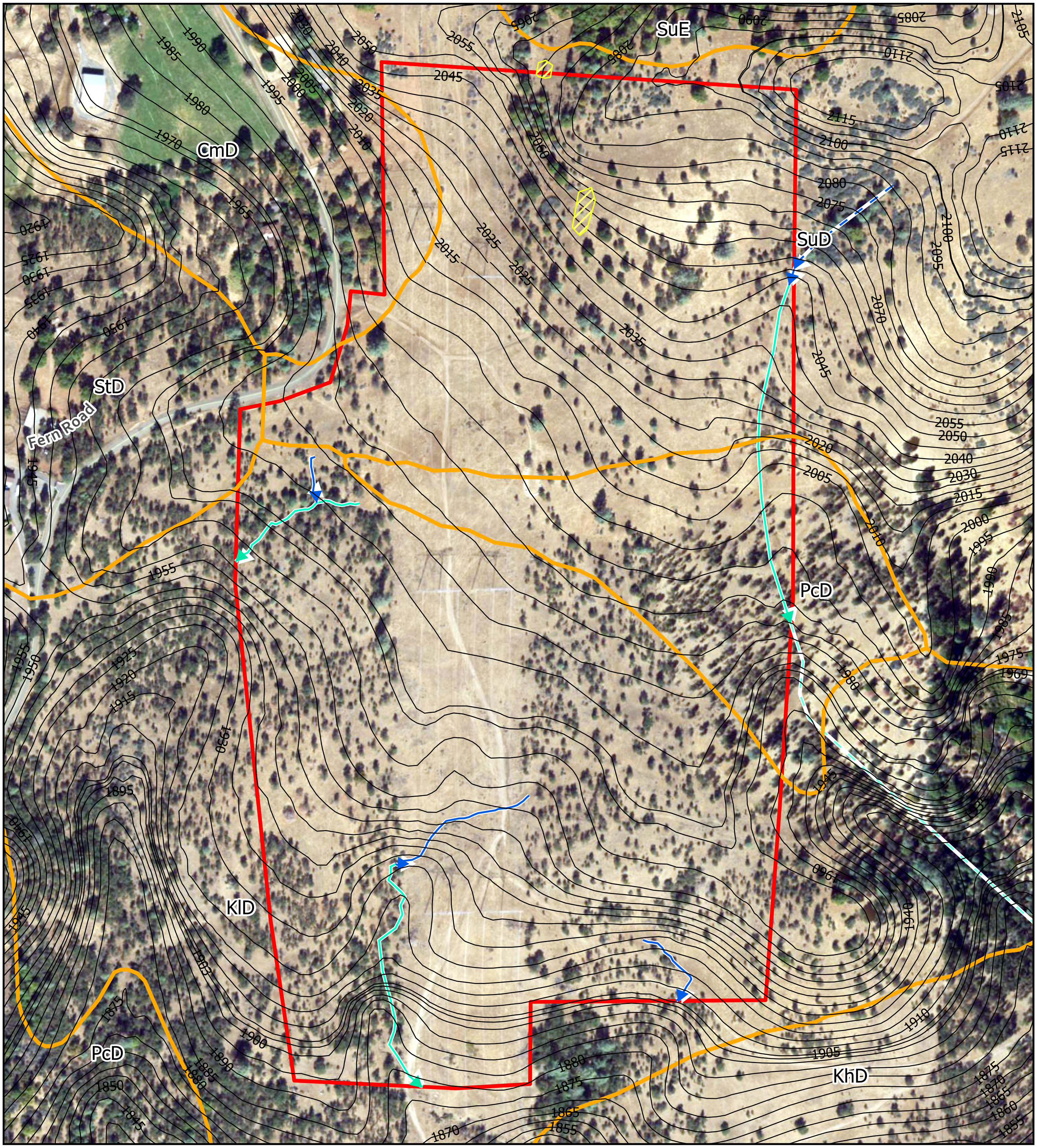

Figure 2. Survey Area, Aquatic Resources, and *Thermopsis californica* var. *argentata* Occurrences

Survey Area (85.74 total acres)
Thermopsis californica var. argentata
Soils
Ephemeral Stream (0.023 Total Acres)
Ephemeral Stream out of survey area
Intermittent Stream (0.188 Total Acres)
Intermittent Stream out of survey area

Round Mountain 500kV Area Dynamic Reactive Support Project Rare Plant Survey Area
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Contours derived from 3DEP
Aerial photo 2018 NAIP
Coordinates: 121°56'19"W 40°38'40"N

N

0 500 1,000 2,000 Feet
1 inch equals 381 feet

5.2 Soil Types

The Survey area is comprised of the following four soil types: Cohasset stony loam, 0-30 percent slopes; Supan very stony loam, 0-30 percent slopes; Kilarc very stony sandy clay loam, 10-30 percent slopes; and Parish loam, 8-30 percent slopes. The hydric soil rating for each soil type is negative. The soil types are described in detail below.

CmD—Cohasset stony loam, 0 to 30 percent slopes
This soil is found on summit, shoulders and mountain flanks of mountain landforms with parent material from residuum weathered from volcanic rock. Depth to water table is more than 80 inches. Depth to restrictive feature is 60 to 64 inches to paralithic bedrock. The soil type is well drained with a medium runoff class and a very low to moderately low capacity of the most limiting layer to transmit water. The soil profile is typically stony loam from 0 to 18 inches, stony clay loam from 18 to 60 inches, and weathered bedrock from 60 to 79 inches. This is not a hydric soil. (NRCS, 2021)

SuD—Supan very stony loam, 0-30 percent slopes
This soil is found on backslopes, shoulders, and side slopes of hill landforms with parent material from residuum weathered from tuff breccia. Depth to water table is more than 80 inches. Depth to restrictive feature is 33 to 37 inches to lithic bedrock. The soil type is well drained with a high runoff class and a low to moderately high capacity of the most limiting layer to transmit water. The soil profile is typically very stony loam from 0 to 10 inches, clay loam from 10 to 33 inches, and unweathered bedrock from 33 to 43 inches. This is not a hydric soil. (NRCS, 2021)

KlD—Kilarc very stony sandy clay loam, 10-30 percent slopes
This soil is found on backslopes, shoulders and mountain flanks of mountain landforms with parent material from residuum weathered from sedimentary rock. Depth to water table is more than 80 inches. Depth to restrictive feature is about 9 inches to abrupt textural change and 44 to 48 inches to paralithic bedrock. The soil type is moderately well drained with a very high runoff class and a moderately low to moderately high capacity of the most limiting layer to transmit water. The soil profile is typically very stony sandy clay loam from 0 to 9 inches, clay from 9-22 inches, clay loam from 22 to 44 inches, and weathered bedrock from 44 to 48 inches. This is not a hydric soil. (NRCS, 2021)

PcD—Parish loam, 8-30 percent slopes
This soil is found on shoulders and backslopes of mountain landforms with parent material from residuum weathered from metamorphic and sedimentary rock. Depth to water table is more than 80 inches. Depth to restrictive feature is 38 to 42 inches to lithic bedrock. The soil type is well drained with a very high runoff class and a very low to moderately low capacity of the most limiting layer to transmit water. The soil profile is typically loam from 0 to 9 inches, gravelly clay loam from 9 to 30 inches, gravelly loam from30 to 38 inches, and unweathered bedrock from 38 to 42 inches. This is not a hydric soil. (NRCS, 2021)

5.3 Precipitation

The water year of 2020-2021 is considered a drought year and Shasta County, California, where the Survey Area lies is currently experiencing extreme drought conditions (National Integrated Drought Information System). Table 1 below shows rainfall for the 2020-2021 water year using precipitation data from the Climate Analysis for Wetlands Tables (known as WETS tables) from the nearest station with continuous records.

The Buckhorn climate station is approximately 16 miles north northeast of the Survey Area and has recorded precipitation since 1948. Prior to surveys, the average annual precipitation was 64.26 inches, with the majority (50.41 inches) occurring during the typical wet season from November to March; in the 2020-2021 water year starting in October, precipitation was measured at 44 percent of normal (USDA 2021b).

Table 1: Precipitation for 2020-2021 Water Year Prior to the Survey Dates (Buckhorn Station)

Month	Average Rainfall (inches)	2020-2021 Water Year Rainfall (inches)	Percent of Average
October	3.88	0.00	0%
November	7.48	4.01	54%
December	14.52	5.30	36%
January	10.27	7.59	74%
February	9.36	5.15	55%
March	8.78	5.25	60%
April	6.24	0.76	12%
May	3.73	M[1]	unavailable
Total	**64.26**	**28.06**	**44%**

6.0 Results

6.1 Habitat Characterization

Quercus botanists surveyed the extent of all habitat types in the Survey Area and observed blue oak woodland, annual grassland, and seasonal wetland inclusions associated with the intermittent streams. Descriptions and names of plant communities were based on field observations and on descriptions in the CNPS Manual of California Vegetation Online (MCV). Natural communities are evaluated using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the CNDDB. Sensitive natural communities are Natural

[1] As of June 11, 2021, rainfall for the month of May 2021 had not been reported.

Communities with ranks of S1-S3. The natural communities observed in the Survey Area are ranked S4 and SNA (semi-natural stands dominated by non-native species). No sensitive natural communities were observed in the Survey Area.

Blue oak woodland: *Quercus douglasii* Forest and Woodland Alliance (S4)

This habitat includes both hardwoods and conifers and comprises the majority of the Survey area. Blue oak (*Quercus douglasii*) is the dominant tree species with a gray pine (*Pinus sabiniana*) and buckeye (*Aesculus californica*) subcomponent. Associated shrub species include poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), and whiteleaf manzanita (*Arctostaphylos viscida*). The ground cover consists of forbs and annual grasses, predominantly big heron bill (*Erodium botrys*), common butter cup (*Ranunculucs californicus*), rose clover (*Trifolium hirtum*), bulbous bluegrass (*Poa bulbosa*), seaside barley (*Hordeum marinum*), and medusa head (*Elymus caput-medusae*).

Annual Grassland: *Bromus tectorum-Taeniatherum caput-medusae* Herbaceous Semi-Natural Alliance (SNA)
Non-native annual grasses such as *H. marinum*, *E. caput-medusae*, and *P. bulbosa* are the dominant grass species and *E. botrys*, star thistle (*Centaurea solstitalis*), and butter n' eggs (*Triphysaria eriantha*) are the dominant forb species in this habitat. Annual grassland was observed under the powerlines and is a result of ongoing vegetation management.

Seasonal wetland inclusions: *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance (S4)

The seasonal wetland inclusion areas are along the intermittent streams and the dominant species in this habitat are wire rush (*Juncus balticus*), yellow monkey flower (*Erythranthe guttata*), and annual beard grass (*Polypogon monspeliensis*).

6.2 Special-status Plants

The criteria for inclusion as a special-status plant were provided in Section 4.1. A list of special-status plant species with the potential to occur on the site was developed through interpretation of the CNDDB, CNPS, and USFWS query results, and knowledge of the special-status plant species in the vicinity of the project (**Appendix B**). CNDDB records of special-status plant species occurrences within five miles of the Survey Area are depicted in **Figure 3**. Field surveys were timed to occur during the optimal flowering periods for the target species. During the 2020 survey, no special-status plant species were observed. In the expanded survey area, we observed one CNPS California Rare Plant Rank (CRPR) 4.3 plant species: silvery false lupine (*Thermopsis californica* var. a*rgentata*). No state or federally listed plant species are known to occur in the project vicinity. The nineteen special-status plant species with high to moderate

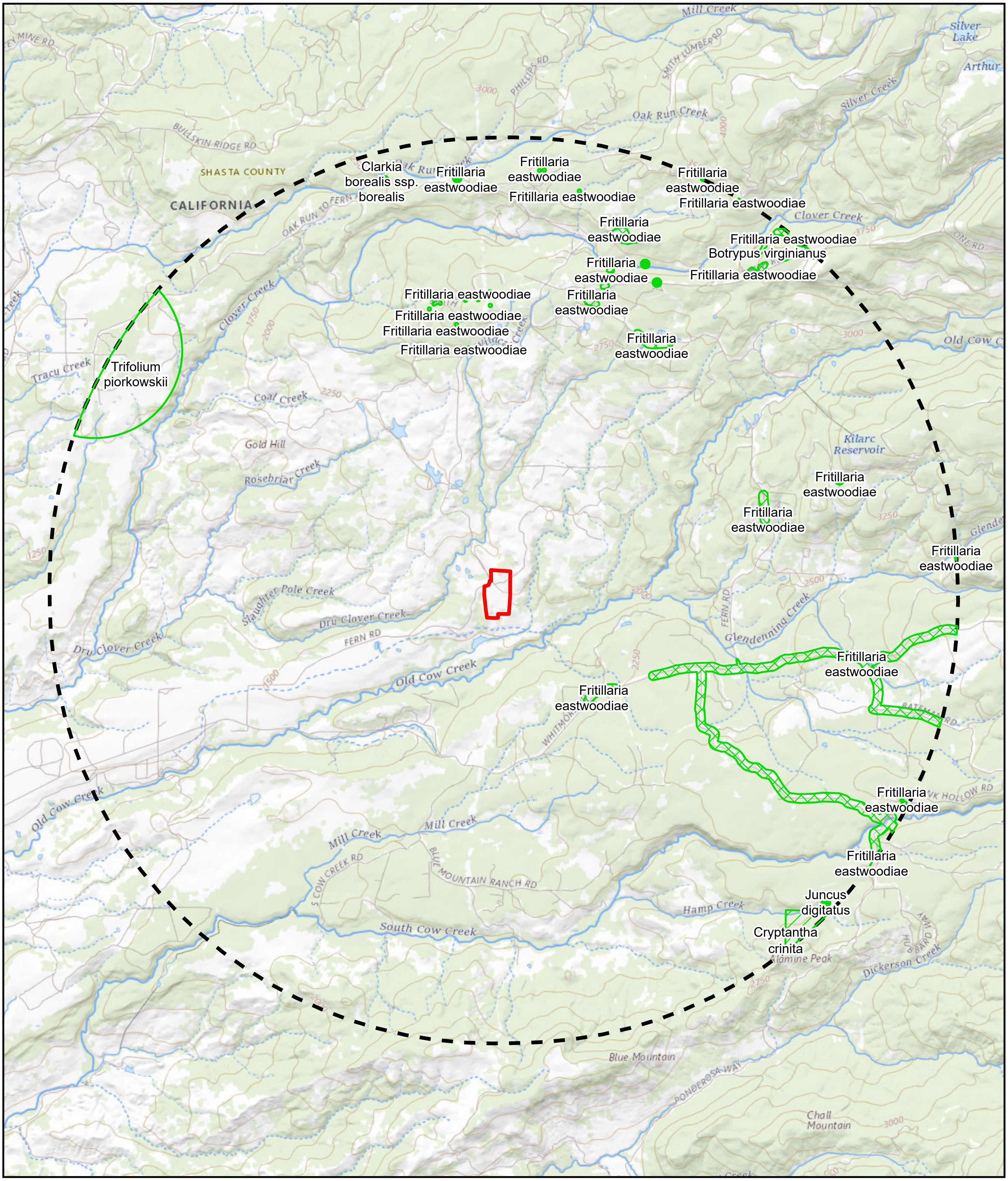

Figure 3. 5-Mile Radius CNDDB Search Results

Legend

- Survey Area (86.74 total acre)
- 5-Mile Buffer

CNDDB

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore, Oak Run, Miller Mountain, Hagaman Gulch, Inwood, Clough Gulch 7.5' USGS Quadrangles
Coordinates: 121°56'14"W 40°38'42"N

N

0 2,000 4,000 8,000 Feet
Scale: 1:96,436

potential to occur on the property and the habitat types where they typically would be found if they occurred in the Survey Area are discussed below.

Ten CNPS List 1B plants (plants rare, threatened or endangered in California or elsewhere) with potential to occur in the Survey Area are Callahan's mariposa-lily (*Calochortus syntrophus*), Shasta clarkia (*Clarkia borealis* ssp. *arida*), northern clarkia (*Clarkia borealis* ssp. *borealis*), silky cryptantha (*Cryptantha crinita*), Jepson's horkelia (*Horkelia daucifolia* var. *indicta*), finger rush (*Juncus digitatus*), Bellinger's meadowfoam (*Limnanthes floccosa* ssp. *bellingeriana*), maverick clover (*Trifolium piorkowskii*), Siskiyou clover (*Trifolium siskiyouense*), and Shasta huckleberry (*Vaccinium shastense* ssp. *shastense*). *J. digitatus*, *L. floccosa* ssp.*bellingeriana*, *T. piorkowski* and *T. siskiyouense* would likely have been found along the intermittent streams and the other five plants listed above would likely have been found in the annual grassland or blue oak woodland. These plants meet the definitions of the California Endangered Species Act and are eligible for listing.

One CNPS list 2 plant (plants rare, threatened, or endangered in California but more common elsewhere) - rattlesnake fern (*Botrypus virginianus*) - would likely have been found along the intermittent streams. CNPS List 2 species are afforded protection under the California Environmental Quality Act (CEQA) at the discretion of CEQA lead agencies.

Two CNPS list 3 plants (plants about which more information is needed to assign them to another rank or to reject them) - Castlegar hawthorne (*Crataegus castlegarensis*) and Butte County fritillary (*Fritillaria eastwoodiae*) - had potential to occur in the Survey Area; *C. castlegarensis* would likely have been found along the intermittent stream and *F. eastwoodiae* would likely have been found in the blue oak woodland. List 3 plants were analyzed since they potentially meet the definitions of the California Endangered Species Act; however, information is lacking to assign them to another rank.

Six CNPS list 4 plants (plants of limited distribution and should be monitored regularly) - Butte County morning-glory (*Calystegia atriplicifolia* ssp. *buttensis*), woolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*), Bidwell's knotweed (*Polygonum bidwelliae*), long-fruited jewel flower (*Streptanthus longisiliquus*), silvery false lupine (*Thermopsis californica* var. *argentata*), and slender false lupine (*Thermopsis gracilis*) - were considered in this analysis. *C. atriplicifolia* ssp. *butensis*, *P. bidwelliae*, *S. longisiliquus*, and *T. gracilis* would likely have been found in the grassland or blue oak woodland, and woolly meadowfoam would likely have been found along the intermittent streams. The two populations of *T. californica* var. *argentata* were found in the blue oak woodland. One population lies directly on the northern border of the survey area just east of the power lines and covers a 25 X 25 ft. area containing approximately 300 plants. The second population is due south of the first population and east of the powerlines and covers a 150 x 25 ft. area containing approximately 200 plants. Both populations are north of the main entrance gate to the property and east of the power lines (**Figure 2**).

Potential impacts to these plants were considered due to the recommendation that California Rare Plant Rank (CRPR) 4 plants be evaluated for impact significance during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, based on CEQA Guidelines §15125 (c) and/or §15380.

The ranks of CNPS listed 1, 2, 3, and 4 plants are described above, but these ranks also include a threat rank (e.g. CRPR 4.3). A threat rank of 0.1 is seriously threatened in California (over 80% of occurrences are threatened and there is a high degree and immediacy of threat). A threat rank of 0.2 is moderately threatened in California (20-80 % of occurrences are threatened and there is a moderate degree and immediacy of threat). A threat rank of 0.3 is not very threatened in California (less than 20% of occurrences are threatened and there is a low degree and immediacy of threat or no current threats are known) (CNPS 2021).

7.0 Potential Impacts and Mitigation

One special-status plant, *Thermopsis californica* var. *argentata* with a CRPR of 4.3, was observed during the surveys (see photo in Appendix A). Plants with a CRPR of 4 are watch listed species and are of limited distribution or infrequent throughout a broader area in California, and their status should be monitored regularly (CNPS, 2021). T. *californica* var. *argentata* has a threat rank of 0.3 meaning it is not very threatened in California, however this threat rank does not designate a change of environmental protection. These two populations of *T. californica* var. *argentata* lie on the periphery of the species' known range and are located at a lower elevation than this species is typically found. It is widely accepted that occurrences on the periphery of a species' range have evolutionary and ecological importance. These occurrences may be rare or unique due to genetic differentiation from the main group of occurrences or because they occur in habitats different than most occurrences. Peripheral occurrences may consist of only a small number of individuals and consequently, may be highly vulnerable to disturbance (CNPS, 2020). If avoidance of the two populations of *T. californica* var. *argentata* is possible, that is recommended. If avoidance is not possible it is recommended to wait until the plant has set seed for the season before disturbance, giving the seed bank a chance to replenish for future possibilities of sprouting. This sensitive species is a perennial rhizomatous plant. Perennial means completing lifecycle (germination through death) in more than two years or growing seasons. Rhizomatous means the plant has a stem that is often elongate, generally more or less horizontal and underground; distinguished from roots by bearing of leaves, leaf scars, axillary buds, etc. (Baldwin et.al., 2012). Also, if the plant populations are going to be disturbed, it is recommended to remove the top 6 in. of soil and place it in another part of the Survey Area that is not going to be disturbed so the plants can have a chance at sprouting the following year. The placement of this seed and rhizome containing soil should mimic the conditions where they were found to encourage a better chance of survival. Soil should not be removed from another location and placed on top of the sensitive plants as this could make it challenging or impossible for their seeds to emerge the following year.

There is potential for a false negative survey for the remaining sensitive plant species due to current extreme drought conditions, meaning that some plants that need more water may not have bloomed this year, or may have bloomed earlier than during a non-drought year. There was also evidence of cattle grazing in the Survey Area, meaning cattle may have eaten or trampled plants beyond an identifiable state. There is the presence of invasive plant species on site which could have an impact on native plant species, but this is not believed to be the reason for the absence of the remaining special-status plant species in the Survey Area. There are no local Habitat Conservation Plans, Natural Community Conservation Plans, or other local, regional, or state habitat conservation plans with which the project might conflict. The Survey Area could have habitat for the remaining sensitive species in the oak woodland and along the intermittent streams, but the plant communities in the Survey Area are not rare (there are no sensitive natural communities) and the area under the transmission lines is already disturbed by ongoing vegetation management, so additional ground and vegetation disturbance will have a minimal effect; if the populations of *T. californica* var. *argentata* can be avoided there are no other mitigation measures recommended for special-status plants.

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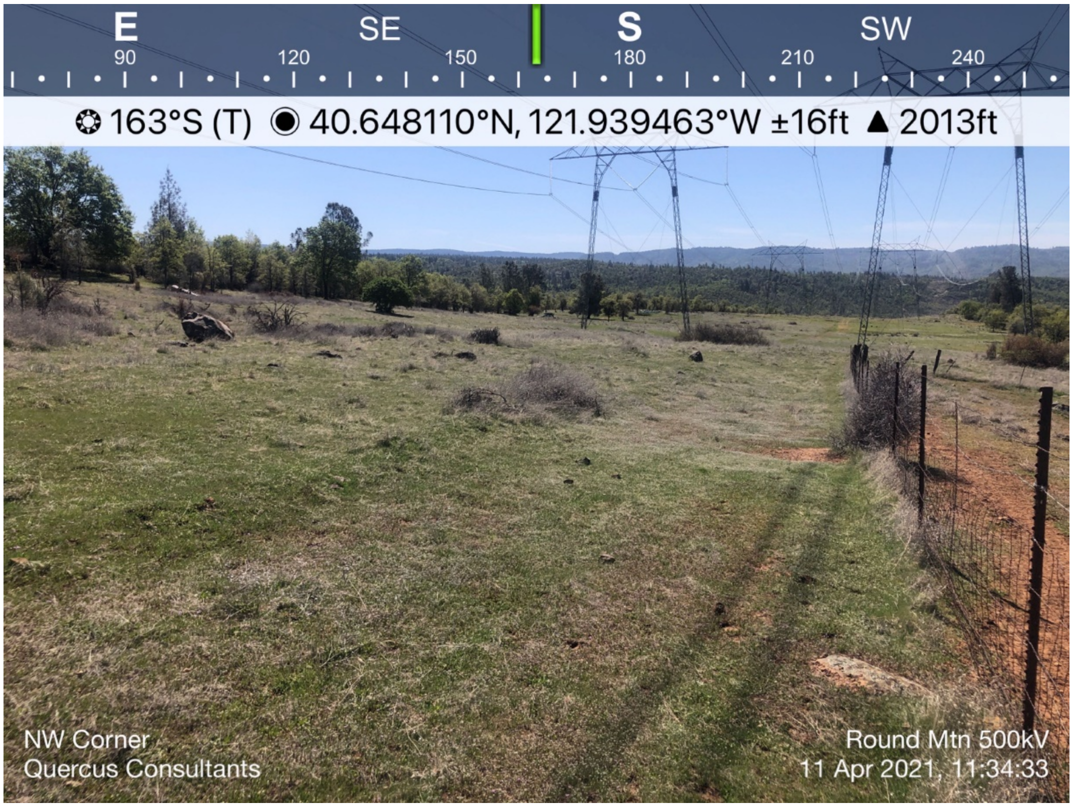
Appendix A

Representative Photographs


E
SE
S
SW
90
120
150
180
210
240
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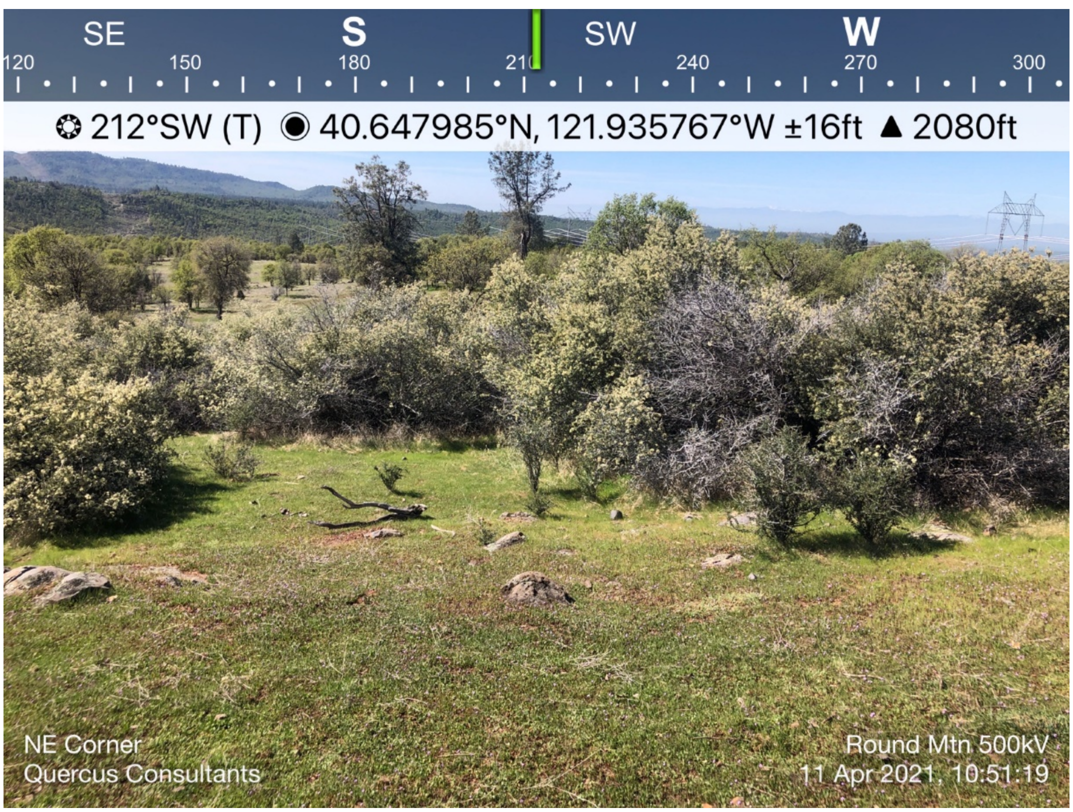
2013ft
NW Corner
Quercus Consultants
Round Mtn 500kV
11 Apr 2021, 11:34:33


SE
S
SW
W
120
150
180
210
240
270
300
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2080ft
NE Corner
Quercus Consultants
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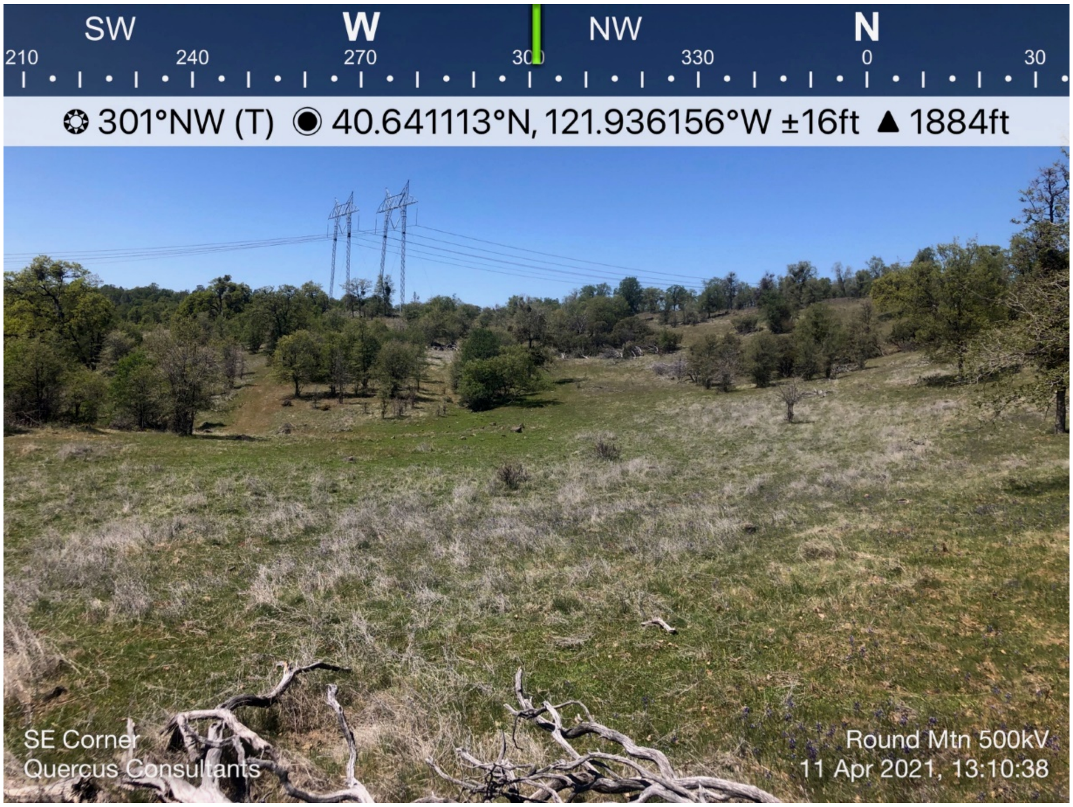
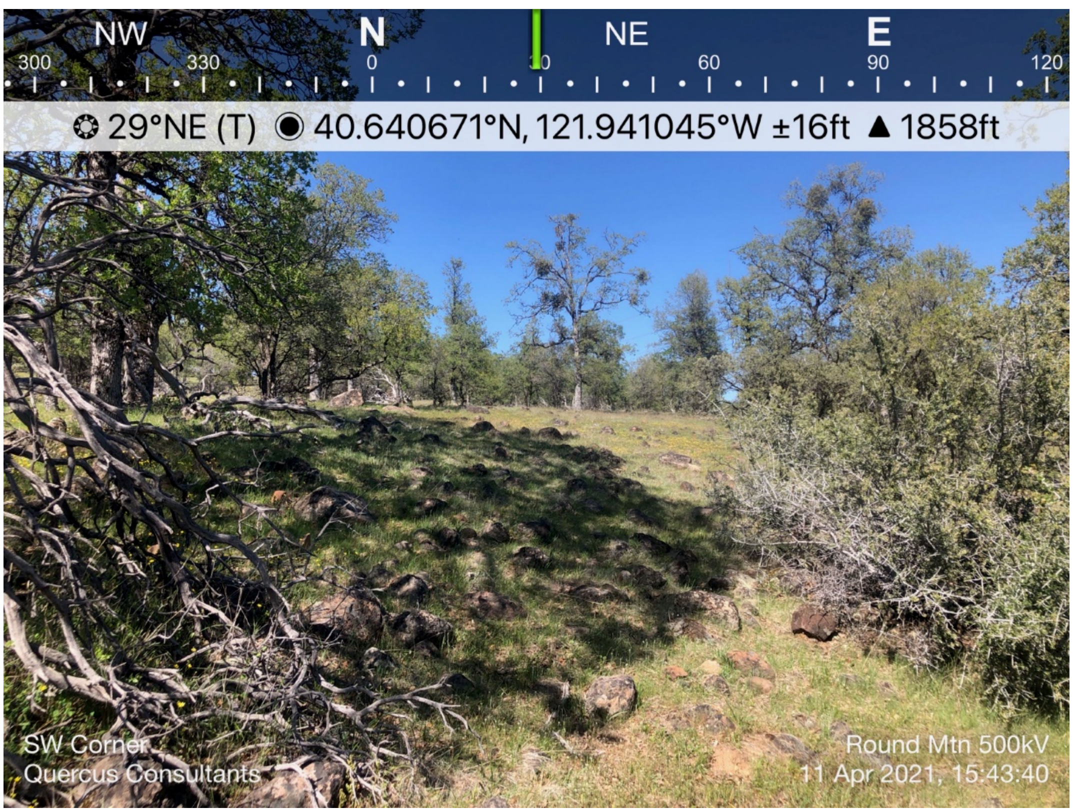

SW
W
NW
N
210
240
270
300
330
0
30
301°NW (T) 40.641113°N, 121.936156°W ±16ft 1884ft
SE Corner
Quercus Consultants
Round Mtn 500kV
11 Apr 2021, 13:10:38


NW
N
NE
E
300
330
0
30
60
90
120
29°NE (T) 40.640671°N, 121.941045°W ±16ft 1858ft
SW Corner
Quercus Consultants
Round Mtn 500kV
11 Apr 2021, 15:43:40


N
NE
E
SE
330
0
30
60
90
120
150
63°NE (T) 40.648199°N, 121.938097°W ±16ft 2047ft
Silvery false lupin (Thermopsis californica
var. argentata)
Quercus Consultants
Round Mtn 500kV
11 Apr 2021, 11:12:23

Appendix B

Special-Status Species Table

Appendix B. Special-Status Species and Potential to Occur within Study Area

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Adiantum shastense Shasta maidenhair fern *PTERIDACEAE*	--/--/4.3	Sometimes carbonate. Lower montane coniferous forest. <1600m	Apr - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Allium sanbornii Sanborn's onion *ALLIACEAE*	--/--/4.2	Usually serpentinite, gravelly. Chaparral, cismontane woodland, lower montane coniferous forest.	May - Sep	None. No suitable habitat present in the Survey Area. No serpentine soils present.
Ageratina shastensis Shasta ageratina *ASTERACEAE*	--/--/1B.2	Chaparral, lower montane coniferous forest. 400-1800m.	June - Oct	Low. Blue oak woodland, not coniferous forest, is present in the Survey Area.
Agrostis hendersonii Hendrson's bent grass *POACEAE*	--/--/3.2	Valley and foothill grassland (Mesic), vernal pools. <300m.	Apr - June	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too high for this plant to occur.
Arctostaphylos malloryi Mallory's manzanita *ERICACEAE*	--/--/4.3	Volcanic, chaparral, lower montane coniferous forest. 650-1200m.	Apr - July	Low. Blue oak woodland, not coniferous forest is present in the Survey Area.
Botrychium crenulatum scalloped moonwort *OPHIOGLOSSACEAE*	--/--/2B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest, lower montane coniferous forest, marshes and swamps. 1500-3600m.	June - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Botrychium minganense Mingan moonwort *OPHIOGLOSSACEAE*	--/--/2B.2	Lower montane coniferous forest, upper montane coniferous forest, bogs and fens, meadows and seeps. 1500-3100m.	July - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Botrypus virginianus rattlesnake fern *OPHIOGLOSSACEAE*	--/--/2B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, riparian forest. 700-1200m.	(Apr) Jun, Aug, Sep	Moderate. Some suitable habitat occurs along the intermittent stream.

Scientific Name Common Name *FAMILY*	Status State/Federal/ CNPS	Habitat description	Flowering Period	Potential to Occur and Rationale
Brasenia schreberi watershield *CAMBOMBACEAE*	--/--/2B.3	Freshwater marshes and swamps. <2200m.	Jun - Sep	None. No freshwater marshes or swamps exist in the Survey Area.
Calochortus syntrophus Callahan's mariposa-lily *LILIACEAE*	--/--/1B.1	Cismontane woodland, valley and foothill grassland. 500-1700m.	May - June	High. Suitable grassland and woodland habitat exists in the Survey Area.
Calystegia atriplicifolia ssp. *buttensis* Butte County morning-glory *CONVOLVULACEAE*	--/--/4.2	Chaparral, lower montane coniferous forest, valley and foothill grassland. 600-1200m.	May - July	High. Suitable grassland and woodland habitat exists in the Survey Area.
Cardamine bellidifolia var. *pachyphylla* fleshy toothwort *BRASSICACEAE*	--/--/4.3	Rocky, talus, and scree. Alpine boulder and rock field, subalpine coniferous forest, and upper montane coniferous forest. 1800-2850m.	June-Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Clarkia borealis ssp. *arida* Shasta clarkia *ONAGRACEAE*	--/--/1B.1	Cismontane woodland, lower montane coniferous forest. 500m.	June - July	High. Suitable woodland habitat exists in the Survey Area.
Clarkia borealis ssp. *borealis* northern clarkia *ONAGRACEAE*	--/--/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 400-800m.	June - July	High. Suitable woodland habitat exists in the Survey Area.
Crataegus castlegarensis castlegar hawthorne *ROSACEAE*	--/--/3	Riparian woodland, moist rocky loam. 900-1300m.	May - June (Jul)	Moderate. Suitable habitat exists along the intermittent stream.
Cryptantha crinita silky cryptantha *BORAGINACEAE*	--/--/1B.2	Cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland. 90-1120m.	Mar - June	High. Suitable grassland and woodland habitat exists in the Survey Area.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Erythranthe taylorii Shasta limestone monkeyflower *PHRYMACEAE*	--/--/1B.1	Lower montane coniferous forest, cismontane woodland. 900-1100m.	Apr - June	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Erythronium shastense Shasta fawn lily *LILIACEAE*	--/--/1B.2	Cismontane woodland, lower montane coniferous forest. 330-1020m. Limestone.	Feb - Apr	None. No suitable habitat present in the Survey Area including no limestone present. The Survey Area is 14 mi. from the nearest existing population and the soil profile at the Survey Area is completely different than the non-limestone occurrences.
Fritillaria eastwoodiae Butte County fritillary *LILIACEAE*	--/--/3.2	Chaparral, cismontane woodland, lower montane coniferous forest. <1500m.	Mar - June	High. Suitable woodland habitat exists in the Survey Area.
Horkelia daucifolia var. *indicta* Jepson's horkelia *ROSACEAE*	--/--/1B.1	Cismontane woodland. 240-670m.	Apr - June	High. Suitable woodland habitat exists in the Survey Area.
Iliamna bakeri Baker's globe mallow *Malvaceae*	--/--/4.2	Chaparral, Great Basin scrub, pinyon and juniper woodland, lower montane coniferous forest. 1000-2500m.	June - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Juncus digitatus finger rush *JUNCACEAE*	--/--/1B.1	Cismontane woodland (openings), lower montane coniferous forest (openings), vernal pools. 650-800m.	May - June	Moderate. Suitable habitat exists along the intermittent stream.
Limnanthes floccosa ssp. *bellingeriana* Bellinger's meadowfoam *LIMNANTHACEAE*	--/--/1B.2	Mesic, cismontane woodland, meadows and seeps. 300-1100m.	Apr - June	Moderate. Suitable habitat exists along the intermittent stream.
Limnanthes floccosa ssp. *floccosa* woolly meadowfoam *Limnanthaceae*	--/--/4.2	Chapparal, cismontane woodland, valley and foothill grassland, vernal pools. <600m.	Mar - May (Jun)	Moderate. Suitable habitat exists along the intermittent stream.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Neviusia cliftonii Shasta snow-wreath *ROSACEAE*	--/--/1B.2	Cismontane woodland, lower montane coniferous forest, riparian woodland. 300-600m. Limestone, shaded north-facing slopes.	Apr - May	None. No suitable habitat present in the Survey Area. No coniferous forest or shady north-facing slopes or limestone exist in the Survey Area.
Paronychia ahartii Ahart's paronychia *CARYOPHYLLACEAE*	--/--/1B.1	Valley and foothill grassland, vernal pools, cismontane woodland. <500m.	Mar - June	None. No suitable habitat present in the Survey Area. No vernal pools occur at the site
Penstemon heterodoxus var.*shastensis* Shasta beardtongue *PLANTAGINACEAE*	--/--/4.3	Volcanic clay, loam. Broadleafed upland forest, chaparral, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. 900-2400m.	May - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Poa sierrae Sierra blue grass *POACEAE*	--/--/1B.3	Lower montane coniferous forest. 350-1500m.	Apr - June	Low. Blue oak woodland, not coniferous forest is present in the Survey Area.
Polygonum bidwelliae Bidwell's knotweed *POLYGONACEAE*	--/--/4.3	Chaparral, cismontane woodland, valley and foothill grassland. 60-1200m.	Apr - July	High. Suitable woodland habitat exists in the Survey Area.
Sidalcea celata Redding checkerbloom *MALVACEAE*	--/---/3	Sometimes serpentine, cismontane woodland. 150-370m.	Apr - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too high for this plant to occur.
Sidalcea gigantea giant checkerbloom *MALVACEAE*	--/--/4.3	Moist to wet forested slopes, seeps, stream margins, meadows, mid to upper conifer forest. (640) 900-1650m.	(Jan - Jun) Jul-Oct	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Smilax jamesii English Peak greenbrier *SMILACEAE*	--/--/4.2	North coast coniferous forest, broadleafed upland forest, lower montane coniferous forest, upper montane coniferous forest, marshes and swamps. 1500-2500m.	May - July	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Streptanthus longisiliquus long-fruited jewel flower *BRASSICACEAE*	--/--/4.3	Openings, cismontane woodland, lower montane coniferous forest. 400-1700m.	Apr - Sep	High. Suitable woodland habitat exists in the Survey Area.
Stellaria longifolia long-leaved starwort *CARYOPHYLLACEAE*	--/--/2B.2	Bogs and fens, meadows and seeps, riparian woodland, upper montane coniferous forest. =/- 900m.	May - Aug	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Subularia aquatica ssp. *americana* water awlwort *BRASSICACEAE*	--/--/4.3	Lake margins, upper montane coniferous forest. 1800-3200m.	Jul - Sep	None. No suitable habitat present in the Survey Area. Elevation at the Survey Area is too low for this plant to occur.
Thermopsis californica var. *argentata* silvery false lupine *FABACEAE*	--/--/4.3	Cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland. 1200-2200m.	Apr - Oct	Moderate. Some suitable habitat present in the Survey Area. This plant typically is found in higher elevations, but there is a record in Jepson eFlora of this plant in the elevation range of this Survey Area.
Thermopsis gracilis slender false lupine *FABACEAE*	--/--/4.3	Sometimes roadsides, chaparral, cismontane woodland, lower montane woodland, lower montane coniferous forest, meadows and seeps, North coast coniferous forest. 100-1200m.	Mar - July	Moderate. Some suitable habitat present in the Survey Area. This plant is more likely to occur in the Klamath National Forest and coastal mountains as opposed to the foothills of the Cascade Range.
Trifolium piorkowskii maverick clover *FABACEAE*	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland (mesic), vernal pools.	Unknown (only 1 record)	Moderate. Suitable habitat exists along the intermittent stream.

Scientific Name **Common Name** ***FAMILY***	**Status State/Federal/ CNPS**	**Habitat description**	**Flowering Period**	**Potential to Occur and Rationale**
Trifolium siskiyouense Siskiyou clover *FABACEAE*	--/--/1B.1	Meadows and seeps. 800-1400m.	June - July	Moderate. Suitable habitat exists along the intermittent stream.
Triteleia crocea var. *crocea* yellow triteleia *THEMIDACEAE*	--/--/4.3	Lower montane coniferous forest (granitic or serpentine).	May - June	None. No granitic or serpentine soils occur in the Survey Area.
Vaccinium shastense ssp. *shastense* Shasta huckleberry *ERICACEAE*	--/--/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, subalpine coniferous forest. 320-1225m.	Dec - May	Moderate. Some suitable woodland habitat exists in the Survey Area.

Appendix C

Plants Observed During Surveys

Appendix C: List of Vascular Plant Species Observed During the Round Mountain 500kV Area Dynamic Reactive Support Project Botanical Survey

Scientific Name	Common Name
Trees	
Aesculus californica	buckeye
Pinus sabiniana	gray pine
Quercus douglasii	blue oak
Quercus kelloggii	black oak
Quercus wislizeni	interior live oak
Shrubs and Vines	
Arctostaphylos viscida	whiteleaf manzanita
Ceanothus cuneatus	buck brush
Cercis occidentalis	western redbud
Rhus aromatica	fragrant sumac
Rubus armeniacus	Himalayan blackberry
Solanum parishii	Parish's purple nightshade
Toxicodendron diversilobum	poison oak
Vitis californica	California wild grape
Herbs	
Achillea millefolium	yarrow
Acmispon brachycarpus	short podded lotus
Allium sp. (not rare)	onion
Amsinckia menziesii	fiddleneck
Aristolochia californica	California pipevine
Asclepias cordifolia	purple milkweed
Athysanus pusillus	dwarf athysanus
Avena fatua	wild oats
Briza minor	little rattlesnake grass
Brodiaea elegans	elegant brodiaea
Bromus diandrus	ripgut brome
Calochortus superbus	Yellow mariposa
Calochortus tolmiei	hairy star tulip
Calystegia occidentalis ssp. *occidentalis*	chaparral false bindweed
Castilleja attenuata	narrow leaved owl's clover
Centaurea solstitialis	yellow star thistle
Cerastium fontanum subsp. *vulgare*	common chickweed
Chlorogalum pomeridianum	soaproot
Clarkia gracilis	graceful clarkia
Clarkia purpurea	purple clarkia
Cryptantha intermedia	common cryptanth
Cynosurus echinatus	dogtail grass
Daucus carota	queen anne's lace
Delphinium variegatum	royal larkspur
Dichelostemma capitatum	blue dicks
Dichelostemma congestum	fork toothed ookow
Dodecatheon hendersonii	mosquito bill
Elymus caput-medusae	medusa head

Scientific Name	Common Name
Erodium botrys	big heron bill
Erythranthe guttata	yellow monkey flower
Festuca perennis	Italian rye grass
Galium parisiense	wall bedstraw
Gilia tricolor	bird's eyes
Hemizonia fitchii	spikeweed
Hordeum marinum	seaside barley
Juncus balticus	wire rush
Lasthenia californica	goldfileds
Lepidium nitidum	shining pepper grass
Leptosiphon bicolor	true baby stars
Lomatium caruifolium	carraway leaved lomatium
Lupinus bicolor	lupine
Marah watsonii	Watson's wild cucumber
Madia citriodora	lemon scented tarweed
Micropus californicus	Q tips
Monardella villosa	coyote mint
Navarretia intertexa	interwoven navarretia
Navarretia tagetina	marigold navarretia
Parentucellia viscosa	yellow parentucelia
Pedicularis densiflora	Indian warrior
Phoradendron leucarpum	mistletoe
Plantago erecta	California plantain
Plantago lanceaolata	ribwort
Poa bulbosa	bulbous blue grass
Polypogon monspeliensis	annual beard grass
Ranunculus arvensis	field buttercup
Ranunculus californicus	common buttercup
Rumex crispus	curly doc
Sanicula bipinnatifida	purple sanicle
Sherardia arvensis	field madder
Thermopsis californica var. *argentata*	silvery false lupin
Thysanocarpus curvipes	common fringe pod
Toxicoscordion fremontii	Fremont's star lily
Torilis arvensis	field hedge parsley
Trifolium arvense	rabbitfoot clover
Trifolium depauperatum	dwarf sac clover
Trifolium dubium	small hop clover
Trifolium hirtum	rose clover
Trifolium subterraneanum	subterranean clover
Triphysaria eriantha	butter n' eggs
Triteleia hyacinthina	white hyacinth
Vicia villosa	hairy vetch
Wyethia angustifolia	narrow leaved mule ears

Appendix E – Tree Count Survey Report

March 29, 2021

Foster Consulting

Patrick Golden
Heritage Environmental Consultants
8071 East 33rd Avenue
Denver, CO 80238

SUBJECT: Round Mountain 500kV Advanced Dynamic Reactive Support Project – Tree Survey Report

Dear Patrick,

I am writing to provide you with this Tree Survey summary report for the Round Mountain 500kV Advanced Dynamic Reactive Support Project near Whitmore, Shasta County, California. This report is intended to support environmental permit applications and the California Environmental Quality Act (CEQA) document and process.

Project Location
The survey area is located along Fern Road and the Round Mountain-Table Mountain 500kV power lines on the Whitmore Geological Survey (USGS) 7.5-minute quadrangle (Figure 1) at coordinates 40°38'45.73"N, 121°56'20.48"W within assessor parcel number (APN) 099-450-001.

Site Description
The approximate 86-acre survey area consists of flat terrain and rolling hills at an elevation of approximately 1900 to 2100 feet above mean sea level with four small seasonal streams that generally flow north to south. The site can generally be described as impacted by human activity both in the past (logging) and present (agriculture and utility alignment). Trees are scatted throughout the project area, except within the utility right of way, mainly consisting of four species, primarily blue oak (*Quercus douglasii)* with lesser amounts of gray pine (*Pinus sabiniana),* black oak (*Q. kelloggii*), and California buckeye (*Aesculus californica*).

Four soil series units have been mapped in the survey area; Cohasset stony loam (CmD), Supan very stony loam (SuD), Parrish loam (PcD), and Kilark very stony sandy clay loam (KiD). These soils are considered well drained to moderately well drained soils.

Methodology
A tree survey was conducted by Jonathan Foster (biologist), Forest Kirk (forester) and Arnold Sanchez (field tech) on March 8-11, 2021. The survey was designed to

determine the species, diameter at breast height (DBH), and relative health of individual trees located within the survey area as shown in Figure 2.

The tree survey was conducted within the survey area for trees greater than 4” DBH. Trees were measured with a diameter tape at breast height (4.5’ above the ground on the uphill side), their species was documented, trees were assessed for their relative health, a GPS point was recorded, and approximately 1000 trees were tagged in the field with a numbered metal tag (tree #1000-1999). The GPS points are displayed on an orthorectified aerial photograph (Figure 2).

Results

Four species over 4” DBH were present within the project area totaling 2447 individual trees. Blue oaks (2266 trees, 93%) are most prevalent, followed by gray pines (95 trees, 4%), black oaks (72 trees, 3%), and buckeyes (14 trees, <1%). Please see Figure 2. and Table 1. for individual tree details.

Please contact me at (530) 710-4059 or by email (*Foster.EnvConsulting@gmail.com*) if you have any questions and thank you for allowing us to assist you with your project.

Sincerely,

Jonathan Foster
Biologist

Attachments:

Table 1. Tree Survey Information
Figure 1. Project Location
Figure 2. Tree Survey

Cc: Dustin Joseph – KP Environmental

Table 1. Round Mountain 500kV ADRS Tree Survey Results

Tree #	Species	DBH	Health	Notes
1	Q. douglasii	20	Good	forked dbh
2	Q. douglasii	15	Good	forked 2 ft
3	Q. douglasii	8	Fair	
4	Q. douglasii	14	Good	
5	Q. douglasii	10	Good	
6	Q. douglasii	6	Fair	
7	Q. douglasii	10	Fair	
8	Q. douglasii	6	Fair	
9	Q. douglasii	9	Fair	
10	Q. douglasii	5	Fair	
11	Q. douglasii	5	Good	
12	Q. douglasii	16	Fair	
13	Q. douglasii	5	Good	
14	Q. douglasii	5	Good	
15	Q. douglasii	5	Good	
16	Q. douglasii	6	Good	
17	Q. douglasii	6	Good	
18	Q. douglasii	5	Good	
19	Q. douglasii	5	Good	
20	Q. douglasii	5	Good	
21	Q. douglasii	8	Good	
22	Q. douglasii	5	Good	
23	Q. douglasii	5	Good	
24	Q. douglasii	11	Poor	fallen
25	Q. douglasii	8	Good	
26	Q. douglasii	6	Good	
27	Q. douglasii	14	Fair	
28	Q. douglasii	6	Good	
29	Q. douglasii	5	Good	
30	Q. douglasii	6	Good	
31	Q. douglasii	7	Good	
32	Q. douglasii	5	Good	
33	Q. douglasii	7	Good	
34	Q. douglasii	5	Fair	
35	Q. douglasii	5	Fair	
36	Q. douglasii	5	Fair	
37	Q. douglasii	5	Good	
38	Q. douglasii	5	Good	
39	Q. douglasii	7	Fair	
40	Q. douglasii	9	Good	
41	Q. douglasii	5	Good	
42	Q. douglasii	9	Good	
43	Q. douglasii	7	Good	
44	Q. douglasii	15	Good	

45	Q. douglasii	6	Fair	
46	Q. douglasii	9	Good	
47	Q. douglasii	7	Fair	
48	Q. douglasii	8	Good	
49	Q. douglasii	5	Good	
50	Q. douglasii	5	Fair	
51	Q. douglasii	6	Good	
52	Q. douglasii	5	Good	
53	Q. douglasii	5	Fair	
54	Q. douglasii	5	Fair	
55	Q. douglasii	6	Fair	
56	Q. douglasii	6	Good	
57	Q. douglasii	9	Good	
58	Q. douglasii	9	Good	
59	Q. douglasii	9	Good	
60	Q. douglasii	7	Good	
61	Q. douglasii	7	Good	
62	Q. douglasii	7	Good	
63	Q. douglasii	8	Fair	
64	Q. douglasii	5	Fair	
65	Q. douglasii	9	Good	
66	Q. douglasii	12	Fair	
67	Q. douglasii	12	Fair	
68	Q. douglasii	6	Good	
69	Q. douglasii	6	Good	
70	Q. douglasii	10	Good	
71	Q. douglasii	9	Good	
72	Q. douglasii	10	Good	
73	Q. douglasii	10	Good	
74	Q. douglasii	10	Fair	
75	Q. douglasii	5	Good	
76	Q. douglasii	5	Good	
77	Q. douglasii	12	Fair	base rot
78	Q. douglasii	5	Good	
79	Q. douglasii	8	Good	
80	Q. douglasii	14	Fair	
81	Q. douglasii	7	Good	
82	Q. douglasii	5	Fair	
83	Q. douglasii	5	Good	
84	Q. douglasii	8	Fair	
85	Q. douglasii	9	Good	
86	Q. douglasii	6	Good	
87	Q. douglasii	8	Good	
88	Q. douglasii	6	Good	
89	Q. douglasii	7	Good	
90	Q. douglasii	6	Good	
91	Q. douglasii	6	Fair	
92	Q. douglasii	10	Good	

93	Q. douglasii	8	Fair	
94	Q. douglasii	8	Good	
95	Q. douglasii	8	Fair	
96	Q. douglasii	12	Good	
97	Q. douglasii	12	Poor	rotten trunk
98	Q. douglasii	10	Fair	
99	Q. douglasii	8	Good	
100	Q. douglasii	11	Good	
101	Q. douglasii	10	Poor	rotten trunk
102	Q. douglasii	6	Good	
103	Q. douglasii	11	Good	
104	Q. douglasii	5	Good	
105	Q. douglasii	15	Poor	rotten
106	Q. douglasii	5	Good	
107	Q. douglasii	7	Good	
108	Q. douglasii	7	Fair	
109	Q. douglasii	8	Fair	
110	Q. douglasii	5	Good	
111	Q. douglasii	7	Good	
112	Q. douglasii	5	Good	
113	Q. douglasii	9	Good	
114	Q. douglasii	11	Good	
115	Q. douglasii	7	Good	
116	Q. douglasii	10	Fair	
117	Q. douglasii	20	Poor	broken top
118	Q. douglasii	9	Good	forked at 3 ft
119	Q. douglasii	5	Fair	forked at 4 ft
120	Q. douglasii	8	Good	
121	P. sabiniana	6	Good	
122	Q. douglasii	7	Good	
123	Q. douglasii	10	Good	
124	Q. douglasii	10	Good	
125	Q. douglasii	9	Good	
126	Q. douglasii	7	Good	
127	Q. douglasii	5	Good	
128	Q. douglasii	10	Fair	
129	Q. douglasii	6	Fair	
130	Q. douglasii	5	Fair	
131	Q. douglasii	8	Good	
132	Q. douglasii	6	Fair	
133	Q. douglasii	6	Fair	
134	Q. douglasii	7	Good	
135	Q. douglasii	7	Good	
136	Q. douglasii	10	Good	
137	Q. douglasii	9	Good	forks 3 ft
138	Q. douglasii	9	Fair	
139	Q. douglasii	7	good	
140	Q. douglasii	5	good	

141	Q. douglasii	7	good	
142	Q. douglasii	8	Fair	
143	Q. douglasii	8	Fair	
144	Q. douglasii	7	Good	
145	Q. douglasii	12	Good	forks 2ft
146	Q. douglasii	13	Good	forks 3ft
147	Q. douglasii	15	Good	forks 3ft
148	Q. douglasii	5	Good	
149	Q. douglasii	7	Fair	
150	Q. douglasii	6	Fair	
151	Q. douglasii	6	Fair	
152	Q. douglasii	6	Good	
153	Q. douglasii	5	Fair	
154	Q. douglasii	7	Good	
155	Q. douglasii	5	Poor	
156	Q. douglasii	6	Fair	
157	Q. douglasii	5	Fair	
158	Q. douglasii	5	Good	
159	Q. douglasii	5	Fair	
160	Q. douglasii	11	Good	
161	Q. douglasii	7	Fair	
162	Q. douglasii	7	Fair	
163	Q. douglasii	8	Good	
164	Q. douglasii	5	Poor	
165	Q. douglasii	6	Fair	
166	Q. douglasii	8	Good	
167	Q. douglasii	6	Good	
168	Q. douglasii	6	Fair	
169	Q. douglasii	8	Good	
170	Q. douglasii	5	Fair	
171	Q. douglasii	6	Good	
172	Q. douglasii	8	Good	
173	Q. douglasii	8	Good	
174	Q. douglasii	7	Good	
175	Q. douglasii	7	Good	
176	Q. douglasii	5	Fair	
177	Q. douglasii	7	Good	
178	Q. douglasii	6	Fair	
179	Q. douglasii	8	Fair	base rot
180	Q. douglasii	10	Good	
181	Q. douglasii	10	Good	
182	Q. douglasii	10	Good	
183	Q. douglasii	5	Fair	
184	Q. douglasii	6	Good	
185	Q. douglasii	5	Fair	
186	Q. douglasii	9	Good	
187	Q. douglasii	9	Good	
188	Q. douglasii	8	good	

189	Q. douglasii	6	good	
190	Q. douglasii	9	good	
191	Q. douglasii	9	good	
192	Q. douglasii	5	good	
193	Q. douglasii	5	good	
194	Q. douglasii	6	good	
195	Q. douglasii	5	good	
196	Q. douglasii	5	good	
197	Q. douglasii	5	fair	
198	Q. douglasii	10	good	
199	Q. douglasii	11	fair	
200	Q. douglasii	5	fair	
201	Q. douglasii	7	fair	
202	Q. douglasii	6	fair	
203	Q. douglasii	7	fair	
204	Q. douglasii	6	fair	forks 2ft
205	Q. douglasii	10	good	
206	Q. douglasii	6	good	
207	Q. douglasii	33	fair	
208	Q. douglasii	5	fair	
209	Q. douglasii	6	poor	scar
210	Q. douglasii	6	good	
211	Q. douglasii	7	fair	
212	Q. douglasii	7	fair	
213	Q. douglasii	9	good	
214	Q. douglasii	10	good	
215	Q. douglasii	9	good	forks dbh
216	Q. douglasii	12	good	
217	Q. douglasii	11	good	
218	Q. douglasii	7	fair	
219	Q. douglasii	11	good	forks 3 ft
220	Q. douglasii	6	fair	
221	Q. douglasii	8	fair	
222	Q. douglasii	6	fair	
223	Q. douglasii	5	fair	
224	Q. douglasii	6	fair	
225	Q. douglasii	6	good	
226	Q. douglasii	7	good	
227	Q. douglasii	6	fair	
228	Q. douglasii	8	fair	
229	Q. douglasii	7	good	
230	Q. douglasii	5	poor	
231	Q. douglasii	11	good	
232	Q. douglasii	10	good	
233	Q. douglasii	6	good	
234	Q. douglasii	7	fair	
235	Q. douglasii	9	good	
236	Q. douglasii	9	good	

237	Q. douglasii	13	good	
238	Q. douglasii	7	good	
239	Q. douglasii	5	good	
240	Q. douglasii	7	good	
241	Q. douglasii	9	fair	
242	Q. douglasii	9	good	
243	Q. douglasii	8	good	
244	Q. douglasii	8	poor	
245	Q. douglasii	7	good	
246	Q. douglasii	10	good	forks 4ft
247	Q. douglasii	7	good	
248	Q. douglasii	9	Good	forks dbh
249	Q. douglasii		Good	
250	Q. douglasii	11	good	
251	Q. douglasii	7	fair	
252	Q. douglasii	7	good	
253	Q. douglasii	5	fair	
254	Q. douglasii	13	good	
255	Q. douglasii	7	good	
256	Q. douglasii	10	poor	
257	Q. douglasii	7	good	
258	Q. douglasii	7	fair	
259	Q. douglasii	9	fair	
260	Q. douglasii	6	fair	
261	Q. douglasii	9	good	
262	Q. douglasii	5	good	
263	Q. douglasii	8	good	
264	Q. douglasii	7	good	
265	Q. douglasii	10	fair	
266	Q. douglasii	7	good	
267	Q. douglasii	6	fair	
268	Q. douglasii	21	poor	
269	Q. douglasii	7	fair	
270	Q. douglasii	12	good	
271	Q. douglasii	6	fair	
272	Q. douglasii	9	good	
273	Q. douglasii	7	fair	
274	Q. douglasii	5	good	
275	Q. douglasii	5	good	
276	Q. douglasii	6	fair	
277	Q. douglasii	6	good	
278	Q. douglasii	11	good	
279	Q. douglasii	9	good	
280	Q. douglasii	10	fair	
281	Q. douglasii	5	fair	
282	Q. douglasii	11	good	
283	Q. douglasii	8	good	
284	Q. douglasii	8	good	

285	Q. douglasii	10	good	forks 4ft
286	Q. douglasii	6	fair	
287	Q. douglasii	7	good	
288	Q. douglasii	6	good	
289	Q. douglasii	7	good	
290	Q. douglasii	10	good	forks dbh
291	Q. douglasii	6	fair	
292	Q. douglasii	5	fair	
293	Q. douglasii	5	poor	
294	Q. douglasii	11	good	
295	Q. douglasii	8	good	
296	Q. douglasii	6	good	
297	Q. douglasii	9	good	
298	Q. douglasii	7	good	
299	Q. douglasii	11	good	
300	Q. douglasii	9	good	
301	Q. douglasii	9	good	
302	Q. douglasii	8	good	
303	Q. douglasii	9	good	
304	Q. douglasii	5	poor	
305	Q. douglasii	12	fair	forked dbh
306	Q. douglasii	8	good	
307	Q. douglasii	8	good	
308	Q. douglasii	6	good	
309	Q. douglasii	6	good	
310	Q. douglasii	7	fair	
311	Q. douglasii	6	fair	
312	Q. douglasii	5	fair	
313	Q. douglasii	8	good	forks 2ft
314	Q. douglasii	9	poor	
315	Q. douglasii	5	fair	
316	Q. douglasii	5	good	
317	Q. douglasii	9	poor	
318	Q. douglasii	8	good	
319	Q. douglasii	6	good	
320	Q. douglasii	7	good	
321	Q. douglasii	5	fair	
322	Q. douglasii	7	fair	
323	Q. douglasii	8	fair	
324	Q. douglasii	10	poor	
325	Q. douglasii	13	poor	
326	Q. douglasii	8	poor	forks 3ft
327	Q. douglasii	8	good	forks 3ft
328	Q. douglasii	8	fair	
329	Q. douglasii	7	fair	
330	Q. douglasii	10	good	
331	Q. douglasii	9	good	
332	Q. douglasii	9	good	

333	Q. douglasii	5	fair	
334	Q. douglasii	7	good	
335	Q. douglasii	7	good	
336	Q. douglasii	11	good	
337	Q. douglasii	8	fair	
338	Q. douglasii	5	fair	
339	Q. douglasii	7	good	
340	Q. douglasii	9	good	
341	Q. douglasii	7	good	
342	Q. douglasii	5	good	
343	Q. douglasii	8	good	
344	Q. douglasii	8	good	
345	Q. douglasii	7	fair	
346	Q. douglasii	6	good	
347	Q. douglasii	5	fair	
348	Q. douglasii	5	good	
349	Q. douglasii	8	good	
350	Q. douglasii	5	good	
351	Q. douglasii	7	good	
352	Q. douglasii	10	good	
353	Q. douglasii	8	fair	
354	Q. douglasii	10	good	
355	Q. douglasii	7	good	
356	Q. douglasii	7	good	
357	Q. douglasii	7	good	
358	Q. douglasii	6	good	
359	Q. douglasii	7	good	
360	Q. douglasii	7	good	
361	Q. douglasii	8	good	
362	Q. douglasii	5	fair	
363	Q. douglasii	6	good	
364	Q. douglasii	6	poor	rotten
365	Q. douglasii	8	fair	some rot
366	Q. douglasii	5	good	
367	Q. douglasii	8	good	
368	Q. douglasii	5	good	
369	Q. douglasii	10	good	forks 4ft
370	Q. douglasii	5	fair	
371	Q. douglasii	7	good	
372	Q. douglasii	7	good	
373	Q. douglasii	7	good	
374	Q. douglasii	6	good	
375	P. sabiniana	9	good	
376	Q. douglasii	10	poor	
377	Q. douglasii	9	fair	
378	Q. douglasii	8	good	
379	Q. douglasii	9	good	
380	Q. douglasii	6	fair	

381	Q. douglasii	7	fair	
382	Q. douglasii	10	good	
383	Q. douglasii	8	good	
384	Q. douglasii	12	good	
385	Q. douglasii	7	fair	
386	Q. douglasii	6	good	
387	Q. douglasii	6	good	
388	Q. douglasii	8	good	
389	Q. douglasii	7	good	forks dbh
390	Q. douglasii	5	good	
391	Q. douglasii	5	good	
392	Q. douglasii	6	good	
393	Q. douglasii	9	good	forks dbh
394	Q. douglasii	9	good	
395	Q. douglasii	8	fair	
396	Q. douglasii	5	fair	
397	Q. douglasii	12	poor	
398	Q. douglasii	9	good	
399	Q. douglasii	7	good	
400	Q. douglasii	8	good	
401	Q. douglasii	8	good	
402	Q. douglasii	9	good	
403	Q. douglasii	9	good	
404	Q. douglasii	8	good	
405	Q. douglasii	6	good	
406	Q. douglasii	6	fair	
407	Q. douglasii	7	good	
408	Q. douglasii	6	good	
409	Q. douglasii	6	good	
410	Q. douglasii	7	good	
411	Q. douglasii	7	good	
412	Q. douglasii	6	good	
413	Q. douglasii	9	good	
414	Q. douglasii	10	good	
415	Q. douglasii	5	good	
416	Q. douglasii	10	fair	scar
417	Q. douglasii	5	good	
418	Q. douglasii	5	fair	
419	Q. douglasii	5	good	
420	Q. douglasii	9	fair	
421	Q. douglasii	7	fair	
422	Q. douglasii	5	good	
423	Q. douglasii	9	fair	
424	Q. douglasii	12	good	
425	Q. douglasii	7	good	
426	Q. douglasii	10	good	
427	Q. douglasii	9	good	
428	Q. douglasii	7	good	

429	Q. douglasii	11	poor	
430	Q. douglasii	7	fair	
431	Q. douglasii	7	good	
432	Q. douglasii	10	good	
433	Q. douglasii	10	good	
434	Q. douglasii	8	fair	
435	Q. douglasii	7	good	
436	Q. douglasii	8	good	
437	Q. douglasii	5	good	
438	Q. douglasii	5	fair	
439	Q. douglasii	5	good	
440	Q. douglasii	12	good	
441	Q. douglasii	9	good	
442	Q. douglasii	5	fair	
443	Q. douglasii	8	good	
444	Q. douglasii	5	fair	
445	Q. douglasii	9	good	
446	Q. douglasii	12	good	
447	Q. douglasii	10	good	
448	Q. douglasii	7	good	
449	Q. douglasii	12	good	
450	Q. douglasii	5	good	
451	Q. douglasii	5	good	
452	Q. douglasii	6	good	
453	P. sabiniana	34	fair	
454	Q. douglasii	5	good	
455	Q. douglasii	9	good	
456	Q. douglasii	6	good	
457	Q. douglasii	6	good	
458	Q. douglasii	10	fair	rotten
459	Q. douglasii	6	good	
460	Q. douglasii	6	good	
461	Q. douglasii	5	good	
462	Q. douglasii	6	good	
463	Q. douglasii	6	good	
464	Q. douglasii	6	good	
465	Q. douglasii	5	good	
466	Q. douglasii	5	good	
467	Q. douglasii	5	good	
468	Q. douglasii	8	good	
469	Q. douglasii	7	fair	
470	Q. douglasii	8	fair	
471	Q. douglasii	10	good	forks dbh
472	Q. douglasii	9	good	
473	Q. douglasii	5	fair	
474	Q. douglasii	9	good	
475	Q. kelloggii	10	good	
476	Q. douglasii	6	good	

477	Q. douglasii	10	good	
478	Q. douglasii	13	good	
479	Q. douglasii	5	good	
480	Q. douglasii	6	good	
481	Q. douglasii	8	fair	forks 2ft
482	Q. douglasii	5	fair	
483	Q. douglasii	5	fair	
484	Q. douglasii	7	fair	forks 2 ft
485	Q. douglasii	7	good	
486	Q. douglasii	12	poor	
487	Q. douglasii	18	good	forks 3ft
488	Q. douglasii	8	good	
489	Q. douglasii	7	good	
490	Q. douglasii	9	good	
491	Q. douglasii	9	good	
492	Q. douglasii	6	fair	
493	Q. douglasii	9	good	
494	Q. douglasii	12	good	forks 2ft
495	Q. douglasii	6	good	
496	Q. douglasii	6	good	
497	Q. douglasii	6	good	
498	Q. douglasii	5	good	
499	Q. douglasii	7	good	
500	Q. douglasii	7	good	
501	Q. douglasii	5	good	
502	Q. douglasii	9	good	
503	Q. douglasii	14	poor	
504	P. sabiniana	20	good	
505	P. sabiniana	13	good	
506	P. sabiniana	17	poor	
507	P. sabiniana	7	good	
508	P. sabiniana	22	good	
509	Q. douglasii	9	good	
510	Q. douglasii	10	fair	
511	Q. douglasii	12	good	forks 2ft
512	P. sabiniana	32	good	
513	Q. douglasii	10	good	
514	Q. douglasii	6	good	
515	Q. douglasii	7	good	
516	Q. douglasii	9	good	
517	Q. douglasii	5	good	
518	Q. douglasii	5	good	
519	Q. douglasii	8	good	
520	Q. douglasii	10	fair	
521	Q. douglasii	5	good	
522	Q. douglasii	8	good	
523	Q. douglasii	12	good	
524	Q. douglasii	8	good	

525	Q. douglasii	5	fair	
526	Q. douglasii	8	good	
527	Q. douglasii	12	good	forks 2ft
528	Q. douglasii	5	good	
529	Q. douglasii	7	fair	
530	Q. douglasii	5	good	
531	Q. douglasii	5	fair	
532	Q. douglasii	9	good	
533	Q. douglasii	23	fair	
534	Q. douglasii	16	poor	deadtop
535	Q. douglasii	20	poor	hollow trunk
536	Q. douglasii	9	good	
537	Q. douglasii	8	fair	
538	Q. douglasii	9	good	
539	Q. douglasii	9	good	
540	Q. douglasii	8	fair	hollow trunk
541	Q. douglasii	5	fair	
542	Q. douglasii	12	good	forks 3 ft
543	Q. douglasii	9	good	
544	Q. douglasii	10	good	forks 3ft
545	Q. douglasii	10	fair	
546	Q. douglasii	5	fair	
547	Q. douglasii	7	good	
548	Q. douglasii	7	good	
549	Q. douglasii	9	good	
550	Q. douglasii	7	good	
551	Q. douglasii	12	fair	
552	Q. douglasii	8	good	
553	Q. douglasii	7	good	
554	Q. douglasii	7	good	
555	Q. douglasii	7	fair	
556	Q. douglasii	7	good	
557	Q. douglasii	5	fair	
558	Q. douglasii	6	good	
559	Q. douglasii	8	good	
560	Q. douglasii	9	fair	
561	Q. douglasii	7	fair	
562	Q. douglasii	8	good	
563	Q. douglasii	11	good	
564	Q. douglasii	13	good	
565	Q. douglasii	6	fair	
566	Q. douglasii	5	good	
567	Q. douglasii	5	good	
568	Q. douglasii	17	fair	broken limbs
569	Q. douglasii	8	fair	
570	Q. douglasii	7	good	
571	Q. douglasii	6	good	
572	Q. douglasii	11	good	

573	Q. douglasii	8	good	
574	Q. douglasii	5	fair	
575	Q. douglasii	9	good	
576	Q. douglasii	8	good	
577	Q. douglasii	6	good	
578	Q. douglasii	6	good	
579	Q. douglasii	9	good	
580	Q. douglasii	10	fair	mistletoe
581	Q. douglasii	9	good	
582	Q. douglasii	5	fair	
583	Q. douglasii	9	fair	
584	Q. douglasii	7	good	
585	Q. douglasii	7	fair	
586	Q. douglasii	11	good	
587	Q. douglasii	7	fair	
588	Q. douglasii	8	fair	
589	Q. douglasii	7	fair	
590	Q. douglasii	7	fair	
591	Q. douglasii	6	good	
592	Q. douglasii	6	good	
593	Q. douglasii	10	good	
594	Q. douglasii	9	poor	
595	Q. douglasii	10	good	
596	Q. douglasii	10	fair	
597	Q. douglasii	5	poor	
598	Q. douglasii	6	good	
599	Q. douglasii	6	poor	
600	Q. douglasii	13	good	forks 2ft
601	Q. douglasii	5	fair	
602	Q. douglasii	9	good	
603	Q. douglasii	7	fair	
604	Q. douglasii	7	good	
605	Q. douglasii	7	good	
606	Q. douglasii	7	fair	
607	Q. douglasii	6	fair	
608	Q. douglasii	7	good	
609	Q. douglasii	10	good	
610	Q. douglasii	6	good	
611	Q. douglasii	9	good	
612	Q. douglasii	6	good	
613	Q. douglasii	7	good	
614	Q. douglasii	5	fair	
615	Q. douglasii	5	fair	
616	Q. douglasii	6	good	
617	Q. douglasii	6	good	
618	Q. douglasii	9	poor	
619	Q. douglasii	5	good	
620	Q. douglasii	7	good	

621	Q. douglasii	5	fair	
622	Q. douglasii	7	fair	
623	Q. douglasii	13	poor	broken top
624	Q. douglasii	5	good	
625	Q. douglasii	5	fair	
626	Q. douglasii	15	poor	
627	Q. douglasii	6	fair	
628	Q. douglasii	9	good	
629	Q. douglasii	6	good	
630	Q. douglasii	6	fair	
631	Q. douglasii	6	fair	
632	Q. douglasii	6	fair	
633	Q. douglasii	5	fair	
634	Q. douglasii	5	fair	
635	Q. douglasii	7	fair	
636	Q. douglasii	6	fair	
637	Q. douglasii	5	fair	
638	Q. douglasii	7	good	
639	Q. douglasii	6	fair	
640	Q. douglasii	6	good	
641	Q. douglasii	8	good	
642	Q. douglasii	7	good	
643	Q. douglasii	8	fair	
644	Q. douglasii	6	fair	
645	Q. douglasii	6	good	
646	Q. douglasii	7	good	
647	Q. douglasii	6	good	
648	Q. douglasii	7	good	
649	Q. douglasii	6	fair	
650	Q. douglasii	5	fair	
651	Q. douglasii	6	fair	
652	Q. douglasii	6	good	
653	Q. douglasii	10	fair	
654	Q. douglasii	7	good	
655	Q. douglasii	6	fair	
656	Q. douglasii	7	good	
657	Q. douglasii	9	good	
658	Q. douglasii	6	fair	
659	Q. douglasii	10	good	
660	Q. douglasii	10	good	
661	Q. douglasii	5	good	
662	Q. douglasii	8	poor	
663	Q. douglasii	6	Good	
664	Q. douglasii	7	Poor	
665	Q. douglasii	7	Fair	
666	Q. douglasii	5	Good	
667	Q. douglasii	5	Good	
668	Q. douglasii	7	Good	

669	Q. douglasii	7	Good	
670	Q. douglasii	10	Fair	
671	Q. douglasii	5	Good	
672	Q. douglasii	6	Good	
673	Q. douglasii	9	Fair	
674	Q. douglasii	7	Good	
675	Q. douglasii	6	Fair	
676	Q. douglasii	7	Good	
677	Q. douglasii	7	Good	
678	Q. douglasii	8	Good	
679	Q. douglasii	7	Good	
680	Q. douglasii	5	Good	
681	Q. douglasii	7	Good	
682	Q. douglasii	8	Good	
683	Q. douglasii	7	Good	
684	Q. douglasii	6	Good	
685	Q. douglasii	5	Good	
686	Q. douglasii	5	Fair	
687	Q. douglasii	5	Good	
688	Q. douglasii	19	Fair	
689	Q. douglasii	9	Good	
690	Q. douglasii	5	Good	
691	Q. douglasii	8	Good	
692	Q. douglasii	5	Good	
693	Q. douglasii	7	Good	
694	Q. douglasii	5	Good	
695	Q. douglasii	6	Good	
696	Q. douglasii	6	Fair	
697	Q. douglasii	8	Good	
698	Q. douglasii	16	Good	forks 2ft
699	Q. douglasii	6	Fair	
700	Q. douglasii	10	Good	forks 2ft
701	Q. douglasii	5	Good	
702	Q. douglasii	11	Good	
703	Q. douglasii	7	Good	
704	Q. douglasii	6	Fair	
705	Q. douglasii	7	Good	
706	Q. douglasii	5	Good	
707	Q. douglasii	5	Good	
708	Q. douglasii	5	Fair	
709	Q. douglasii	10	Good	
710	Q. douglasii	10	Good	
711	Q. douglasii	7	Good	
712	Q. douglasii	6	Fair	
713	Q. douglasii	8	Good	
714	Q. douglasii	6	Fair	
715	Q. douglasii	8	Good	
716	Q. douglasii	5	Fair	

717	Q. douglasii	6	Good
718	Q. douglasii	7	Good
719	Q. douglasii	8	Good
720	Q. douglasii	6	Good
721	Q. douglasii	5	Fair
722	Q. douglasii	5	Good
723	Q. douglasii	6	Good
724	Q. douglasii	5	Good
725	Q. douglasii	5	Good
726	Q. douglasii	5	Good
727	Q. douglasii	7	Good
728	Q. douglasii	6	Good
729	Q. douglasii	5	Good
730	Q. douglasii	6	Fair
731	Q. douglasii	8	Good
732	Q. douglasii	6	Good
733	Q. douglasii	5	Good
734	Q. douglasii	7	Good
735	Q. douglasii	7	Good
736	Q. douglasii	5	Good
737	Q. douglasii	9	Good
738	Q. douglasii	6	Good
739	Q. douglasii	6	Good
740	Q. douglasii	9	Good
741	Q. douglasii	5	Good
742	Q. douglasii	8	Good
743	Q. douglasii	6	Good
744	Q. douglasii	7	Good
745	Q. douglasii	9	Good
746	Q. douglasii	8	Good
747	Q. douglasii	5	Good
748	Q. douglasii	6	Good
749	Q. douglasii	6	Good
750	Q. douglasii	7	Good
751	Q. douglasii	5	Good
752	Q. douglasii	5	Good
753	Q. douglasii	6	Good
754	Q. douglasii	6	Good
755	Q. douglasii	9	poor
756	Q. douglasii	8	Good
757	Q. douglasii	5	Fair
758	Q. douglasii	7	Fair
759	Q. douglasii	6	Fair
760	Q. douglasii	8	Good
761	Q. douglasii	6	Fair
762	Q. douglasii	7	Good
763	Q. douglasii	7	Good
764	Q. douglasii	10	Good

765	Q. douglasii	9	Good	
766	Q. douglasii	6	Fair	
767	Q. douglasii	7	Good	
768	Q. douglasii	6	Fair	
769	Q. douglasii	6	Fair	
770	Q. douglasii	7	Good	
771	Q. douglasii	7	Fair	
772	Q. douglasii	9	poor	
773	Q. douglasii	10	Good	
774	Q. douglasii	6	Good	
775	Q. douglasii	5	Good	
776	Q. douglasii	7	Fair	
777	Q. douglasii	9	Good	
778	Q. douglasii	11	Good	forks 3ft
779	Q. douglasii	7	Good	
780	Q. douglasii	5	Good	
781	Q. douglasii	5	Good	
782	Q. douglasii	9	Good	
783	Q. douglasii	5	Fair	
784	Q. douglasii	6	Fair	
785	Q. douglasii	11	Fair	broken top
786	Q. douglasii	17	Fair	
787	Q. douglasii	7	Good	
788	Q. douglasii	6	Good	
789	Q. douglasii	8	poor	
790	Q. douglasii	5	Good	
791	Q. douglasii	5	Fair	
792	Q. douglasii	6	Good	
793	Q. douglasii	8	Good	
794	Q. douglasii	5	Fair	
795	Q. douglasii	7	Fair	
796	Q. douglasii	9	Good	
797	Q. douglasii	5	Fair	
798	Q. douglasii	8	Good	
799	Q. douglasii	5	Good	
800	Q. douglasii	5	Fair	
801	Q. douglasii	8	Good	
802	Q. douglasii	5	Good	
803	Q. douglasii	6	Good	
804	Q. douglasii	5	Good	
805	Q. douglasii	6	Good	
806	Q. douglasii	8	Good	
807	Q. douglasii	5	Fair	
808	Q. douglasii	7	Good	
809	Q. douglasii	9	Good	
810	Q. douglasii	10	Good	
811	Q. douglasii	5	Good	
812	Q. douglasii	5	Fair	

813	Q. douglasii	5	Good	
814	Q. douglasii	5	Good	
815	Q. douglasii	8	Good	forks 3 ft
816	Q. douglasii	6	Good	
817	Q. douglasii	5	Good	
818	Q. douglasii	7	Good	
819	Q. douglasii	5	Fair	
820	Q. douglasii	7	Good	
821	Q. douglasii	8	Fair	
822	Q. douglasii	11	Fair	
823	Q. douglasii	8	Good	
824	Q. douglasii	7	Good	
825	Q. douglasii	5	Fair	
826	Q. douglasii	7	Good	
827	Q. douglasii	9	Good	
828	Q. douglasii	7	Fair	
829	Q. douglasii	7	Fair	
830	Q. douglasii	9	Good	
831	Q. douglasii	5	Good	
832	Q. douglasii	5	Good	
833	Q. douglasii	7	Good	
834	Q. douglasii	6	Good	
835	Q. douglasii	6	Good	
836	Q. douglasii	5	Good	
837	Q. douglasii	6	Good	
838	Q. douglasii	6	Fair	
839	Q. douglasii	5	Good	
840	Q. douglasii	5	Fair	
841	Q. douglasii	6	Good	
842	Q. douglasii	5	Good	
843	Q. douglasii	6	Good	
844	Q. douglasii	5	Fair	
845	Q. douglasii	6	Good	
846	Q. douglasii	6	Good	
847	Q. douglasii	6	Good	
848	Q. douglasii	5	Fair	
849	Q. douglasii	10	Good	
850	Q. douglasii	5	Fair	
851	Q. douglasii	7	Good	
852	Q. douglasii	5	Good	
853	Q. douglasii	8	Good	
854	Q. douglasii	7	Good	
855	Q. douglasii	7	Good	
856	Q. douglasii	6	Fair	
857	Q. douglasii	5	Good	
858	Q. douglasii	10	Good	
859	Q. douglasii	7	Good	
860	Q. douglasii	5	Fair	

861	Q. douglasii	5	Good	
862	Q. douglasii	6	Fair	
863	Q. douglasii	5	Good	
864	Q. douglasii	5	Good	
865	Q. douglasii	9	Good	
866	Q. douglasii	10	Good	
867	Q. douglasii	15	Fair	
868	Q. douglasii	5	Fair	
869	Q. douglasii	7	Good	
870	P. sabiniana	19	Good	
871	Q. douglasii	6	Fair	
872	Q. douglasii	6	Good	
873	P. sabiniana	12	Good	
874	Q. douglasii	9	Fair	
875	Q. douglasii	7	Good	
876	Q. douglasii	6	Good	
877	Q. douglasii	8	Good	
878	Q. douglasii	5	Good	
879	Q. douglasii	7	Good	
880	Q. douglasii	10	Good	forks 3 ft
881	Q. douglasii	10	Good	
882	Q. douglasii	5	Good	
883	Q. douglasii	7	Fair	
884	Q. douglasii	12	Good	forks dbh
885	Q. douglasii	5	Fair	
886	Q. douglasii	12	Good	forks 2ft
887	Q. douglasii	5	Good	
888	Q. douglasii	10	Good	
889	Q. douglasii	5	Good	
890	Q. douglasii	6	Good	
891	Q. douglasii	6	Good	
892	Q. douglasii	5	Fair	
893	Q. douglasii	5	Fair	
894	Q. douglasii	5	Good	
895	Q. douglasii	6	Good	
896	Q. douglasii	7	Good	
897	Q. douglasii	8	Good	
898	Q. douglasii	8	Good	
899	Q. douglasii	5	Fair	
900	Q. douglasii	7	Good	forks 3ft
901	Q. douglasii	8	Good	
902	Q. douglasii	5	Good	
903	Q. douglasii	6	Fair	
904	Q. douglasii	8	Fair	
905	Q. douglasii	9	Good	
906	Q. douglasii	10	Good	
907	Q. douglasii	5	Good	
908	Q. douglasii	6	Fair	

909	Q. douglasii	5	Fair	
910	Q. douglasii	9	Good	
911	Q. douglasii	10	Good	
912	Q. douglasii	7	Good	forks 2ft
913	Q. douglasii	5	Good	
914	Q. douglasii	6	Good	
915	Q. douglasii	11	Fair	some rot
916	Q. douglasii	5	Good	
917	Q. douglasii	6	Good	
918	Q. douglasii	20	poor	rotten
919	Q. douglasii	8	Good	
920	Q. douglasii	6	Good	
921	Q. douglasii	6	Fair	
922	Q. douglasii	5	Fair	
923	Q. douglasii	5	Good	
924	Q. douglasii	7	Good	
925	Q. douglasii	6	Good	
926	Q. douglasii	9	Good	
927	Q. douglasii	14	Good	
928	Q. douglasii	5	Fair	
929	P. sabiniana	10	Good	
930	Q. douglasii	8	Good	
931	Q. douglasii	9	Good	
932	Q. douglasii	20	Good	
933	Q. douglasii	14	Good	
934	Q. douglasii	9	Good	forks dbh
935	P. sabiniana	19	Good	
936	Q. douglasii	6	Good	
937	Q. douglasii	6	Fair	
938	Q. douglasii	5	Good	
939	Q. douglasii	9	Good	
940	Q. douglasii	8	Good	forks dbh
941	Q. douglasii	17	Good	
942	Q. douglasii	5	Good	
943	Q. douglasii	7	Fair	
944	Q. douglasii	13	Good	forks dbh
945	Q. kelloggii	14	Good	
946	Q. douglasii	10	Fair	
947	Q. douglasii	7	Good	
948	Q. douglasii	6	Fair	
949	Q. douglasii	8	Good	
950	P. sabiniana	28	Good	
951	Q. douglasii	7	Good	
952	Q. douglasii	5	Good	
953	Q. douglasii	6	Good	
954	Q. douglasii	5	Fair	
955	Q. douglasii	9	Good	
956	Q. douglasii	11	poor	rotten

957	Q. douglasii	6	Good	
958	P. sabiniana	11	Good	
959	P. sabiniana	18	Fair	
960	P. sabiniana	20	Good	
961	P. sabiniana	17	Fair	
962	Q. douglasii	9	Good	
963	Q. douglasii	9	Good	
964	Q. douglasii	5	Fair	
965	Q. douglasii	8	good	forks 4ft
966	Q. douglasii	10	Good	
967	Q. douglasii	9	Good	
968	Q. douglasii	15	Good	
969	Q. douglasii	12	Good	
970	Q. douglasii	5	Fair	
971	Q. douglasii	6	Fair	
972	Q. douglasii	6	Fair	
973	Q. douglasii	6	Fair	
974	Q. douglasii	15	Fair	
975	Q. douglasii	10	Fair	
976	Q. douglasii	11	Fair	
977	Q. douglasii	6	Good	
978	Q. douglasii	7	Fair	
979	Q. douglasii	7	Fair	
980	Q. douglasii	5	poor	
981	Q. douglasii	9	Good	
982	Q. douglasii	12	Good	
983	Q. douglasii	15	Good	
984	P. sabiniana	20	Fair	
985	Q. douglasii	6	poor	
986	Q. douglasii	6	Fair	
987	Q. douglasii	14	Good	forks 3ft
988	Q. douglasii	10	Good	
989	Q. douglasii	5	Fair	
990	Q. douglasii	8	Good	
991	Q. douglasii	7	Good	
992	Q. douglasii	12	Good	
993	Q. douglasii	5	Fair	
994	Q. douglasii	8	Fair	
995	Q. douglasii	6	Fair	
996	Q. douglasii	6	Fair	
997	Q. douglasii	8	Good	
998	Q. douglasii	6	Fair	
999	Q. douglasii	6	Fair	
1000	Q. douglasii	9	Fair	broken top
1002	Q. douglasii	5	fair	
1003	P. sabiniana	5	fair	
1004	P. sabiniana	9	good	
1005	P. sabiniana	11	good	

1006	Q. douglasii	5	fair	
1007	Q. douglasii	10	good	forks 3ft
1008	Q. douglasii	5	good	
1009	Q. douglasii	5	good	
1010	Q. douglasii	5	good	
1011	Q. douglasii	5	good	
1012	Q. douglasii	5	fair	forks 3ft
1013	Q. douglasii	5	good	
1014	Q. douglasii	5	fair	
1015	P. sabiniana	11	fair	
1016	P. sabiniana	16	good	
1017	P. sabiniana	12	good	
1018	Q. douglasii	11	good	
1019	Q. douglasii	5	good	
1020	P. sabiniana	9	good	
1021	Q. douglasii	5	good	
1022	P. sabiniana	9	good	
1023	P. sabiniana	13	fair	
1024	P. sabiniana	9	good	
1025	Q. douglasii	14	good	
1026	Q. douglasii	5	good	
1027	Q. douglasii	11	good	
1028	Q. douglasii	9	good	
1029	Q. douglasii	6	fair	
1030	Q. douglasii	6	good	
1031	Q. douglasii	13	good	
1032	Q. douglasii	10	good	
1033	Q. douglasii	10	good	
1034	Q. douglasii	7	good	
1035	Q. douglasii	5	fair	
1036	Q. douglasii	14	good	
1037	Q. douglasii	6	good	
1038	Q. douglasii	5	good	
1039	Q. douglasii	6	good	
1040	Q. douglasii	5	fair	
1041	Q. douglasii	7	good	
1042	Q. douglasii	5	fair	
1043	Q. douglasii	6	fair	
1044	Q. douglasii	7	good	
1045	Q. douglasii	8	good	
1046	Q. douglasii	8	good	
1047	Q. douglasii	5	good	
1048	Q. douglasii	7	good	
1049	Q. douglasii	5	fair	
1050	Q. douglasii	5	good	
1051	Q. douglasii	8	good	forks 3ft
1052	Q. douglasii	10	good	
1053	Q. douglasii	6	fair	

1054	Q. douglasii	12	good	
1055	Q. douglasii	7	fair	
1056	Q. douglasii	7	good	
1057	Q. douglasii	7	good	
1058	Q. douglasii	13	good	
1059	Q. douglasii	6	good	
1060	Q. douglasii	11	good	forks at dbh
1061	Q. douglasii	9	fair	
1062	Q. douglasii	13	good	
1063	Q. douglasii	7	poor	
1064	Q. douglasii	10	good	
1065	Q. douglasii	6	fair	
1066	Q. douglasii	9	good	
1067	Q. douglasii	7	good	
1068	Q. douglasii	12	good	
1069	Q. douglasii	7	fair	
1070	Q. douglasii	6	fair	
1071	Q. douglasii	5	fair	
1072	Q. douglasii	12	good	
1073	Q. douglasii	14	good	
1074	Q. douglasii	17	good	
1075	Q. douglasii	9	good	
1076	Q. douglasii	7	good	
1077	Q. douglasii	6	poor	
1078	Q. douglasii	18	good	
1079	Q. douglasii	5	fair	
1080	Q. douglasii	7	poor	
1081	Q. douglasii	8	good	
1082	Q. douglasii	6	fair	
1083	Q. douglasii	8	good	
1084	Q. douglasii	9	good	
1085	Q. douglasii	7	fair	
1086	Q. douglasii	8	fair	
1087	Q. douglasii	5	fair	
1088	Q. douglasii	7	fair	
1089	Q. douglasii	7	fair	
1090	Q. douglasii	6	fair	
1091	Q. douglasii	6	fair	
1092	Q. douglasii	5	fair	
1093	Q. douglasii	7	fair	
1094	Q. douglasii	7	fair	
1095	Q. douglasii	5	poor	
1096	Q. douglasii	5	poor	
1097	Q. douglasii	10	fair	
1098	Q. douglasii	7	fair	
1099	Q. douglasii	13	good	
1100	Q. douglasii	9	fair	
1101	Q. douglasii	18	Fair	Split at 3'

1102	Q. douglasii	17	Good	
1103	Q. douglasii	7	Poor	broken top
1104	Q. douglasii	6	Good	
1105	Q. douglasii	6	Good	
1106	Q. douglasii	7	Good	
1107	Q. douglasii	11	fair	woodpecker
1108	Q. douglasii	6	Fair	Split at 3'
1109	Q. douglasii	7	Good	
1110	P. sabiniana	12	Good	
1111	Q. douglasii	6	Fair	split at 1'
1112	Q. douglasii	5	Fair	split at 3'
1113	P. sabiniana	9	Fair	leaning
1114	Q. douglasii	6	Good	
1115	Q. douglasii	11	Good	
1116	Q. douglasii	10	Fair	split at 3'
1117	Q. douglasii	5	Fair	split base
1118	Q. douglasii	6	Good	split base
1119	Q. douglasii	6	Good	split base
1120	Q. douglasii	4	Fair	split base
1121	Q. douglasii	5	Good	
1122	Q. douglasii	6	Fair	split base
1123	Q. douglasii	5	Good	
1124	Q. douglasii	6	Fair	split base
1125	Q. douglasii	11	Good	
1126	Q. douglasii	5	Good	
1127	Q. douglasii	5	Good	
1128	Q. douglasii	4	Good	
1129	Q. douglasii	7	Good	
1130	Q. douglasii	6	Good	split base
1131	Q. douglasii	6	Fair	split at 2'
1132	Q. douglasii	7	Good	
1133	Q. douglasii	8	Good	
1134	Q. douglasii	4	Fair	split at 3'
1135	Q. douglasii	7	Good	
1136	Q. douglasii	11	Good	
1137	Q. douglasii	6	Fair	split base
1138	Q. douglasii	6	Fair	split base
1139	P. sabiniana	11	Good	
1140	Q. douglasii	5	Fair	split base
1141	Q. douglasii	7	Good	
1142	Q. douglasii	5	Good	split base
1143	Q. douglasii	5	Good	
1144	Q. douglasii	8	Good	
1145	Q. douglasii	7	Good	
1146	Q. douglasii	5	Good	
1147	Q. douglasii	4	Fair	split base
1148	Q. douglasii	5	Fair	split base
1149	Q. douglasii	5	Fair	split at 2'

1150	Q. douglasii	6	Good	
1151	Q. douglasii	6	Fair	split base
1152	Q. douglasii	15	Fair	split base
1153	Q. douglasii	5	Good	
1154	Q. douglasii	6	Good	
1155	Q. douglasii	4	Good	
1156	Q. douglasii	6	Fair	split base
1157	P. sabiniana	6	Good	
1158	Q. douglasii	9	Good	
1159	Q. douglasii	9	Good	
1160	Q. douglasii	4	Fair	
1161	Q. douglasii	5	Good	
1162	Q. douglasii	7	Good	split at dbh
1163	Q. douglasii	7	Good	
1164	Q. douglasii	6	Good	
1165	Q. douglasii	6	Good	
1166	Q. douglasii	14	Good	
1167	Q. douglasii	14	Good	
1168	Q. douglasii	5	Good	
1169	Q. douglasii	10	Fair	
1170	Q. douglasii	7	Good	
1171	Q. douglasii	12	Fair	split at dbh
1172	Q. douglasii	6	Good	
1173	Q. douglasii	7	Good	
1174	Q. douglasii	14	Good	
1175	Q. douglasii	4	Fair	leaning
1176	Q. douglasii	15	Good	
1177	Q. douglasii	8	Good	
1178	Q. douglasii	4	Good	
1179	Q. douglasii	6	Fair	split at 2'
1180	Q. douglasii	17	Good	
1181	Q. douglasii	13	Good	
1182	Q. douglasii	19	Good	
1183	Q. douglasii	6	Good	
1184	Q. douglasii	6	Good	
1185	Q. douglasii	16	Good	
1186	Q. douglasii	13	Good	split at dbh
1187	Q. douglasii	6	Fair	split base
1188	Q. douglasii	6	Fair	split base
1189	Q. douglasii	29	Poor	hollow
1190	P. sabiniana	7	Good	
1191	P. sabiniana	7	Good	
1192	Q. douglasii	5	Fair	split base
1193	Q. douglasii	12	Good	
1194	Q. douglasii	13	Good	
1195	Q. douglasii	11	Good	Split at 3'
1196	Q. douglasii	7	Fair	split base
1197	P. sabiniana	7	Good	

1198	Q. douglasii	6	Good	
1199	Q. douglasii	11	Good	
1200	Q. douglasii	13	Good	
1201	P. sabiniana	7	good	
1202	P. sabiniana	9	fair	
1203	Q. douglasii	8	good	
1204	Q. douglasii	10	good	
1205	Q. douglasii	7	fair	
1206	Q. douglasii	8	fair	forks at 3 ft.
1207	Q. douglasii	6	fair	
1208	Q. douglasii	8	good	
1209	P. sabiniana	10	good	
1210	Q. douglasii	10	good	
1211	Q. douglasii	8	good	
1212	Q. douglasii	7	fair	
1213	Q. douglasii	7	fair	
1214	Q. douglasii	9	fair	
1215	Q. douglasii	5	fair	
1216	Q. douglasii	5	fair	
1217	P. sabiniana	5	fair	
1218	Q. douglasii	12	good	
1219	Q. douglasii	8	fair	forks 3ft
1220	Q. douglasii	13	good	
1221	Q. douglasii	6	fair	
1222	Q. douglasii	8	good	
1223	Q. douglasii	9	good	
1224	Q. douglasii	15	good	
1225	Q. douglasii	6	fair	
1226	Q. douglasii	7	fair	
1227	Q. douglasii	6	fair	
1228	Q. douglasii	5	fair	
1229	Q. douglasii	7	fair	
1230	Q. douglasii	8	fair	
1231	Q. douglasii	6	fair	
1232	Q. douglasii	7	fair	
1233	Q. douglasii	17	good	
1234	Q. douglasii	5	fair	forks 4ft
1235	Q. douglasii	6	fair	forks 3ft
1236	Q. douglasii	5	fair	
1237	Q. douglasii	5	fair	
1238	Q. douglasii	5	fair	
1239	Q. douglasii	12	fair	
1240	Q. douglasii	5	fair	
1241	Q. douglasii	6	fair	
1242	Q. douglasii	5	fair	
1243	Q. douglasii	5	fair	
1244	Q. douglasii	5	fair	
1245	Q. douglasii	5	fair	

1246	Q. douglasii	6	fair	
1247	Q. douglasii	5	fair	
1248	Q. douglasii	5	fair	
1249	Q. douglasii	8	good	
1250	Q. douglasii	6	good	
1251	Q. douglasii	8	good	
1252	Q. douglasii	5	fair	
1253	Q. douglasii	6	good	
1254	Q. douglasii	5	good	
1255	Q. douglasii	5	good	
1256	Q. douglasii	5	good	
1257	Q. douglasii	5	fair	
1258	Q. douglasii	5	fair	
1259	Q. douglasii	14	fair	
1260	Q. douglasii	7	fair	
1261	Q. douglasii	6	fair	
1262	Q. douglasii	8	good	
1263	Q. douglasii	5	fair	
1264	Q. douglasii	6	good	
1265	Q. douglasii	6	good	
1266	Q. douglasii	5	good	
1267	Q. douglasii	5	fair	
1268	Q. douglasii	5	fair	
1269	Q. douglasii	14	good	
1270	Q. douglasii	6	good	
1271	Q. douglasii	5	fair	
1272	Q. douglasii	6	fair	
1273	Q. douglasii	6	fair	
1274	Q. douglasii	8	fair	
1275	Q. douglasii	5	fair	
1276	Q. douglasii	15	good	forks at 3ft
1277	Q. douglasii	8	good	
1278	Q. douglasii	5	fair	
1279	Q. douglasii	6	good	
1280	Q. douglasii	6	good	
1281	Q. douglasii	5	good	
1282	Q. douglasii	6	good	
1283	Q. douglasii	11	good	
1284	Q. douglasii	6	good	
1285	Q. douglasii	11	good	
1286	Q. douglasii	5	good	
1287	Q. douglasii	5	good	
1288	Q. douglasii	5	good	
1289	Q. douglasii	6	good	
1290	Q. douglasii	5	fair	
1291	Q. douglasii	9	good	
1292	Q. douglasii	6	good	
1293	Q. douglasii	6	good	

1294	Q. douglasii	5	good	
1295	Q. douglasii	9	good	
1296	Q. douglasii	5	fair	
1297	Q. douglasii	5	good	
1298	Q. douglasii	5	good	
1299	Q. douglasii	5	good	
1300	Q. douglasii	5	good	
1302	Q. douglasii	8	good	forks 3 ft
1303	Q. douglasii	7	fair	
1304	Q. douglasii	11	good	
1305	Q. douglasii	10	good	
1306	Q. douglasii	11	good	
1307	Q. douglasii	5	fair	
1308	Q. douglasii	5	fair	
1309	Q. douglasii	11	good	forks dbh
1310	Q. douglasii	5	good	
1311	Q. douglasii	5	good	
1312	Q. douglasii	13	fair	woodpecker
1313	Q. douglasii	6	fair	
1314	Q. douglasii	6	good	
1315	Q. douglasii	8	good	
1316	Q. douglasii	5	fair	
1317	Q. douglasii	6	fair	
1318	Q. douglasii	6	good	
1319	Q. douglasii	9	good	
1320	Q. douglasii	7	good	
1321	Q. douglasii	7	fair	
1322	P. sabiniana	9	fair	forks dbh
1323	Q. douglasii	7	good	
1324	Q. douglasii	6	good	
1325	Q. douglasii	9	good	
1326	Q. douglasii	10	good	
1327	Q. douglasii	5	good	
1328	Q. douglasii	17	good	
1329	Q. douglasii	5	fair	
1330	Q. douglasii	5	good	
1331	Q. douglasii	7	good	
1332	Q. douglasii	7	good	forks 3ft
1333	Q. douglasii	12	good	
1334	Q. douglasii	5	fair	
1335	Q. douglasii	10	good	mistletoe
1336	Q. douglasii	21	fair	
1337	P. sabiniana	32	fair	
1338	Q. douglasii	10	fair	
1339	Q. douglasii	5	fair	
1340	Q. douglasii	7	fair	
1341	Q. douglasii	6	fair	
1342	Q. douglasii	5	fair	

1343	Q. douglasii	5	fair	
1344	Q. douglasii	14	good	
1345	Q. douglasii	5	good	
1346	Q. douglasii	5	fair	
1347	Q. douglasii	5	fair	
1348	Q. douglasii	13	good	
1349	Q. douglasii	12	good	
1350	Q. douglasii	5	good	
1351	Q. douglasii	5	good	
1352	P. sabiniana	35	fair	
1353	Q. douglasii	13	good	
1354	Q. douglasii	5	Fair	
1355	Q. douglasii	14	Good	
1356	Q. douglasii	8	Good	
1357	Q. douglasii	10	Good	
1358	Q. douglasii	9	Good	
1359	Q. douglasii	5	Fair	
1360	Q. douglasii	12	Good	
1361	Q. douglasii	9	Good	
1362	Q. douglasii	10	Fair	
1363	Q. douglasii	10	Fair	
1364	Q. douglasii	8	Good	
1365	Q. douglasii	7	Fair	
1366	Q. douglasii	6	Fair	
1367	Q. douglasii	12	Good	
1368	Q. douglasii	13	Good	
1369	Q. douglasii	9	Good	
1370	Q. douglasii	5	Fair	
1371	Q. douglasii	10	Fair	
1372	A. californica	5	Fair	
1373	A. californica	5	Fair	
1374	Q. douglasii	11	Good	
1375	Q. douglasii	13	Poor	Rotten trunk
1376	P. sabiniana	9	Good	
1377	Q. douglasii	10	Fair	Rotten trunk
1378	Q. douglasii	13	Good	
1379	Q. douglasii	7	Poor	Rotten trunk
1380	Q. douglasii	6	Fair	
1381	Q. douglasii	6	Fair	
1382	Q. douglasii	8	Fair	
1383	Q. douglasii	8	Good	
1384	Q. douglasii	8	Good	
1385	Q. douglasii	11	Good	split at 3'
1386	Q. douglasii	7	Good	
1387	Q. douglasii	9	Good	
1388	Q. douglasii	12	Good	
1389	Q. douglasii	9	Good	
1390	Q. douglasii	8	Good	

1391	Q. douglasii	5	Fair	
1392	Q. douglasii	6	Fair	
1393	Q. douglasii	11	Good	
1394	Q. douglasii	9	Good	
1395	Q. douglasii	14	Good	
1396	Q. douglasii	10	Good	
1397	Q. douglasii	6	Fair	
1398	Q. douglasii	7	Good	
1399	Q. douglasii	8	Good	
1400	Q. douglasii	10	Good	
1401	Q. douglasii	7	Good	
1402	P. sabiniana	7	Good	
1403	Q. douglasii	13	Fair	split at 1'
1404	Q. douglasii	7	Good	
1405	Q. douglasii	8	Good	
1406	Q. douglasii	5	Good	
1407	Q. douglasii	5	Fair	split base
1408	Q. douglasii	11	Good	
1409	Q. douglasii	14	Good	split at 3'
1410	Q. douglasii	12	Fair	split at 2'
1411	Q. douglasii	13	Good	
1412	Q. douglasii	6	Fair	split base
1413	Q. douglasii	5	Good	
1414	Q. douglasii	4	Fair	split base
1415	Q. douglasii	16	Good	
1416	Q. douglasii	4	Good	
1417	Q. douglasii	12	Good	mistletoe
1418	Q. douglasii	9	Good	
1419	Q. douglasii	11	Fair	crown bend
1420	A. californica	11	Good	
1421	Q. douglasii	10	Good	
1422	Q. douglasii	12	Good	
1423	A. californica	5	Good	split base
1424	Q. douglasii	5	Good	
1425	Q. douglasii	13	Good	
1426	Q. douglasii	11	Fair	leaning
1427	Q. douglasii	14	Good	mistletoe
1428	Q. douglasii	6	Good	
1429	A. californica	12	Good	
1430	A. californica	4	Good	
1431	Q. douglasii	13	Good	
1432	Q. douglasii	8	Good	
1433	A. californica	17	Good	split base
1434	A. californica	14	Fair	leaning
1435	Q. douglasii	11	Fair	leaning
1436	Q. douglasii	14	Good	split at dbh
1437	Q. douglasii	12	Good	
1438	Q. douglasii	13	Good	

1439	Q. douglasii	6	Good	
1440	Q. douglasii	6	Good	
1441	Q. douglasii	6	Good	
1442	Q. douglasii	12	Good	split base
1443	A. californica	6	Good	split base
1444	Q. douglasii	9	Good	
1445	Q. douglasii	10	Good	
1446	Q. douglasii	13	Good	
1447	Q. douglasii	9	Good	
1448	Q. douglasii	10	Good	
1449	Q. douglasii	9	Good	
1450	Q. douglasii	9	Good	
1451	Q. douglasii	10	Good	
1452	Q. douglasii	9	Good	
1453	Q. douglasii	9	Good	split at dbh
1454	Q. douglasii	7	Good	
1455	Q. douglasii	11	Good	
1456	Q. douglasii	6	Good	
1457	Q. douglasii	8	Good	
1458	Q. douglasii	8	Good	
1459	Q. douglasii	9	Good	
1460	Q. douglasii	13	Good	
1461	Q. douglasii	7	Good	
1462	Q. douglasii	6	Fair	split base
1463	Q. douglasii	7	Good	
1464	Q. douglasii	7	Good	
1465	Q. douglasii	7	Good	
1466	Q. douglasii	6	Good	
1467	Q. douglasii	7	Good	
1468	Q. douglasii	7	Good	
1469	Q. douglasii	7	Good	
1470	Q. douglasii	7	Fair	split base
1471	Q. douglasii	9	Good	
1472	Q. douglasii	8	Fair	split base
1473	Q. douglasii	10	Good	
1474	Q. douglasii	9	Good	
1475	Q. douglasii	12	Good	
1476	Q. douglasii	7	Good	
1477	Q. douglasii	11	Fair	split base
1478	Q. douglasii	6	Fair	split at 3'
1479	Q. douglasii	7	Good	
1480	Q. douglasii	8	Good	
1481	Q. douglasii	5	Good	
1482	Q. douglasii	7	Fair	split at dbh
1483	Q. douglasii	8	Poor	split base
1484	Q. douglasii	6	Fair	split base
1485	Q. douglasii	6	Fair	split base
1486	Q. douglasii	6	Fair	split base

1487	Q. douglasii	6	Poor	split at dbh
1488	Q. douglasii	10	Good	
1489	Q. douglasii	5	Good	
1490	Q. douglasii	7	Fair	split base
1491	Q. douglasii	9	Good	
1492	Q. douglasii	9	Good	
1493	Q. douglasii	11	Good	
1494	Q. douglasii	9	Good	
1495	Q. douglasii	7	Fair	split at 3'
1496	Q. douglasii	7	Fair	split at 3'
1497	Q. douglasii	8	Good	
1498	Q. douglasii	6	Good	
1499	Q. douglasii	6	Good	
1500	Q. douglasii	9	Poor	rotten
1501	Q. douglasii	8	Good	
1502	Q. douglasii	8	Good	
1503	Q. douglasii	12	Good	
1504	Q. douglasii	12	Good	
1505	Q. douglasii	11	Good	
1506	Q. douglasii	6	Fair	
1507	Q. douglasii	11	Good	
1508	A. californica	5	Fair	
1509	A. californica	6	Fair	
1510	Q. douglasii	11	Fair	
1511	Q. douglasii	13	Good	
1512	Q. douglasii	5	Good	
1513	Q. douglasii	9	Good	
1514	Q. douglasii	11	Good	
1515	Q. douglasii	12	Good	
1516	Q. douglasii	10	Good	
1517	Q. douglasii	6	Good	
1518	Q. douglasii	12	Good	
1519	Q. douglasii	8	Good	
1520	Q. douglasii	14	Good	
1521	Q. douglasii	16	Good	
1522	Q. kelloggii	22	Fair	hollow base
1523	Q. douglasii	13	Good	
1524	Q. douglasii	9	Good	
1525	Q. douglasii	5	Fair	
1526	Q. douglasii	9	Fair	
1527	Q. douglasii	9	Good	
1528	Q. douglasii	6	Fair	
1529	Q. douglasii	9	Good	
1530	Q. douglasii	15	Poor	Base Rot
1531	Q. douglasii	13	Good	
1532	Q. douglasii	9	Good	
1533	Q. douglasii	10	Poor	Dead top
1534	Q. douglasii	11	Fair	

1535	Q. douglasii	8	Fair	
1536	Q. douglasii	7	Good	
1537	Q. douglasii	6	Good	
1538	Q. douglasii	10	Good	
1539	Q. douglasii	20	Poor	rotten
1540	Q. douglasii	5	Fair	
1541	A. californica	7	Poor	Base Rot
1542	A. californica	8	Poor	dead limbs
1543	Q. douglasii	5	Fair	
1544	Q. douglasii	6	Fair	
1545	Q. douglasii	14	Fair	
1546	Q. douglasii	5	Fair	
1547	Q. douglasii	13	Poor	
1548	Q. douglasii	13	Good	
1549	Q. douglasii	11	Good	
1550	Q. douglasii	8	Fair	
1551	Q. douglasii	5	Fair	
1552	Q. douglasii	11	Good	
1553	Q. douglasii	12	Fair	
1554	Q. douglasii	6	Poor	Dead top
1555	Q. douglasii	9	Good	
1556	Q. douglasii	11	Poor	leaning
1557	Q. douglasii	6	Fair	
1558	Q. douglasii	6	Fair	
1559	Q. douglasii	7	Fair	
1560	Q. douglasii	5	Good	
1561	Q. douglasii	13	Good	
1562	Q. douglasii	11	Fair	
1563	Q. douglasii	9	Fair	
1564	Q. douglasii	13	Fair	
1565	Q. douglasii	11	Good	
1566	Q. douglasii	12	Good	
1567	Q. douglasii	8	Poor	Base Rot
1568	Q. douglasii	9	Fair	
1569	Q. douglasii	10	Poor	Dead top
1570	Q. douglasii	14	Fair	Forks at DBH
1571	Q. douglasii	6	Poor	Dead top
1572	Q. douglasii	9	Fair	
1573	Q. douglasii	12	Good	
1574	Q. douglasii	5	Poor	suppressed
1575	Q. douglasii	8	Fair	
1576	Q. douglasii	5	Fair	
1577	Q. douglasii	7	Fair	
1578	Q. douglasii	5	Poor	suppressed
1579	Q. douglasii	8	Poor	dead limbs
1580	Q. douglasii	6	Poor	suppressed
1581	Q. douglasii	17	Fair	
1582	Q. douglasii	9	Fair	

1583	Q. douglasii	13	Good	
1584	Q. douglasii	12	Good	
1585	Q. douglasii	14	Poor	dead limbs
1586	Q. douglasii	10	Poor	dead limbs
1587	Q. douglasii	5	Fair	
1588	Q. douglasii	14	Fair	
1589	Q. douglasii	14	Good	
1590	Q. douglasii	9	Fair	
1591	Q. douglasii	7	Fair	
1592	Q. douglasii	6	Poor	Rotten trunk
1593	Q. douglasii	9	Good	
1594	Q. douglasii	8	Fair	
1595	Q. douglasii	8	Fair	
1596	Q. douglasii	9	Fair	
1597	Q. douglasii	8	Fair	
1598	Q. douglasii	5	Fair	
1599	Q. douglasii	9	Fair	
1600	Q. douglasii	7	Fair	
1601	Q. douglasii	6	Good	
1602	Q. douglasii	7	Good	
1603	Q. douglasii	7	Good	
1604	Q. douglasii	7	Good	
1605	Q. douglasii	9	Poor	rotten
1606	Q. douglasii	12	Good	
1607	P. sabiniana	10	Good	
1608	Q. douglasii	7	Good	split base
1609	Q. douglasii	11	Good	
1610	Q. douglasii	9	Good	
1611	Q. douglasii	7	Good	
1612	Q. douglasii	9	Poor	split base
1613	P. sabiniana	35	Good	
1614	Q. douglasii	10	Fair	split base
1615	Q. douglasii	6	Good	
1616	Q. douglasii	6	Good	
1617	Q. douglasii	10	Good	
1618	Q. douglasii	7	Good	
1619	Q. douglasii	8	Good	
1620	Q. douglasii	6	Good	
1621	Q. douglasii	7	Good	
1622	Q. douglasii	7	Fair	leaning
1623	Q. douglasii	6	Good	
1624	Q. douglasii	9	Good	
1625	Q. douglasii	9	Fair	split at 2'
1626	Q. douglasii	8	Good	By stream
1627	Q. douglasii	7	Fair	split base
1628	Q. douglasii	7	Fair	split base
1630	Q. douglasii	5	Fair	split at 1'
1631	Q. douglasii	7	Fair	split base

1632	Q. douglasii	8	Good	
1633	Q. douglasii	7	Good	
1634	Q. douglasii	7	Poor	rotten
1635	Q. douglasii	7	Good	
1636	Q. douglasii	9	Good	
1637	Q. douglasii	5	Fair	split base
1638	Q. douglasii	9	Good	
1639	Q. douglasii	6	Good	
1640	Q. douglasii	7	Good	split base
1641	Q. douglasii	8	Good	split base
1642	Q. douglasii	8	Good	
1643	Q. douglasii	5	Good	
1644	Q. douglasii	14	Fair	split at 3'
1645	Q. douglasii	7	Good	
1646	Q. douglasii	13	Good	
1647	Q. douglasii	5	Fair	split base
1648	Q. douglasii	8	Good	
1649	Q. douglasii	7	Fair	split base
1650	Q. douglasii	7	Good	
1651	Q. douglasii	7	Good	
1652	Q. douglasii	9	Fair	leaning
1653	Q. douglasii	7	Fair	split base
1654	Q. douglasii	7	Good	
1655	Q. douglasii	8	Good	
1656	Q. douglasii	7	Good	
1657	Q. douglasii	8	Fair	split base
1658	Q. douglasii	8	Good	
1659	Q. douglasii	8	Good	split base
1660	Q. douglasii	7	Good	split base
1661	Q. douglasii	6	Good	
1662	Q. douglasii	8	Fair	split base
1663	Q. douglasii	6	Good	split base
1664	Q. douglasii	7	Good	split base
1665	Q. douglasii	8	Good	
1666	Q. douglasii	7	Good	
1667	Q. douglasii	12	Good	
1668	Q. douglasii	6	Fair	split at 3'
1669	Q. douglasii	6	Good	split at 3'
1670	Q. douglasii	11	Good	By stream
1671	Q. douglasii	6	Fair	split base
1672	Q. douglasii	7	Fair	split base
1673	Q. douglasii	7	Good	
1674	Q. douglasii	9	Good	
1675	Q. douglasii	7	Good	
1676	Q. douglasii	7	Good	split base
1677	Q. douglasii	9	Good	
1678	Q. douglasii	7	Good	
1679	Q. douglasii	13	Good	

1680	Q. douglasii	8	Good	split base
1681	Q. douglasii	9	Good	split at 3'
1682	Q. douglasii	9	Good	
1683	Q. douglasii	7	Good	split at 1'
1684	Q. douglasii	12	Good	
1685	Q. douglasii	11	Good	
1686	Q. douglasii	8	Good	
1687	Q. douglasii	7	Good	
1688	Q. kelloggii	37	Good	
1689	Q. douglasii	9	Good	split at 2'
1690	Q. douglasii	8	Good	
1691	Q. douglasii	7	Good	
1692	Q. douglasii	14	Good	
1693	Q. douglasii	9	Good	split at 3'
1694	Q. douglasii	10	Fair	split base
1695	Q. douglasii	8	Good	split 2'
1696	Q. douglasii	7	Good	
1697	Q. douglasii	7	Good	
1698	Q. douglasii	9	Good	
1699	P. sabiniana	7	Good	
1700	Q. kelloggii	14	Poor	rotten
1701	Q. douglasii	5	good	
1702	Q. douglasii	6	fair	
1703	Q. douglasii	5	poor	
1704	Q. douglasii	6	poor	
1705	Q. douglasii	13	fair	
1706	Q. douglasii	8	good	
1707	Q. douglasii	6	fair	
1708	Q. douglasii	7	fair	
1709	Q. douglasii	5	fair	
1710	Q. douglasii	7	poor	
1711	Q. douglasii	8	poor	forks dbh
1712	Q. douglasii	6	poor	
1713	Q. douglasii	8	poor	dead top
1714	Q. douglasii	7	fair	
1715	Q. douglasii	6	fair	
1716	Q. douglasii	6	fair	
1717	Q. douglasii	8	good	
1718	Q. douglasii	7	fair	
1719	Q. douglasii	9	poor	
1720	Q. douglasii	8	poor	
1721	Q. douglasii	6	poor	
1722	Q. douglasii	6	poor	
1723	Q. douglasii	7	poor	
1724	Q. douglasii	10	fair	
1725	Q. douglasii	7	good	
1726	Q. douglasii	5	fair	
1727	Q. douglasii	16	fair	

1728	Q. douglasii	8	good	
1729	Q. douglasii	11	good	
1730	Q. douglasii	6	fair	
1731	Q. douglasii	14	fair	
1732	Q. douglasii	8	fair	
1733	Q. douglasii	6	fair	
1734	Q. douglasii	6	fair	
1735	Q. douglasii	11	good	
1736	Q. douglasii	5	fair	
1737	Q. douglasii	6	fair	
1738	Q. douglasii	6	fair	
1739	Q. douglasii	6	fair	
1740	Q. douglasii	7	poor	rotten
1741	Q. douglasii	9	poor	hollow trunk
1742	Q. douglasii	9	fair	
1743	Q. douglasii	7	fair	
1744	Q. douglasii	6	fair	
1745	Q. douglasii	5	fair	
1746	Q. douglasii	5	fair	
1747	Q. douglasii	5	fair	
1748	Q. douglasii	8	fair	
1749	Q. douglasii	9	good	
1750	Q. douglasii	5	good	
1751	Q. douglasii	14	good	
1752	Q. douglasii	7	fair	
1753	Q. douglasii	17	fair	
1754	Q. douglasii	9	poor	rotten
1755	Q. douglasii	5	fair	
1756	Q. douglasii	6	fair	
1757	Q. douglasii	8	fair	
1758	Q. douglasii	7	fair	
1759	Q. douglasii	8	good	
1760	Q. douglasii	5	fair	
1761	Q. douglasii	8	fair	
1762	Q. douglasii	12	fair	
1763	Q. douglasii	6	fair	
1764	Q. douglasii	7	good	
1765	Q. douglasii	13	poor	
1766	Q. douglasii	7	poor	
1767	Q. douglasii	9	fair	
1768	Q. douglasii	16	good	
1769	Q. douglasii	9	good	
1770	Q. douglasii	5	good	
1771	Q. douglasii	15	good	
1772	Q. douglasii	11	good	
1773	Q. douglasii	7	good	
1774	Q. douglasii	6	good	
1775	Q. douglasii	21	poor	rotten

1776	Q. douglasii	7	fair	
1777	Q. douglasii	5	poor	
1778	Q. douglasii	8	poor	
1779	Q. douglasii	6	fair	
1780	Q. douglasii	21	good	
1781	Q. douglasii	8	good	
1782	Q. douglasii	9	good	
1783	Q. douglasii	10	fair	
1784	Q. douglasii	7	good	
1785	Q. douglasii	10	fair	
1786	Q. douglasii	7	good	
1787	Q. douglasii	12	fair	forks dbh
1788	Q. douglasii	5	fair	
1789	Q. douglasii	7	fair	
1790	Q. douglasii	5	fair	
1791	Q. douglasii	9	good	
1792	Q. douglasii	6	fair	
1793	Q. douglasii	8	fair	
1794	Q. douglasii	14	good	
1795	Q. douglasii	9	good	
1796	Q. douglasii	11	good	
1797	Q. douglasii	6	good	
1798	Q. douglasii	9	good	
1799	Q. douglasii	8	good	
1800	Q. douglasii	9	good	
1801	Q. douglasii	11	Good	
1802	Q. douglasii	7	Good	
1803	Q. douglasii	7	Fair	split at 3'
1804	Q. douglasii	9	Poor	Rot at top
1805	Q. douglasii	7	Good	
1806	Q. douglasii	6	Good	
1807	Q. douglasii	7	Good	
1808	Q. douglasii	10	Good	
1809	Q. douglasii	6	Good	
1810	Q. douglasii	6	Poor	rotten
1811	Q. douglasii	7	Good	split base
1812	Q. douglasii	9	Good	
1813	Q. douglasii	9	Good	
1814	Q. douglasii	7	Good	
1815	Q. douglasii	6	Good	
1816	Q. douglasii	10	Good	
1817	Q. douglasii	7	Good	
1818	Q. douglasii	9	Good	
1819	Q. douglasii	10	Fair	split at 3'
1820	Q. douglasii	7	Fair	Base Rot
1821	Q. douglasii	6	Good	
1822	Q. douglasii	9	Fair	split at 1'
1823	Q. douglasii	9	Good	

1824	Q. douglasii	12	Good	
1825	Q. douglasii	10	Good	
1826	Q. douglasii	8	Fair	split at 1'
1827	Q. douglasii	7	Good	
1828	Q. douglasii	5	Good	
1829	Q. douglasii	11	Good	
1830	Q. douglasii	5	Fair	leaning
1831	Q. douglasii	9	Fair	
1832	Q. douglasii	6	Good	
1833	Q. douglasii	6	Good	
1834	Q. douglasii	9	Good	
1835	Q. douglasii	7	Good	
1836	Q. douglasii	11	Good	
1837	Q. douglasii	11	Good	
1838	Q. douglasii	12	Good	
1839	Q. douglasii	6	Good	
1840	Q. douglasii	9	Good	
1841	Q. douglasii	6	Good	
1842	Q. douglasii	7	Good	
1843	Q. douglasii	6	Fair	leaning
1844	Q. douglasii	7	Good	
1845	Q. douglasii	7	Fair	leaning
1846	Q. douglasii	10	Good	
1847	Q. douglasii	11	Good	
1848	Q. douglasii	6	Good	
1849	Q. douglasii	7	Fair	split at 2'
1850	Q. douglasii	6	Good	
1851	Q. douglasii	8	Good	
1852	Q. douglasii	14	Good	
1853	Q. douglasii	9	Fair	split at 3'
1854	Q. douglasii	7	Good	
1855	Q. douglasii	7	Good	
1856	Q. douglasii	8	Good	
1857	Q. douglasii	7	Fair	split at 2'
1858	Q. douglasii	7	Good	
1859	Q. douglasii	9	Fair	split at 1'
1860	Q. douglasii	6	Good	
1861	Q. douglasii	6	Good	
1862	Q. douglasii	7	Good	
1863	Q. douglasii	10	Fair	rotten
1864	Q. douglasii	6	Fair	split at 3'
1865	Q. douglasii	8	Good	
1866	Q. douglasii	7	Good	
1867	Q. douglasii	7	Good	
1868	Q. douglasii	7	Fair	leaning
1869	Q. douglasii	7	Good	
1870	Q. douglasii	5	Good	
1871	Q. douglasii	7	Fair	split base

1872	Q. douglasii	7	Good	
1873	Q. douglasii	8	Good	
1874	Q. douglasii	9	Poor	Base Rot
1875	Q. douglasii	7	Good	
1876	Q. douglasii	12	Good	
1877	Q. douglasii	7	Good	
1878	Q. douglasii	12	Good	
1879	Q. douglasii	12	Good	
1880	Q. douglasii	14	Good	
1881	Q. douglasii	15	Good	
1882	Q. douglasii	6	Good	
1883	Q. douglasii	4	Good	
1884	Q. douglasii	6	Good	
1885	Q. douglasii	6	Good	
1886	Q. douglasii	4	Fair	split base
1887	Q. douglasii	5	Fair	split base
1888	Q. douglasii	12	Fair	split at 2'
1889	Q. douglasii	12	Good	
1890	Q. douglasii	9	Good	
1891	Q. douglasii	7	Good	
1892	Q. douglasii	6	Good	
1893	Q. douglasii	8	Fair	leaning
1894	Q. douglasii	11	Fair	rotten
1895	Q. douglasii	9	Good	
1896	Q. douglasii	7	Good	
1897	Q. douglasii	9	Good	
1898	Q. douglasii	14	Good	
1899	Q. douglasii	5	Fair	split base
1900	Q. douglasii	9	Good	
1901	Q. douglasii	5	fair	
1902	Q. douglasii	5	fair	
1903	Q. douglasii	7	good	
1904	Q. douglasii	6	good	
1905	Q. douglasii	6	good	
1906	Q. douglasii	6	fair	
1907	Q. douglasii	7	fair	
1908	Q. douglasii	9	poor	
1909	Q. douglasii	8	fair	
1910	Q. douglasii	7	fair	
1911	Q. douglasii	7	good	
1912	Q. douglasii	6	fair	
1913	Q. douglasii	5	fair	
1914	Q. douglasii	5	poor	
1915	Q. douglasii	9	fair	
1916	Q. douglasii	7	fair	hollow trunk
1917	Q. douglasii	11	good	
1918	Q. douglasii	9	fair	
1919	Q. douglasii	16	good	

1920	Q. douglasii	14	good
1921	Q. douglasii	5	fair
1922	Q. douglasii	12	good
1923	Q. douglasii	5	good
1924	Q. douglasii	10	fair
1925	Q. douglasii	9	good
1926	Q. douglasii	7	good
1927	Q. douglasii	5	fair
1928	Q. douglasii	7	good
1929	Q. douglasii	8	good
1930	Q. douglasii	6	good
1931	Q. douglasii	9	fair
1932	Q. douglasii	9	good
1933	Q. douglasii	7	good
1934	Q. douglasii	12	fair
1935	Q. douglasii	7	good
1936	Q. douglasii	6	fair
1937	Q. douglasii	5	fair
1938	Q. douglasii	5	good
1939	Q. douglasii	5	fair
1940	Q. douglasii	7	good
1941	Q. douglasii	10	good
1942	Q. douglasii	9	good
1943	Q. douglasii	7	good
1944	Q. douglasii	6	fair
1945	Q. douglasii	5	good
1946	Q. douglasii	5	good
1947	Q. douglasii	7	good
1948	Q. douglasii	8	good
1949	Q. douglasii	6	good
1950	Q. douglasii	8	good
1951	Q. douglasii	5	fair
1952	Q. douglasii	6	good
1953	Q. douglasii	7	fair
1954	Q. douglasii	7	good
1955	Q. douglasii	9	good
1956	Q. douglasii	8	poor
1957	Q. douglasii	6	poor
1958	Q. douglasii	6	good
1959	Q. douglasii	5	poor
1960	Q. douglasii	7	good
1961	Q. douglasii	5	fair
1962	Q. douglasii	6	good
1963	Q. douglasii	5	fair
1964	Q. douglasii	8	good
1965	Q. douglasii	8	fair
1966	Q. douglasii	6	fair
1967	Q. douglasii	5	good

1968	Q. douglasii	6	good	
1969	Q. douglasii	6	poor	
1970	Q. douglasii	5	fair	
1971	Q. douglasii	5	good	
1972	Q. douglasii	6	good	
1973	Q. douglasii	5	fair	
1974	Q. douglasii	6	good	
1975	Q. douglasii	7	good	
1976	Q. douglasii	7	poor	hollow base
1977	Q. douglasii	8	good	
1978	Q. douglasii	8	good	
1979	Q. douglasii	16	good	
1980	Q. douglasii	6	fair	
1981	Q. douglasii	10	poor	broken top
1982	Q. douglasii	8	good	
1983	Q. douglasii	14	good	
1984	Q. douglasii	25	good	forked dbh
1985	Q. douglasii	12	poor	
1986	Q. douglasii	9	good	
1987	Q. douglasii	11	good	
1988	Q. douglasii	5	good	
1989	Q. douglasii	28	Fair	Base Rot
1990	Q. douglasii	15	Good	
1991	Q. douglasii	7	Good	
1992	Q. douglasii	4	Fair	rotten
1993	Q. douglasii	11	Good	
1994	Q. douglasii	7	Good	
1995	Q. douglasii	9	Good	
1996	Q. douglasii	8	Fair	split base
1997	Q. douglasii	7	Fair	split base
1998	Q. douglasii	7	Fair	split base
1999	P. sabiniana	8	Fair	split base
2000	Q. douglasii	9	Fair	split at 3'
2001	Q. douglasii	11	Good	
2002	Q. douglasii	5	Good	
2003	Q. douglasii	10	Good	
2004	Q. douglasii	5	Good	
2005	Q. douglasii	9	Fair	
2006	Q. douglasii	10	Good	
2007	Q. douglasii	10	Good	
2008	Q. douglasii	6	Fair	
2009	P. sabiniana	7	poor	
2010	Q. douglasii	5	Good	
2011	Q. douglasii	9	Good	
2012	Q. douglasii	9	Good	
2013	Q. kelloggii	20	Good	forks dbh
2014	Q. douglasii	9	good	
2015	Q. douglasii	5	Fair	

2016	Q. douglasii	7	Fair	
2017	P. sabiniana	34	Fair	
2018	Q. douglasii	5	Good	
2019	P. sabiniana	36	Good	
2020	Q. douglasii	15	Good	
2021	Q. douglasii	8	Good	
2022	Q. douglasii	6	Fair	
2023	Q. douglasii	6	Fair	
2024	Q. douglasii	7	Fair	
2025	Q. douglasii	15	Good	forks dbh
2026	Q. douglasii	12	Good	
2027	Q. douglasii	10	Fair	
2028	Q. douglasii	14	Good	
2029	Q. douglasii	8	Fair	
2030	Q. douglasii	8	poor	
2031	Q. douglasii	9	Fair	
2032	Q. douglasii	12	Fair	
2033	Q. douglasii	12	Fair	
2034	Q. douglasii	17	Good	
2035	Q. douglasii	10	Good	
2036	Q. douglasii	6	Fair	
2037	Q. douglasii	9	Fair	
2038	Q. douglasii	9	Good	
2039	Q. douglasii	14	Good	
2040	Q. douglasii	9	Good	
2041	Q. douglasii	12	Good	
2042	Q. douglasii	9	Good	
2043	Q. douglasii	11	Good	mistletoe
2044	Q. douglasii	8	Fair	
2045	Q. douglasii	16	Good	
2046	Q. douglasii	12	Good	
2047	Q. douglasii	10	Good	
2048	Q. douglasii	13	Good	
2049	Q. douglasii	9	Good	
2050	Q. douglasii	14	Fair	poison oak
2051	Q. douglasii	8	Good	
2052	Q. douglasii	12	Good	
2053	Q. douglasii	13	Good	
2054	Q. douglasii	7	Fair	
2055	Q. kelloggii	10	Good	
2056	Q. kelloggii	9	Good	
2057	Q. kelloggii	11	Good	
2058	Q. douglasii	11	Good	
2059	Q. douglasii	13	Good	
2060	Q. kelloggii	16	Good	
2061	Q. douglasii	6	Good	
2062	Q. douglasii	15	Good	
2063	Q. douglasii	5	poor	

2064	Q. douglasii	20	good	
2065	Q. douglasii	6	Good	
2066	Q. douglasii	10	poor	woodpecker
2067	Q. douglasii	7	Fair	
2068	Q. douglasii	16	Good	
2069	Q. douglasii	18	Fair	
2070	Q. douglasii	8	Fair	
2071	Q. douglasii	10	Good	
2072	Q. douglasii	14	Good	forks 2ft
2073	Q. douglasii	10	poor	poison oak
2074	Q. douglasii	13	Fair	
2075	P. sabiniana	8	Fair	
2076	Q. douglasii	7	Fair	
2077	Q. douglasii	13	Good	
2078	Q. douglasii	10	Good	
2079	Q. douglasii	9	Good	
2080	Q. douglasii	9	Fair	
2081	Q. douglasii	8	Fair	
2082	Q. douglasii	6	Fair	
2083	Q. douglasii	8	Fair	
2084	Q. kelloggii	19	Good	
2085	Q. douglasii	6	Fair	
2086	Q. douglasii	8	Fair	
2087	Q. kelloggii	10	Good	
2088	Q. kelloggii	11	Good	
2089	Q. kelloggii	10	Good	
2090	Q. kelloggii	9	Good	
2091	Q. kelloggii	9	Good	
2092	Q. douglasii	6	Fair	
2093	Q. kelloggii	6	Good	forks dbh
2094	Q. kelloggii	16	Good	
2095	Q. douglasii	13	Good	
2096	Q. kelloggii	17	Good	
2097	P. sabiniana	6	Good	
2098	Q. douglasii	7	Good	
2099	P. sabiniana	5	Good	
2100	Q. douglasii	5	Good	
2101	Q. douglasii	6	Good	
2102	Q. douglasii	5	Good	
2103	Q. douglasii	5	Good	
2104	Q. douglasii	7	Good	
2105	Q. douglasii	5	Good	
2106	Q. douglasii	7	Good	
2107	Q. douglasii	6	Good	
2108	Q. douglasii	5	Good	
2109	Q. douglasii	5	Good	
2110	Q. douglasii	5	Good	
2111	Q. douglasii	5	Good	

2112	Q. douglasii	7	Good	
2113	Q. douglasii	5	Good	
2114	Q. douglasii	6	Good	
2115	Q. kelloggii	13	Good	
2116	Q. douglasii	5	Good	
2117	Q. douglasii	5	Good	
2118	Q. douglasii	12	Good	forks 2ft
2119	Q. douglasii	8	Good	
2120	Q. douglasii	8	Good	
2121	P. sabiniana	7	Good	
2122	Q. douglasii	5	Good	
2123	Q. douglasii	5	Good	
2124	Q. douglasii	9	Fair	curved stem
2125	Q. douglasii	6	Good	
2126	Q. douglasii	8	Good	
2127	Q. douglasii	7	Good	
2128	Q. douglasii	7	Good	
2129	Q. douglasii	6	Good	
2130	Q. douglasii	5	Good	
2131	Q. douglasii	5	Good	
2132	Q. douglasii	5	Good	
2133	Q. douglasii	5	Fair	
2134	P. sabiniana	7	Good	
2135	P. sabiniana	10	Good	
2136	Q. douglasii	5	Good	
2137	Q. douglasii	5	Good	
2138	Q. douglasii	7	Good	
2139	Q. douglasii	5	Good	
2140	Q. douglasii	6	Good	
2141	Q. douglasii	8	Fair	
2142	Q. kelloggii	7	Good	
2143	Q. douglasii	7	Fair	
2144	Q. kelloggii	9	Good	
2145	Q. douglasii	9	Good	
2146	P. sabiniana	6	Good	
2147	Q. douglasii	8	Good	forks at 2ft
2148	Q. kelloggii	16	Good	
2149	Q. douglasii	10	poor	
2150	Q. douglasii	7	Good	
2151	Q. douglasii	6	Good	
2152	Q. douglasii	6	Good	
2153	Q. douglasii	5	Fair	poison oak
2154	Q. kelloggii	7	Good	forks dbh
2155	Q. kelloggii	8	Good	
2156	Q. kelloggii	11	Good	
2157	Q. douglasii	5	Good	
2158	P. sabiniana	9	Good	
2159	P. sabiniana	8	Good	

2160	Q. douglasii	8	Fair	poison oak
2161	Q. douglasii	9	Good	
2162	P. sabiniana	5	Fair	
2163	Q. douglasii	9	Fair	
2164	P. sabiniana	10	Good	
2165	Q. douglasii	8	Good	
2166	Q. douglasii	5	poor	poison oak
2167	Q. douglasii	10	Good	
2168	Q. douglasii	9	Fair	
2169	P. sabiniana	9	Good	
2170	Q. douglasii	7	Good	
2171	Q. douglasii	5	Good	
2172	Q. kelloggii	37	Good	
2173	P. sabiniana	8	Good	
2174	P. sabiniana	5	Good	
2175	Q. douglasii	6	Fair	
2176	Q. douglasii	6	Fair	
2177	Q. kelloggii	10	Good	
2178	Q. kelloggii	20	Good	
2179	Q. douglasii	16	Good	
2180	Q. douglasii	11	Fair	forks 1ft
2181	Q. kelloggii	11	Good	
2182	Q. kelloggii	12	Good	
2183	Q. kelloggii	13	Good	
2184	P. sabiniana	11	Good	
2185	Q. kelloggii	5	Good	
2186	Q. kelloggii	7	poor	rotten
2187	Q. kelloggii	5	fair	
2188	P. sabiniana	7	Good	
2189	P. sabiniana	7	Good	
2190	P. sabiniana	7	Good	
2191	Q. douglasii	5	Good	
2192	P. sabiniana	6	Good	
2193	P. sabiniana	7	Good	
2194	Q. kelloggii	5	Good	
2195	Q. kelloggii	5	Good	
2196	Q. kelloggii	7	Good	
2197	Q. kelloggii	5	Good	
2198	Q. kelloggii	7	Good	
2199	Q. kelloggii	6	Good	
2200	Q. kelloggii	5	Good	
2201	Q. kelloggii	6	Good	
2202	Q. kelloggii	9	poor	scar
2203	Q. kelloggii	12	Fair	
2204	Q. kelloggii	6	Good	forks 3ft
2205	Q. kelloggii	5	Good	
2206	Q. kelloggii	6	Good	
2207	P. sabiniana	9	Good	

2208	Q. kelloggii	6	Good	
2209	Q. kelloggii	8	Good	
2210	Q. kelloggii	6	Good	
2211	Q. kelloggii	5	Good	
2212	Q. kelloggii	5	Good	
2213	Q. kelloggii	7	Good	
2214	Q. kelloggii	5	Good	
2215	Q. kelloggii	7	Good	
2216	Q. kelloggii	6	Good	
2217	Q. kelloggii	7	Good	
2218	P. sabiniana	6	Good	
2219	Q. douglasii	7	Good	
2220	Q. douglasii	6	Good	
2221	Q. douglasii	6	Good	
2222	Q. douglasii	5	Good	
2223	Q. douglasii	7	Good	
2224	Q. douglasii	7	Good	
2225	Q. douglasii	5	Fair	
2226	Q. douglasii	5	Fair	
2227	Q. douglasii	9	Good	
2228	Q. douglasii	5	Good	
2229	Q. douglasii	5	Good	
2230	Q. douglasii	6	Good	
2231	Q. douglasii	5	Good	
2232	P. sabiniana	10	Good	
2233	Q. douglasii	5	Good	
2234	Q. douglasii	5	fair	
2235	Q. douglasii	5	fair	
2236	Q. douglasii	5	fair	
2237	Q. douglasii	5	Good	
2238	Q. douglasii	5	Good	
2239	Q. douglasii	5	Good	
2240	Q. douglasii	10	Good	
2241	Q. douglasii	11	Good	
2242	Q. douglasii	7	Good	
2243	Q. douglasii	12	Fair	poison oak
2244	P. sabiniana	10	Good	
2245	Q. douglasii	6	Fair	
2246	Q. douglasii	5	Fair	
2247	Q. douglasii	5	Fair	
2248	Q. douglasii	5	Fair	
2249	Q. douglasii	8	Good	
2250	Q. douglasii	8	Good	
2251	Q. douglasii	6	Good	
2252	Q. douglasii	5	Good	
2253	Q. douglasii	6	Good	
2254	Q. douglasii	5	Good	
2255	Q. kelloggii	5	Good	

2256	Q. kelloggii	7	Good	
2257	Q. kelloggii	6	Good	
2258	Q. douglasii	5	Fair	
2259	Q. kelloggii	12	Good	
2260	Q. kelloggii	13	Good	
2261	P. sabiniana	8	Good	
2262	Q. douglasii	8	Fair	
2263	P. sabiniana	11	Good	
2264	Q. douglasii	5	Good	
2265	Q. douglasii	6	Good	
2266	P. sabiniana	13	Good	
2267	Q. kelloggii	7	Good	
2268	Q. kelloggii	7	Good	
2269	Q. kelloggii	6	Good	
2270	P. sabiniana	5	Good	
2271	Q. douglasii	5	Good	
2272	Q. kelloggii	6	Good	
2273	Q. kelloggii	6	Good	
2274	P. sabiniana	8	Good	
2275	P. sabiniana	14	Good	
2276	P. sabiniana	7	Good	
2277	P. sabiniana	7	Good	
2278	Q. kelloggii	32	Good	
2279	P. sabiniana	23	Good	
2280	P. sabiniana	16	Good	split at 2'
2281	Q. douglasii	7	Good	
2282	Q. douglasii	7	Good	
2283	Q. douglasii	9	Good	
2284	Q. douglasii	5	Good	
2285	Q. douglasii	11	Good	
2286	Q. douglasii	5	Good	
2287	Q. kelloggii	8	Good	
2288	Q. douglasii	7	Good	
2289	Q. douglasii	11	Good	
2290	P. sabiniana	8	Good	
2291	Q. douglasii	10	Good	
2292	Q. kelloggii	16	Good	
2293	Q. kelloggii	20	Good	
2294	Q. douglasii	6	Good	
2295	Q. douglasii	6	Good	split base
2296	Q. douglasii	13	Good	
2297	Q. douglasii	13	Good	
2298	Q. douglasii	8	Good	
2299	P. sabiniana	17	Good	
2300	Q. douglasii	7	Good	split base
2301	Q. douglasii	7	Good	split base
2302	Q. douglasii	7	Good	
2303	Q. douglasii	8	Good	

2304	Q. douglasii	7	Good	
2305	Q. douglasii	8	Good	
2306	Q. douglasii	7	Good	
2307	Q. douglasii	8	Good	
2308	Q. douglasii	7	Good	
2309	Q. douglasii	7	Good	
2310	Q. douglasii	9	Good	
2311	Q. douglasii	7	Good	
2312	P. sabiniana	10	Good	
2313	Q. douglasii	9	Poor	rotten
2314	P. sabiniana	8	Good	
2315	Q. douglasii	8	Good	Split at 3'
2316	P. sabiniana	25	Good	
2317	Q. douglasii	11	Good	
2318	Q. douglasii	7	Good	
2319	Q. douglasii	4	Good	
2320	Q. douglasii	8	Good	
2321	Q. douglasii	12	Fair	Base Rot
2322	P. sabiniana	13	Good	
2323	Q. douglasii	8	Good	split base
2324	Q. douglasii	5	Good	
2325	Q. douglasii	7	Good	split base
2326	Q. douglasii	7	Good	
2327	Q. douglasii	8	Good	
2328	Q. douglasii	8	Good	split base
2329	Q. douglasii	7	Good	
2330	Q. douglasii	7	Fair	split base
2331	Q. douglasii	14	Good	
2332	Q. douglasii	11	Good	
2333	Q. douglasii	7	Fair	split at 1'
2334	Q. douglasii	7	Fair	split at 1'
2335	Q. douglasii	8	Good	split base
2336	Q. douglasii	7	Good	split at 1'
2337	Q. douglasii	7	Fair	split base
2338	Q. douglasii	6	Good	
2339	Q. douglasii	7	Good	
2340	Q. douglasii	7	Fair	split base
2341	Q. douglasii	7	Good	
2342	Q. douglasii	6	Good	
2343	Q. douglasii	8	Good	
2344	Q. douglasii	6	Good	
2345	Q. douglasii	9	Good	
2346	Q. douglasii	7	Good	
2347	Q. douglasii	6	Fair	split base
2348	Q. douglasii	7	Good	
2349	Q. douglasii	8	Good	split base
2350	P. sabiniana	6	Fair	leaning
2351	Q. douglasii	6	Fair	split base

2352	Q. douglasii	7	Good	split base
2353	Q. douglasii	7	Fair	split base
2354	Q. douglasii	7	Good	split at 2'
2355	Q. douglasii	7	Good	split base
2356	Q. douglasii	4	Good	
2357	Q. douglasii	6	Good	split base
2358	Q. douglasii	5	Good	split base
2359	Q. douglasii	7	Good	split base
2360	Q. douglasii	7	Good	split base
2361	Q. douglasii	6	Fair	split base
2362	Q. douglasii	7	Good	
2363	Q. douglasii	7	Fair	split base
2364	Q. douglasii	6	Good	split base
2365	Q. douglasii	12	Good	
2366	Q. douglasii	7	Good	
2367	Q. douglasii	7	Fair	
2368	Q. douglasii	7	Good	
2369	Q. douglasii	8	Fair	split at 2'
2370	Q. douglasii	7	Fair	split at 2'
2371	Q. douglasii	7	Fair	split base
2372	Q. douglasii	6	Fair	split base
2373	Q. douglasii	6	Fair	split base
2374	Q. douglasii	6	Good	split base
2375	Q. douglasii	6	Good	split base
2376	Q. douglasii	7	Good	
2377	Q. douglasii	7	Good	
2378	Q. douglasii	6	Fair	Split at 3'
2379	Q. douglasii	6	Fair	split base
2380	Q. douglasii	7	Good	
2381	Q. douglasii	11	Good	
2382	P. sabiniana	6	Fair	
2383	Q. douglasii	8	Fair	split base
2384	Q. douglasii	6	Fair	
2385	Q. douglasii	10	Good	
2386	Q. douglasii	8	Fair	split base
2387	Q. douglasii	7	Good	
2388	Q. douglasii	7	Fair	
2389	Q. douglasii	7	Good	
2390	Q. douglasii	8	Fair	split base
2391	Q. douglasii	8	Fair	split base
2392	Q. douglasii	5	Good	
2393	Q. douglasii	7	Good	
2394	Q. douglasii	7	Good	split base
2395	A. californica	8	Good	split base
2396	P. sabiniana	6	Fair	leaning
2397	Q. douglasii	7	Fair	
2398	Q. douglasii	8	Good	split base
2399	Q. douglasii	7	Fair	split base

2400	Q. douglasii	5	Fair	split base
2401	Q. douglasii	6	Fair	split base
2402	Q. douglasii	6	Good	
2403	Q. douglasii	7	Good	
2404	Q. douglasii	6	Fair	split base
2405	Q. douglasii	5	Good	
2406	Q. douglasii	26	Poor	Base Rot
2407	Q. douglasii	7	Good	
2408	Q. douglasii	6	Fair	
2409	Q. douglasii	7	Good	
2410	Q. douglasii	7	Fair	leaning
2411	Q. douglasii	12	Good	
2412	Q. douglasii	7	Poor	Base Rot
2413	Q. douglasii	9	Good	
2414	Q. douglasii	5	Good	
2415	Q. douglasii	7	Good	
2416	Q. douglasii	7	Good	
2417	Q. douglasii	11	Fair	leaning
2418	Q. douglasii	12	Good	split at 3'
2419	Q. douglasii	10	Good	
2420	Q. douglasii	11	Fair	
2421	Q. douglasii	14	Good	
2422	Q. douglasii	10	Good	
2423	Q. douglasii	10	Fair	split base
2424	Q. douglasii	12	Good	
2425	Q. douglasii	4	Good	
2426	Q. douglasii	14	Good	Split at 3'
2427	Q. douglasii	8	Good	
2428	Q. douglasii	13	Fair	split base
2429	Q. douglasii	15	Poor	rotten
2430	Q. douglasii	11	Poor	rotten
2431	Q. douglasii	9	Good	
2432	Q. douglasii	6	Fair	
2433	Q. douglasii	5	Fair	
2434	Q. douglasii	8	Good	split base
2435	Q. douglasii	7	Good	
2436	Q. douglasii	7	Fair	Base Rot
2437	Q. douglasii	8	Good	
2438	Q. douglasii	5	Good	
2439	Q. douglasii	7	Fair	split at 2'
2440	Q. douglasii	11	Good	
2441	Q. douglasii	9	Good	
2442	Q. douglasii	8	Good	
2443	Q. douglasii	7	Fair	Split at 3'
2444	Q. douglasii	7	Fair	split base
2445	Q. douglasii	7	Good	
2446	Q. douglasii	7	Good	
2447	Q. douglasii	5	Good	

2448	Q. douglasii	4	Good	split base
2449	Q. douglasii	5	Good	
2450	Q. douglasii	6	Good	

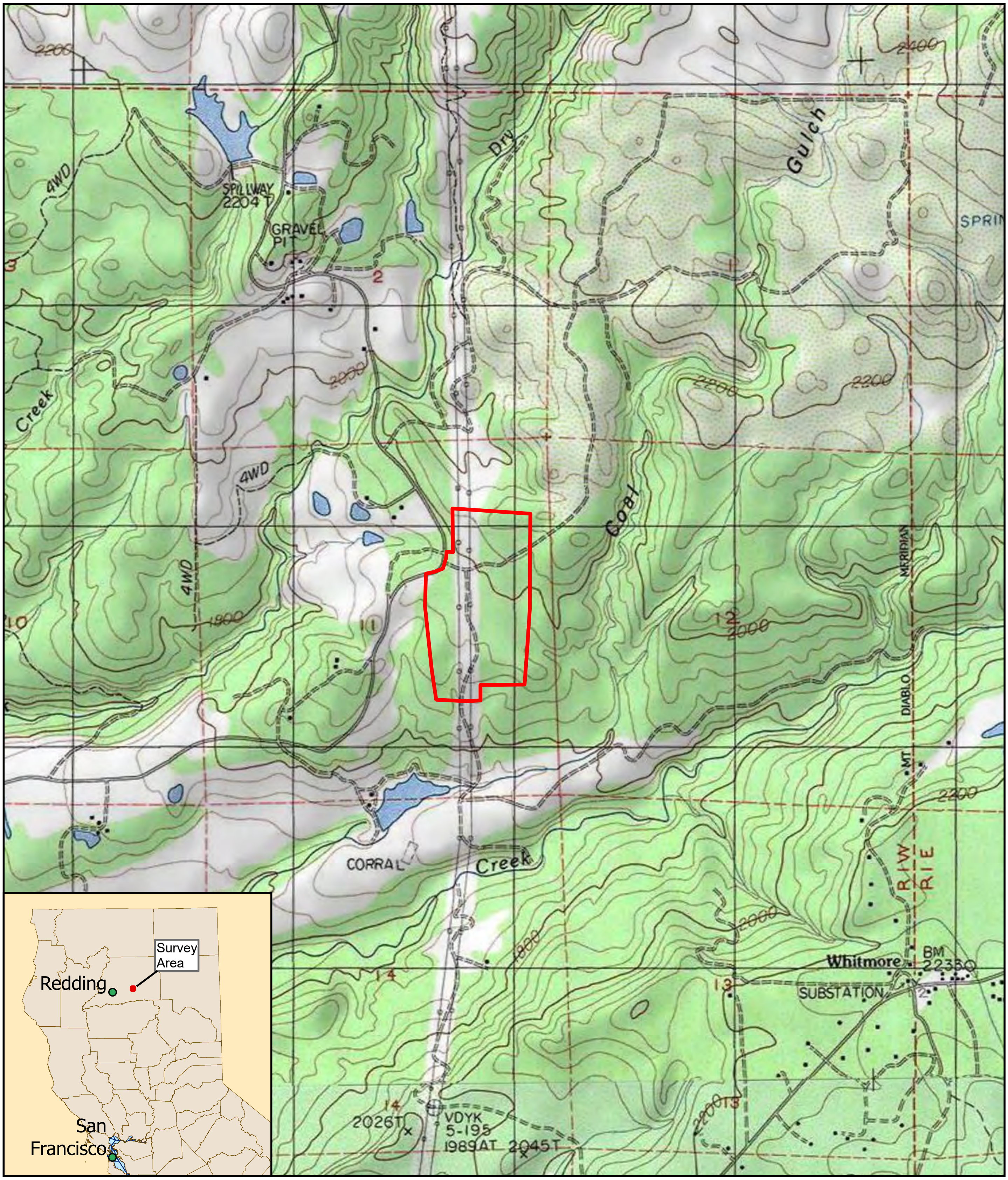


Figure 1. Project Location/Vicinity Map

Survey Area (86.688 total acre)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet
Scale: 1:24,000

Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

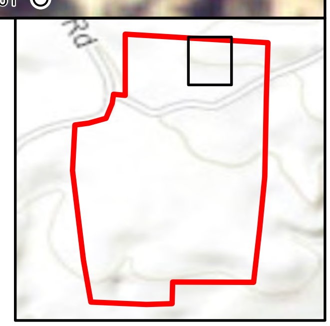
CmD - Cohasset stony loam

SuD - Supan very stony loam

PcD - Parrish loam

KiD - Kilark very stony sandy clay loam

Figure 2. Tree Survey Results



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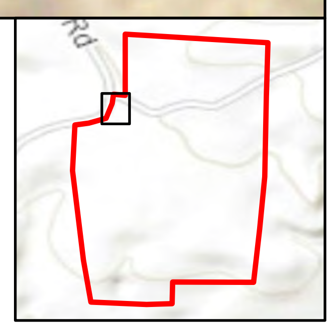

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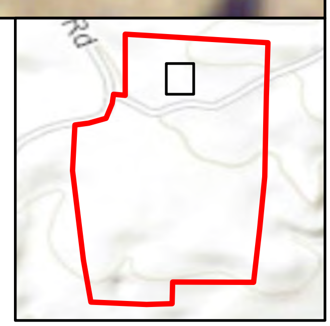

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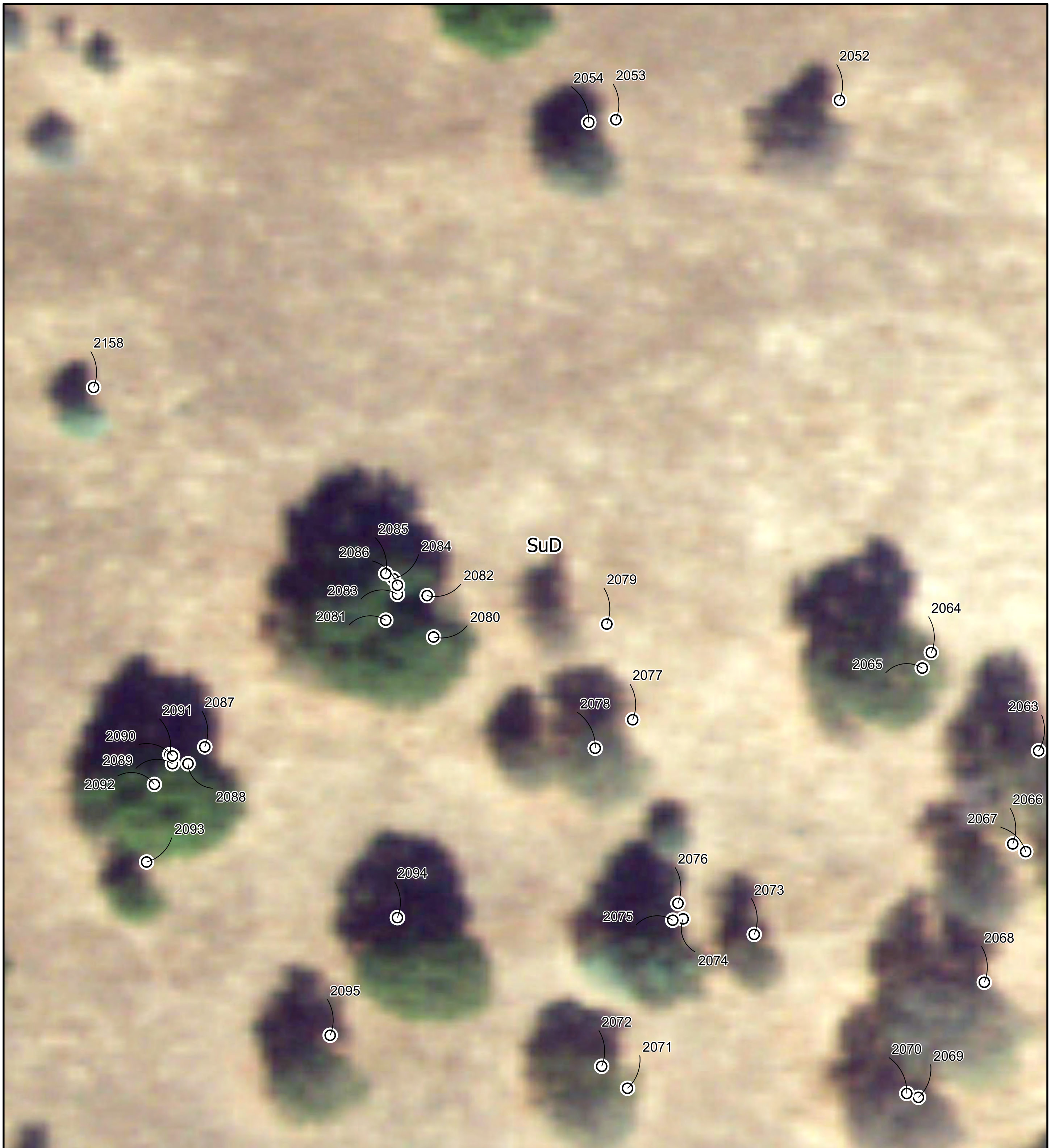

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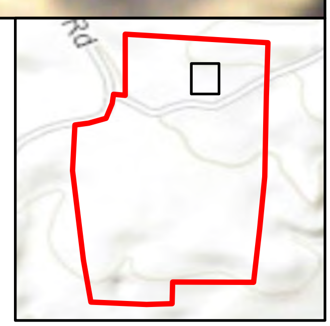

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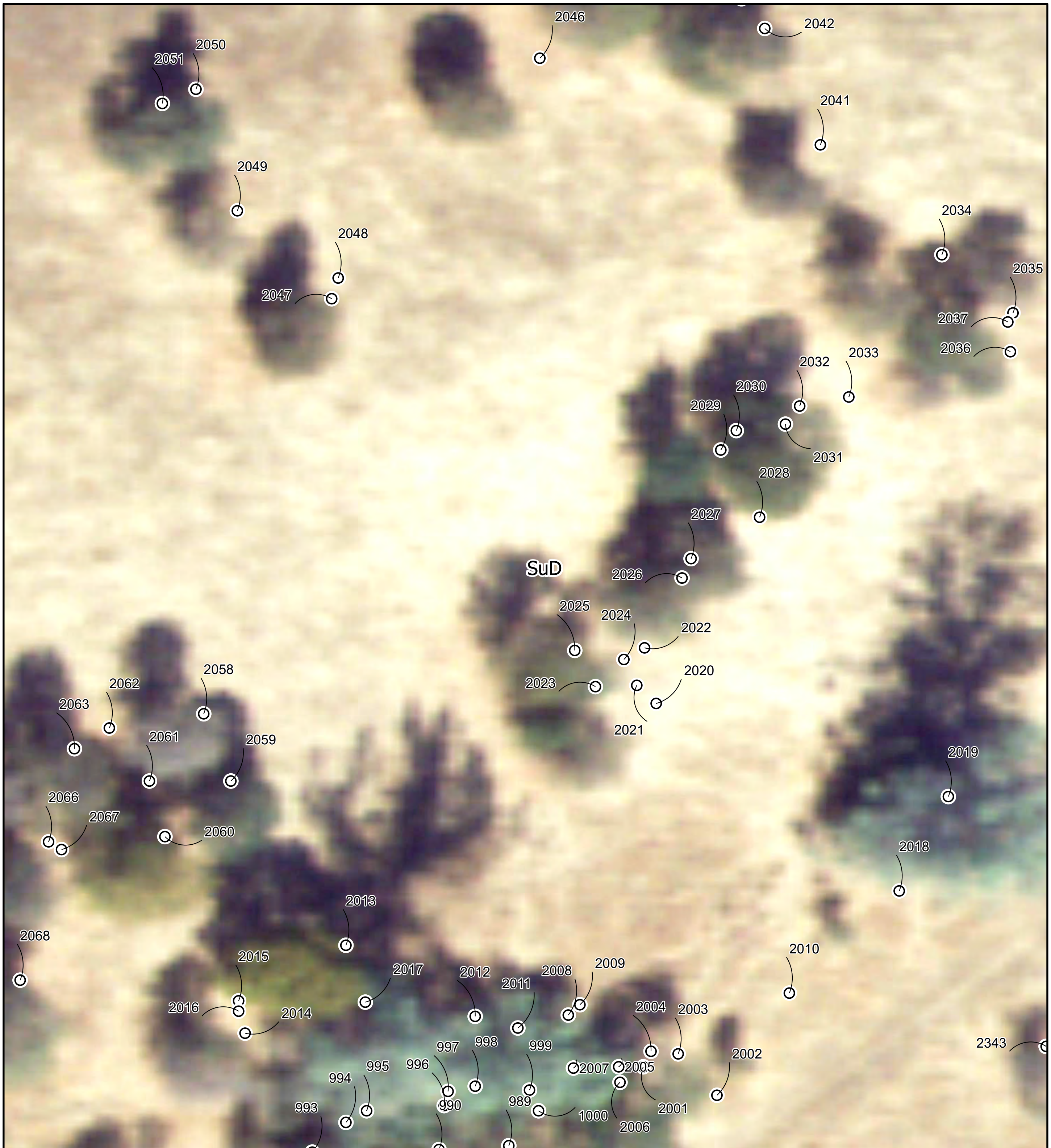

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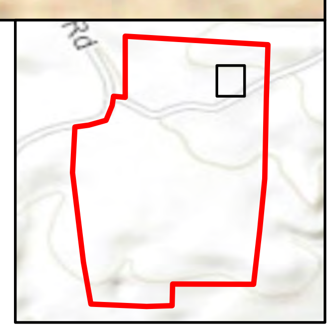

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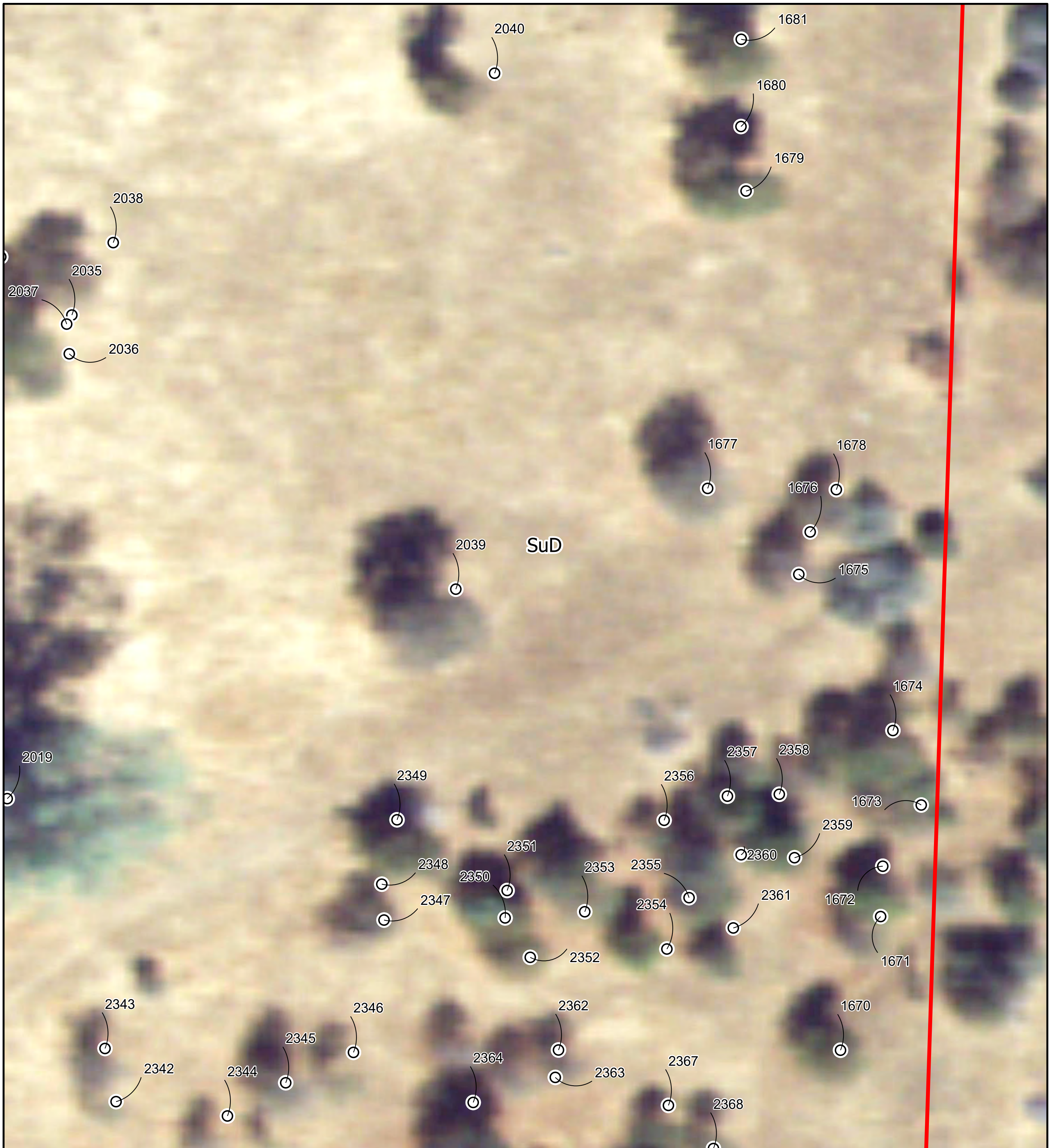

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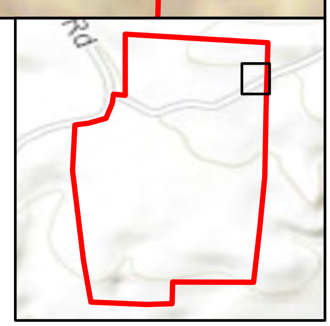

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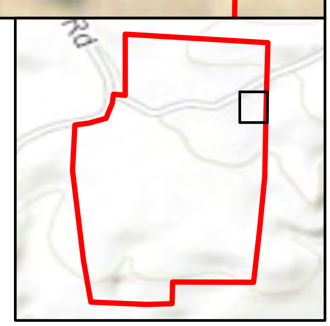

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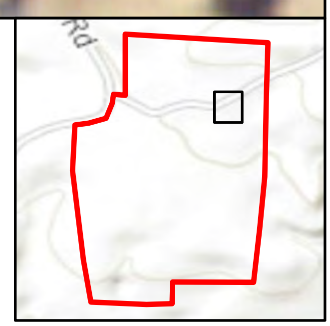

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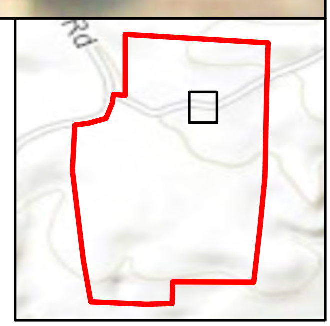

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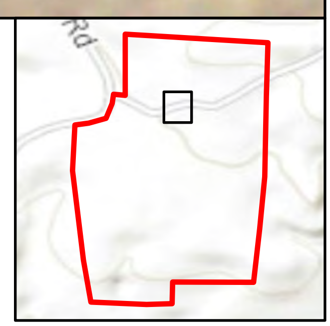

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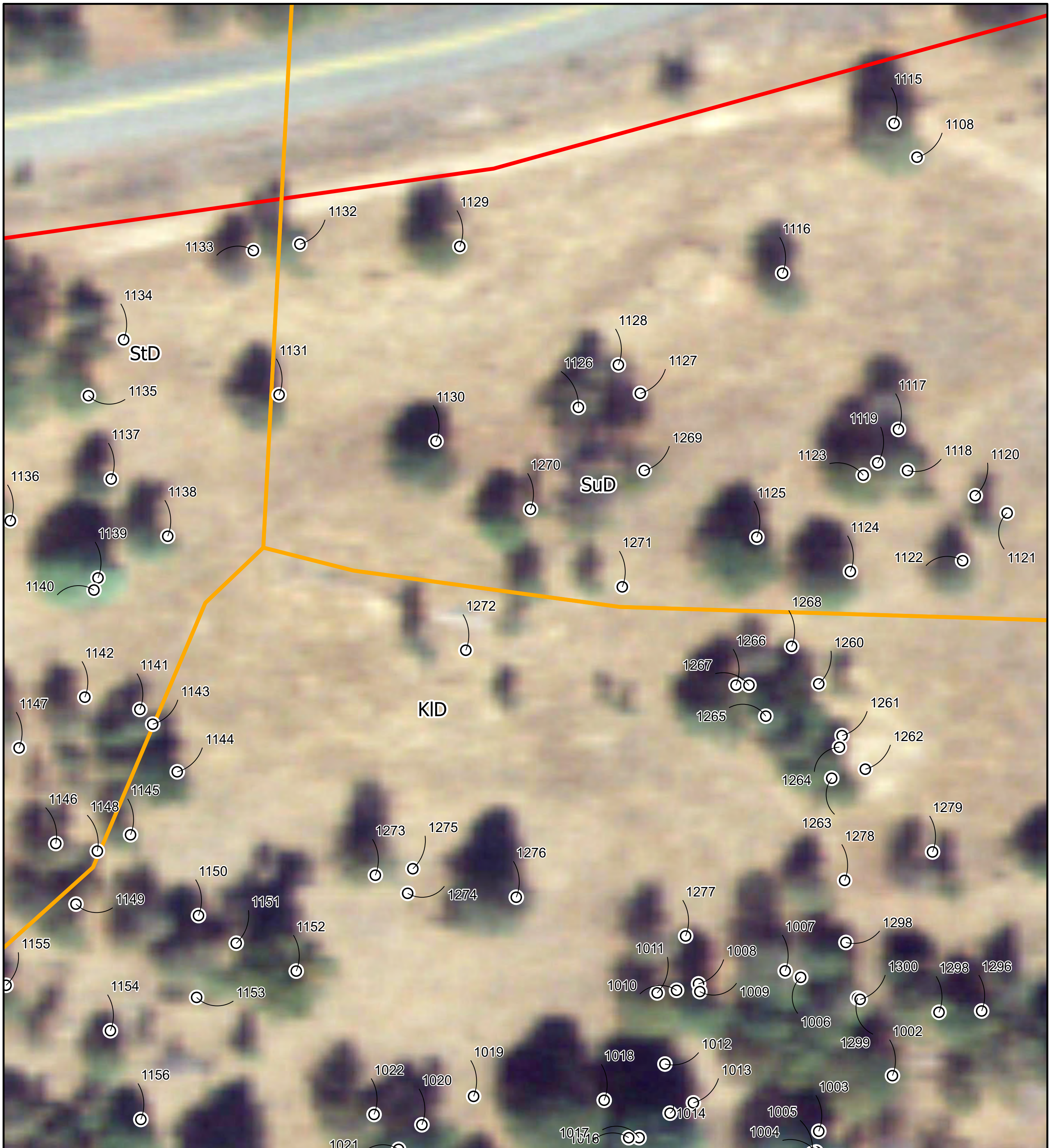

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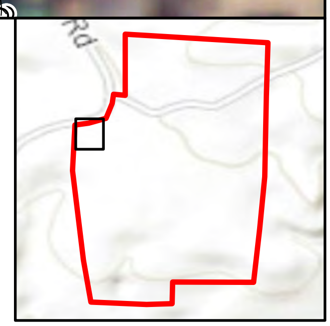

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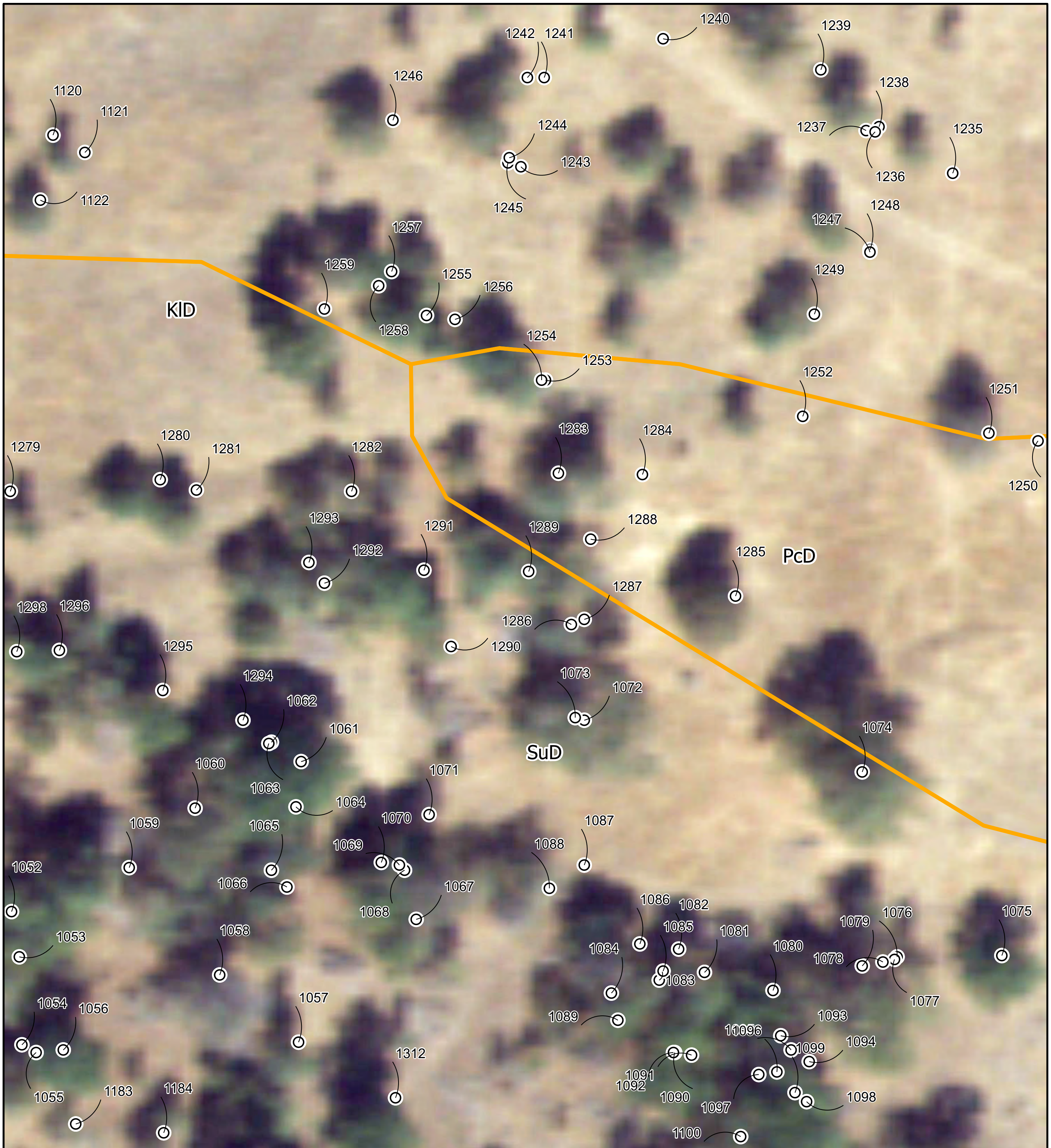

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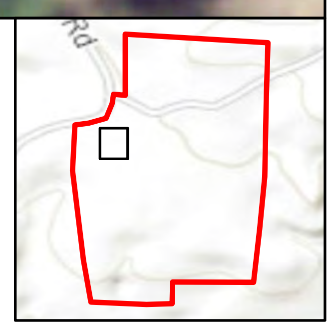

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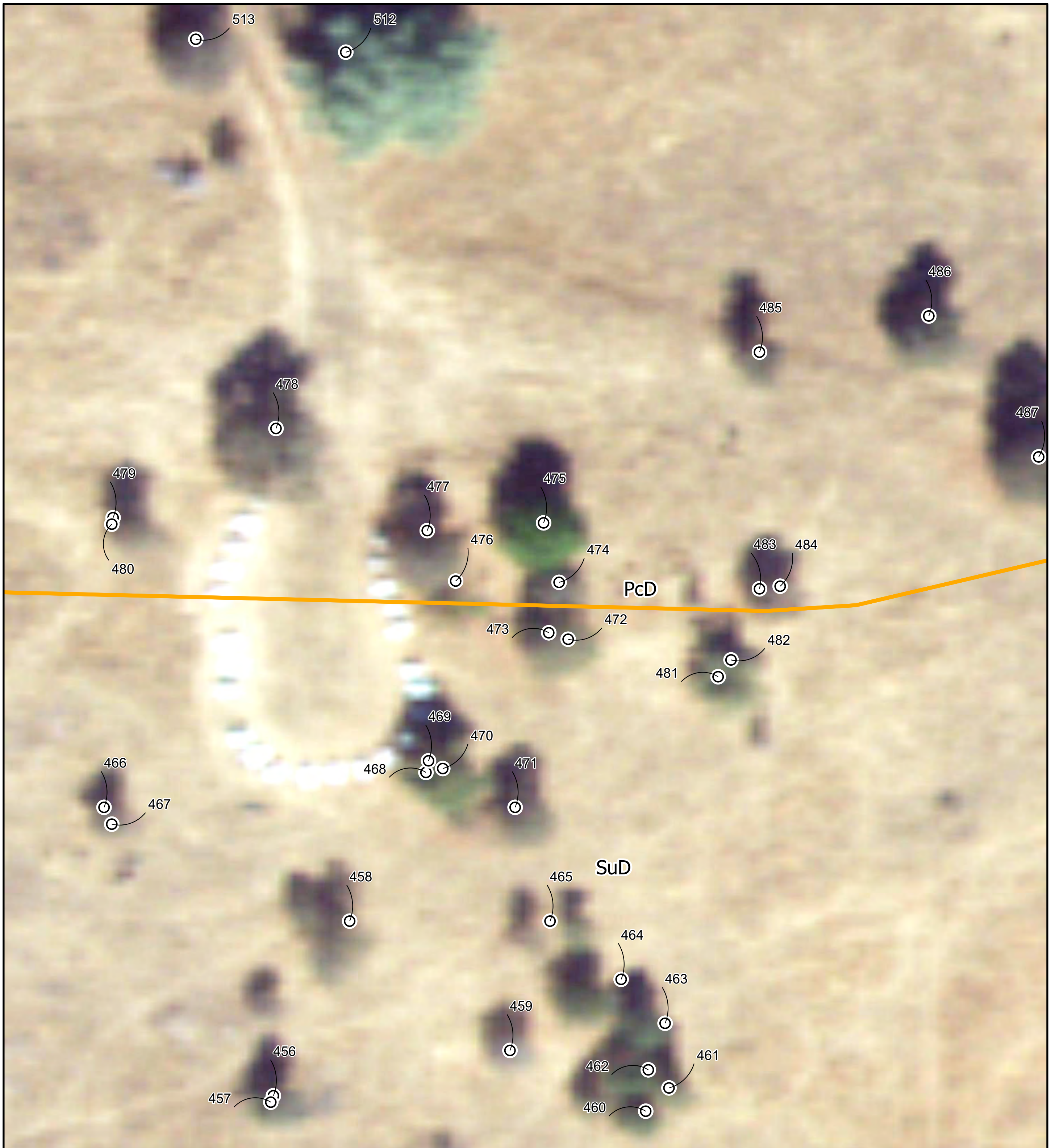

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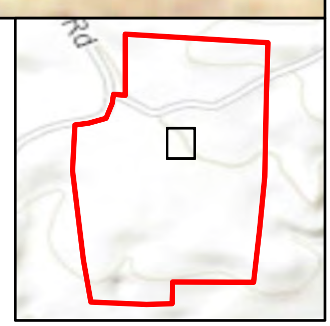

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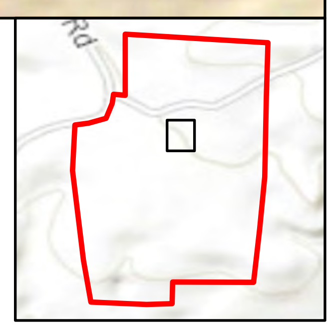

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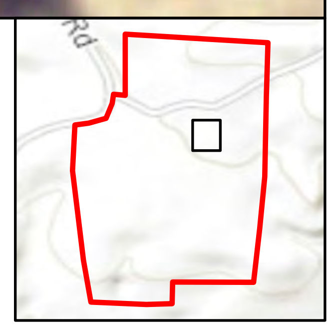

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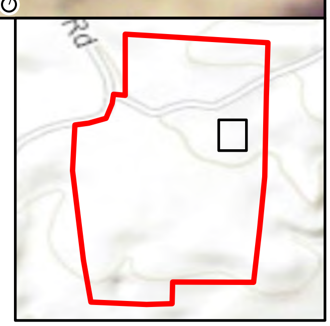

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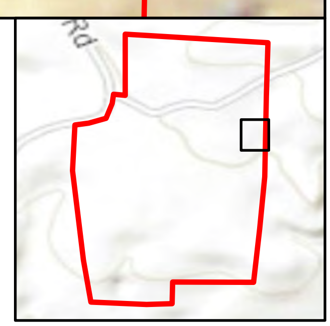

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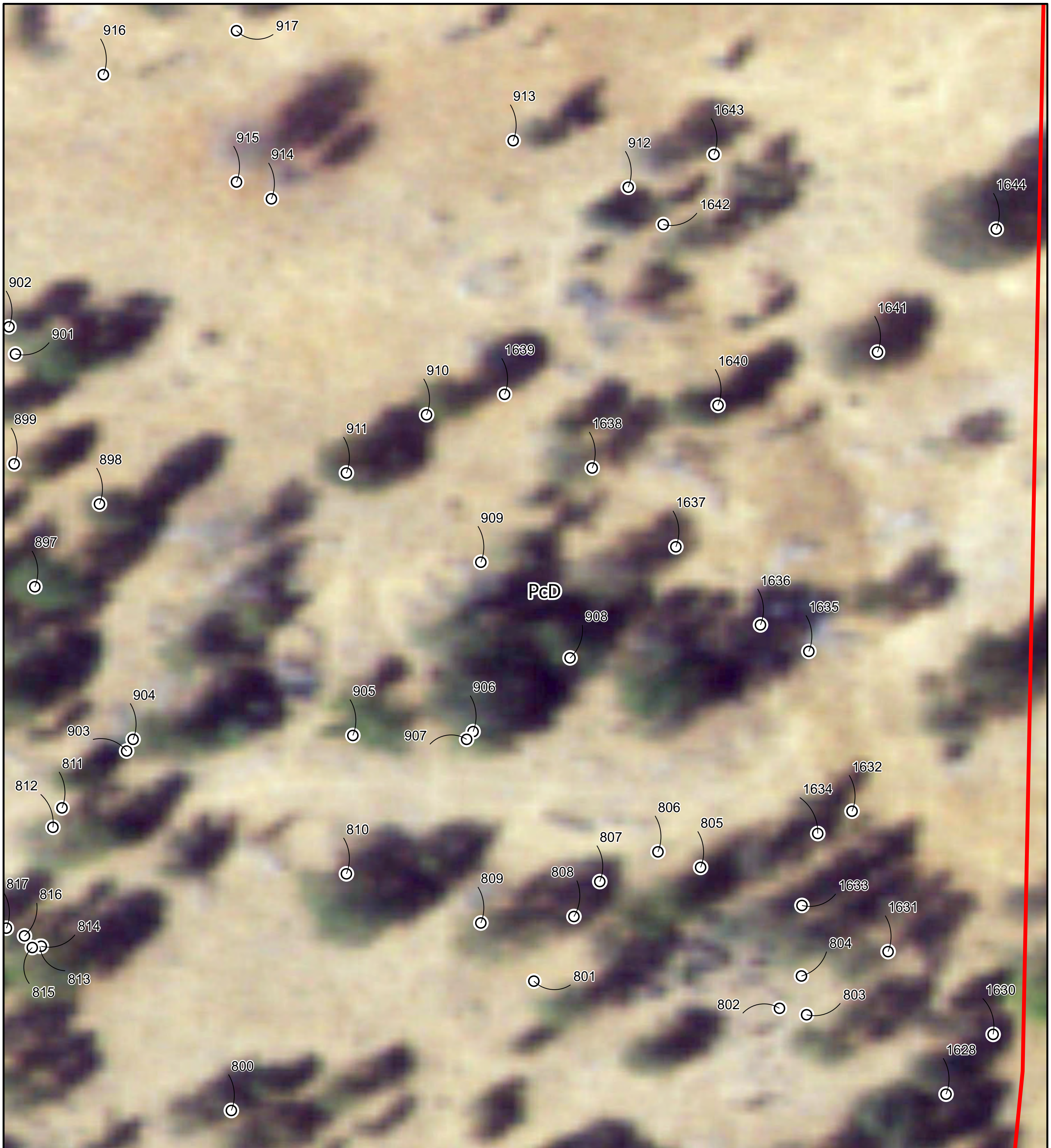

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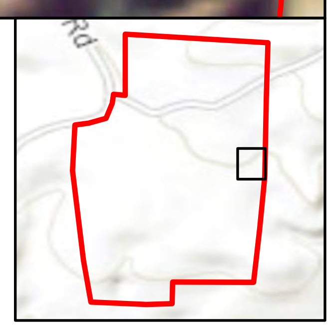

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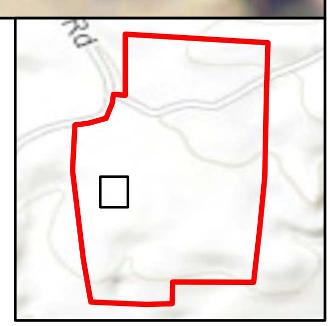

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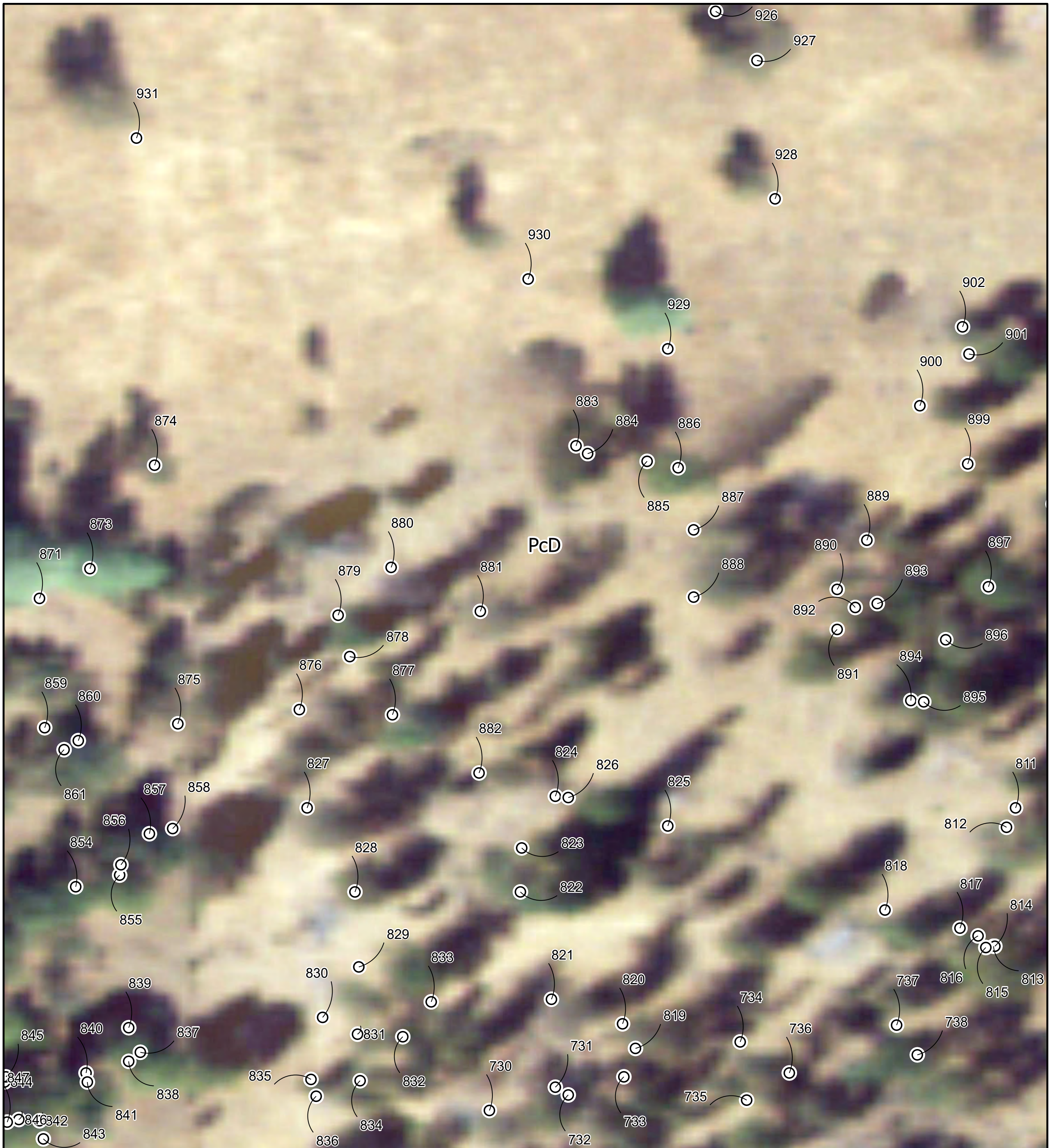

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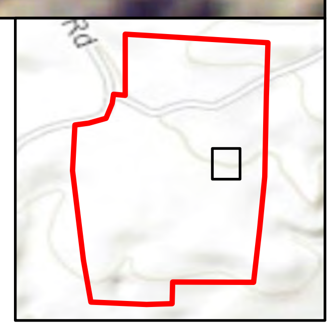

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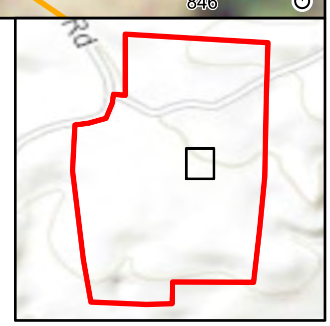

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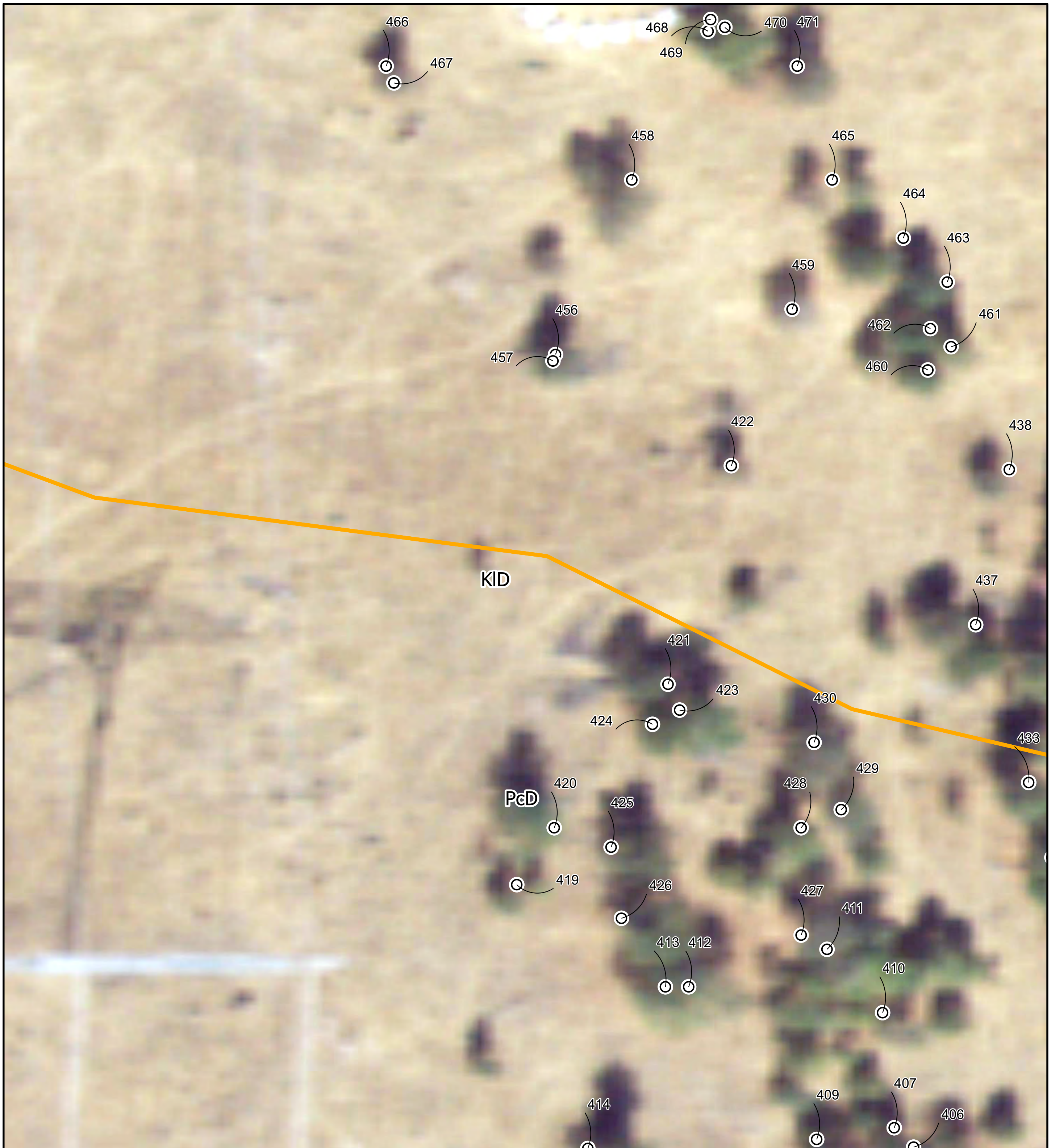

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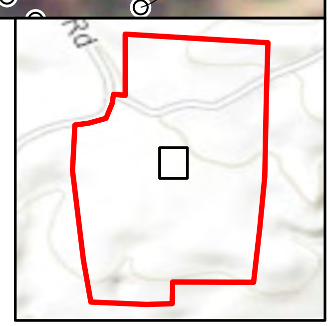

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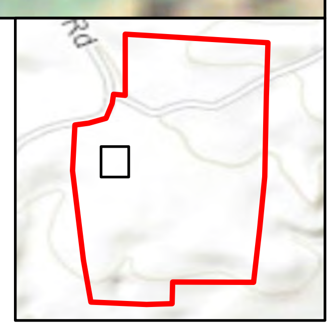

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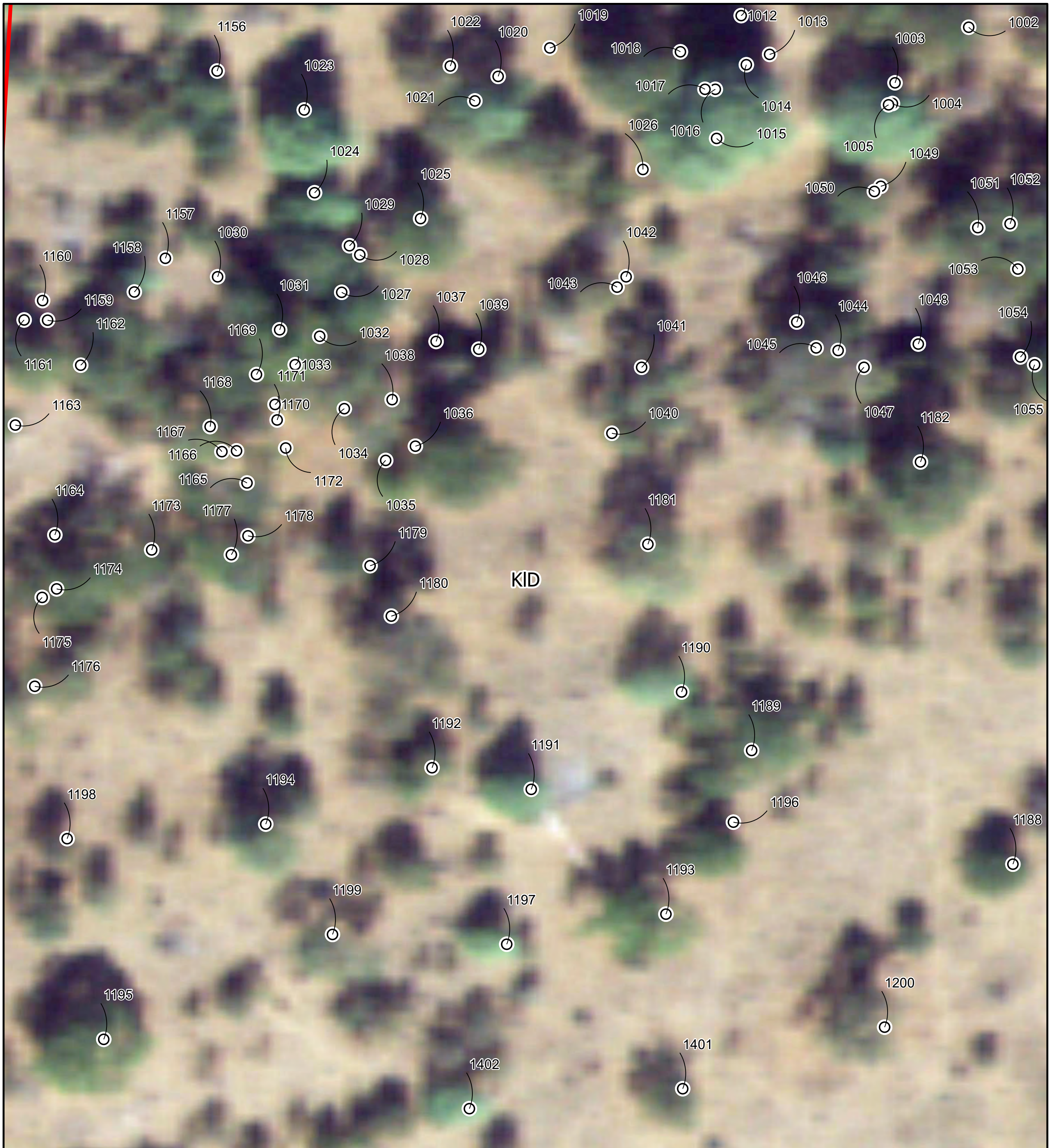

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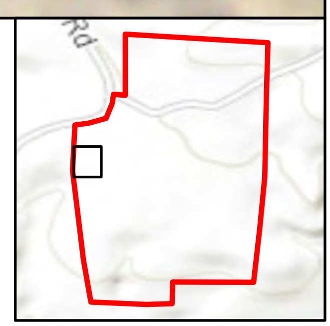

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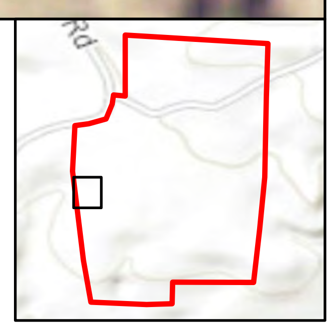

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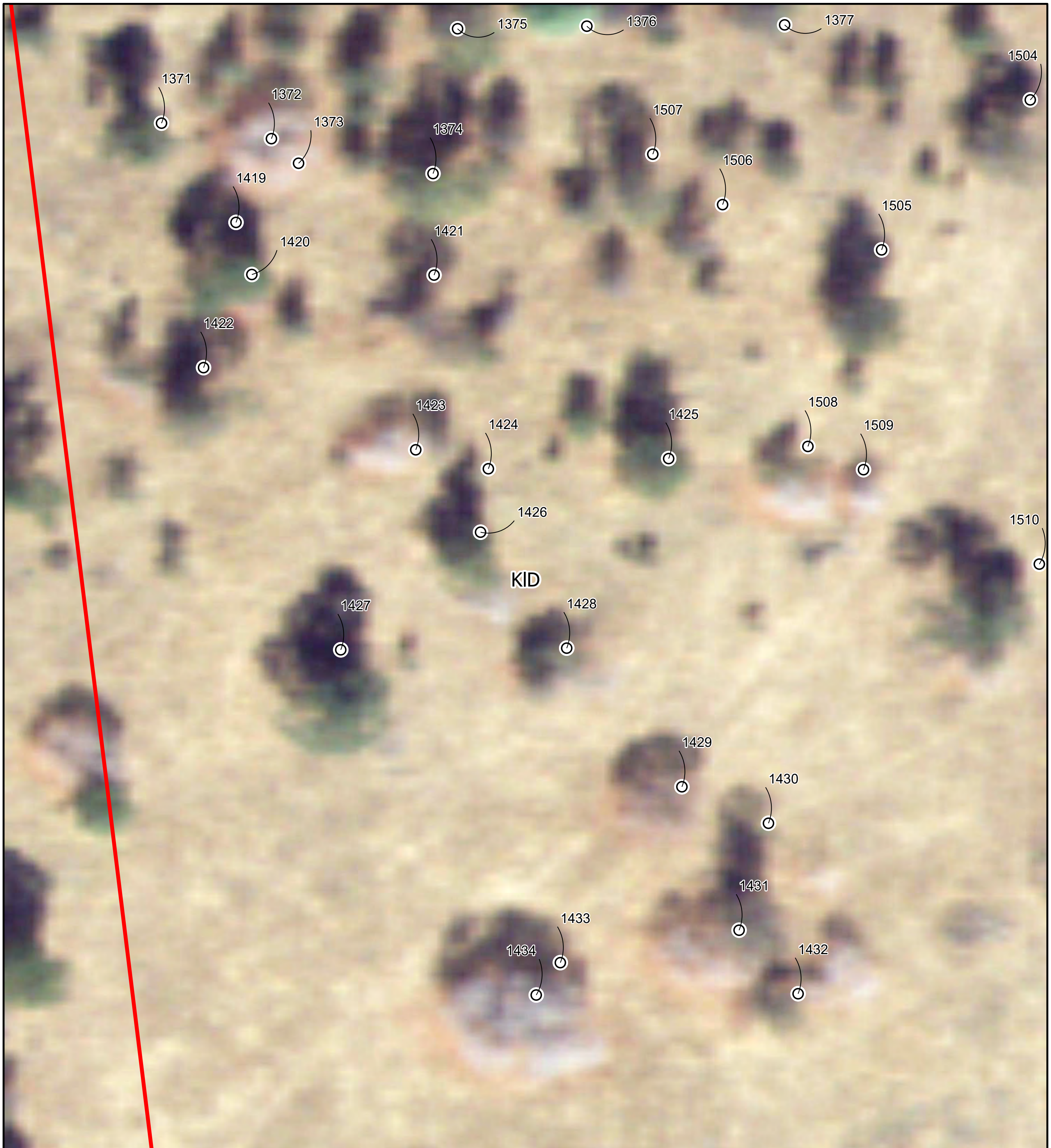

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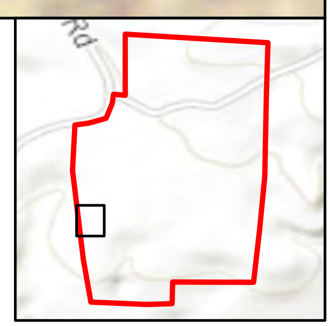

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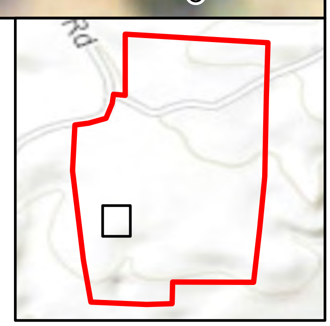

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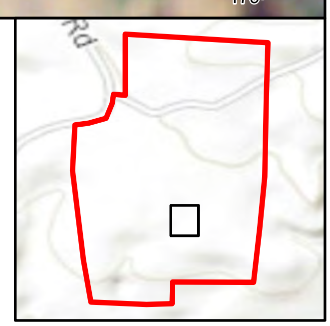

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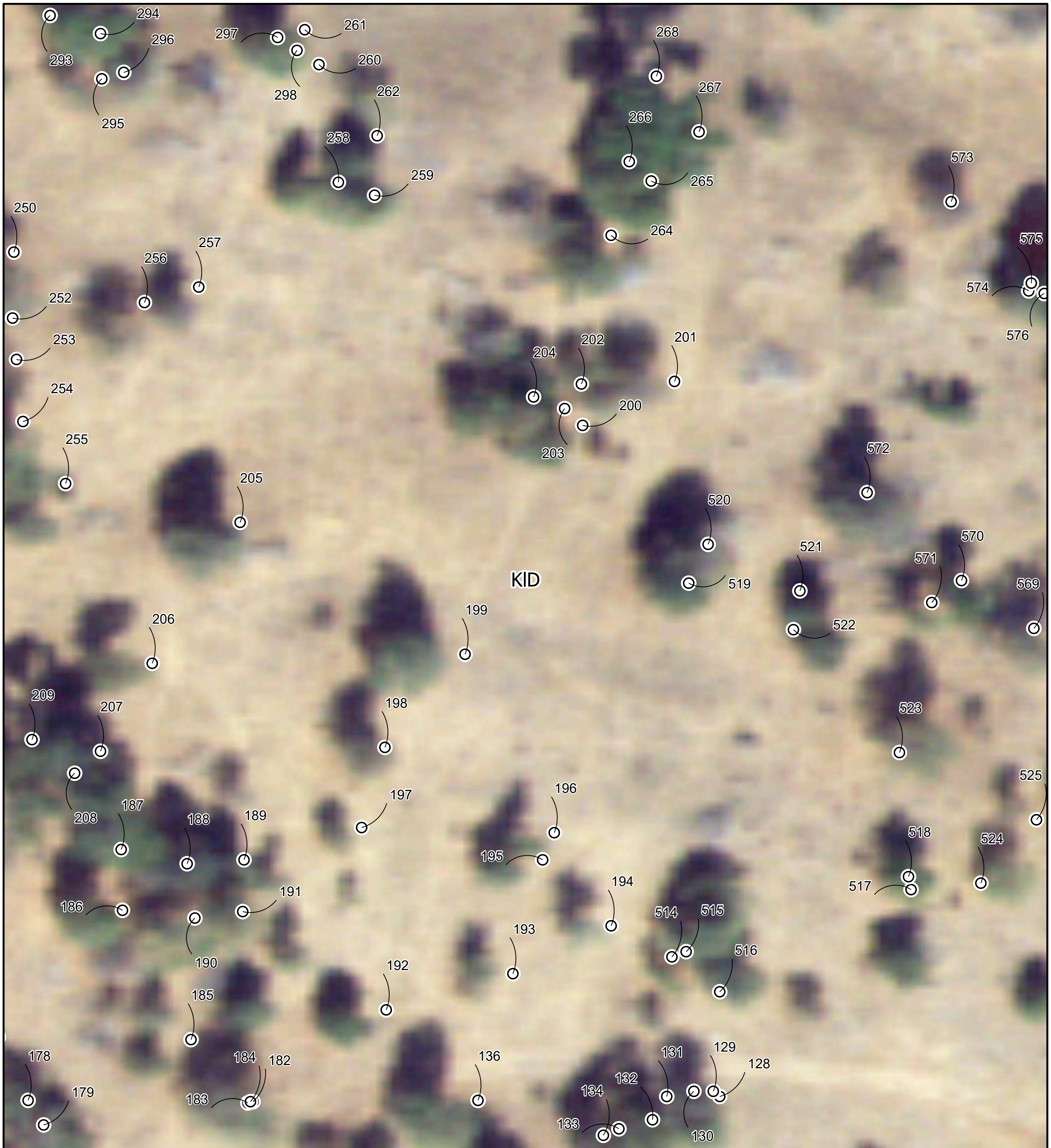

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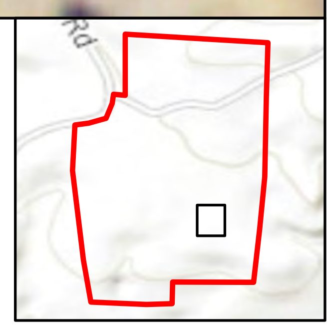

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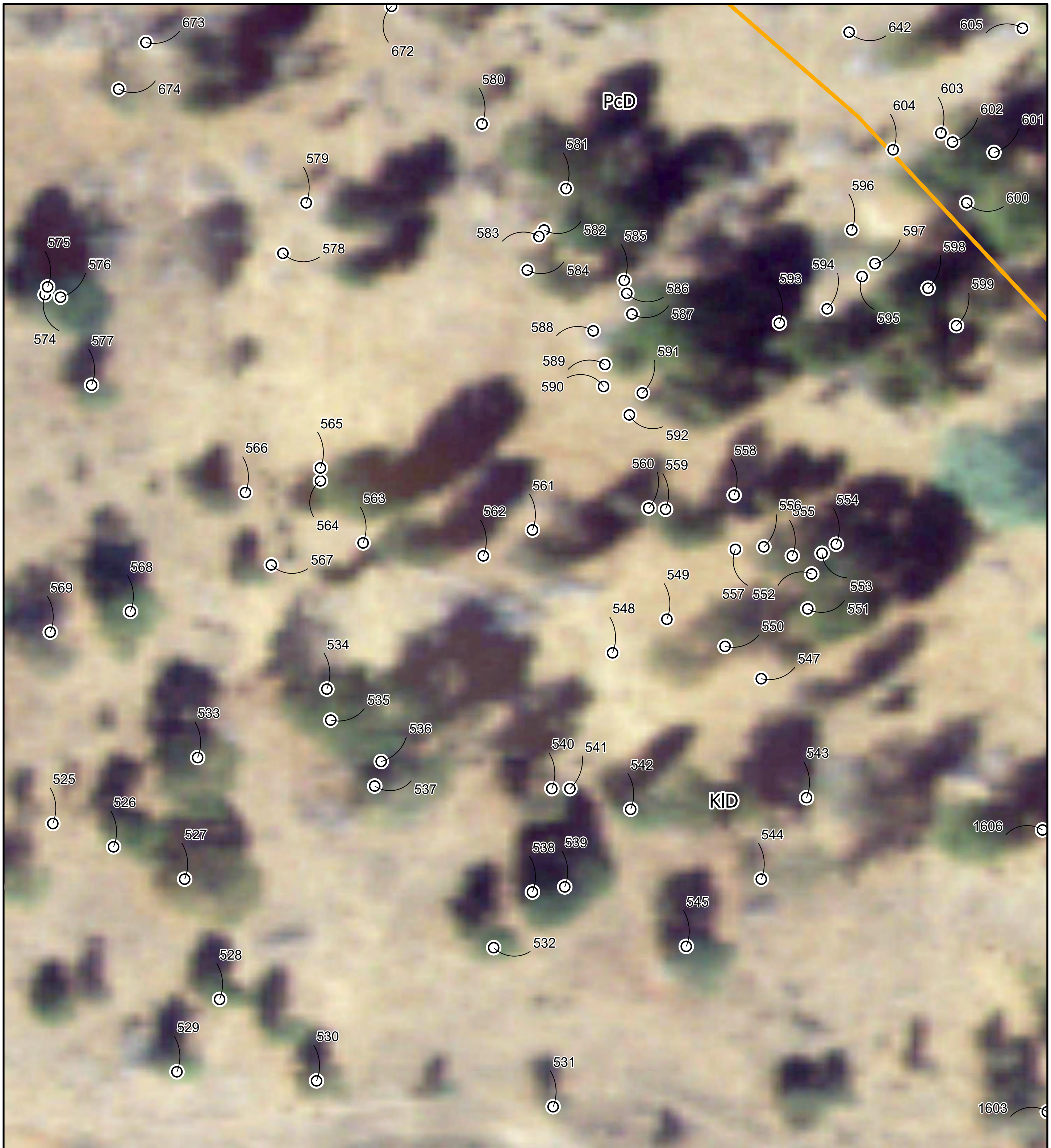

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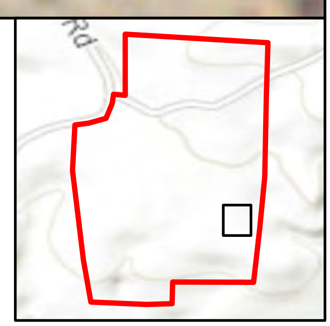

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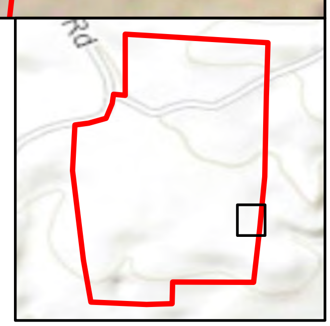
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

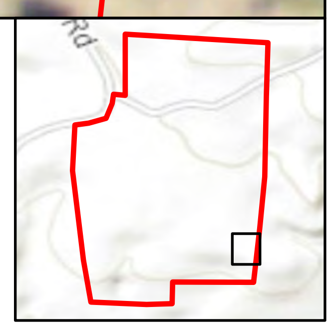
Soils

Tree Points

Soil Type

CmD - Cohasset stony loam
SuD - Supan very stony loam
PcD - Parrish loam
KiD - Kilark very stony sandy clay loam

Figure 2. Tree Survey Results



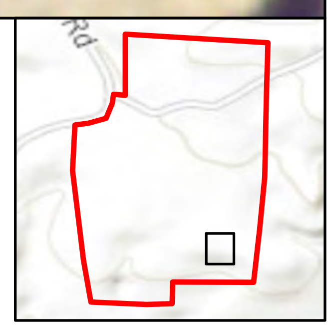
Survey Area (85.688 acres)

Soils

Tree Points

Soil Type
CmD - Cohasset stony loam
SuD - Supan very stony loam
PcD - Parrish loam
KlD - Kilark very stony sandy clay loam

Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type
CmD - Cohasset stony loam
SuD - Supan very stony loam
PcD - Parrish loam
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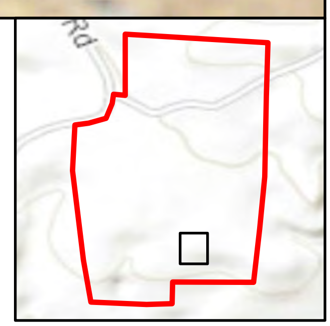
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type
CmD - Cohasset stony loam
SuD - Supan very stony loam
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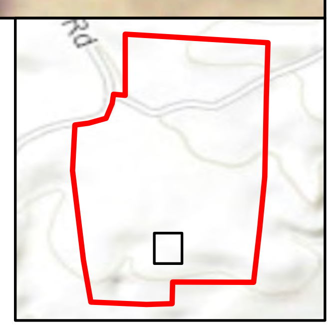
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

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SuD - Supan very stony loam

PcD - Parrish loam

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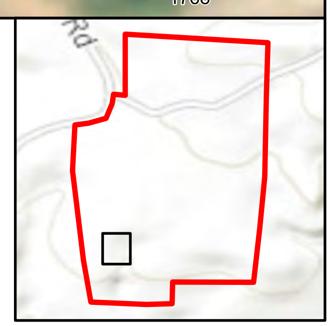
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

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SuD - Supan very stony loam

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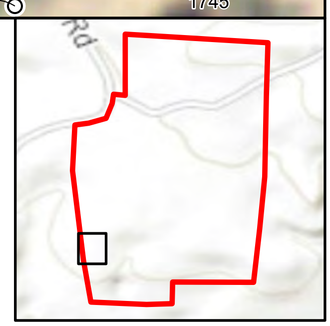
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

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SuD - Supan very stony loam

PcD - Parrish loam

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Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

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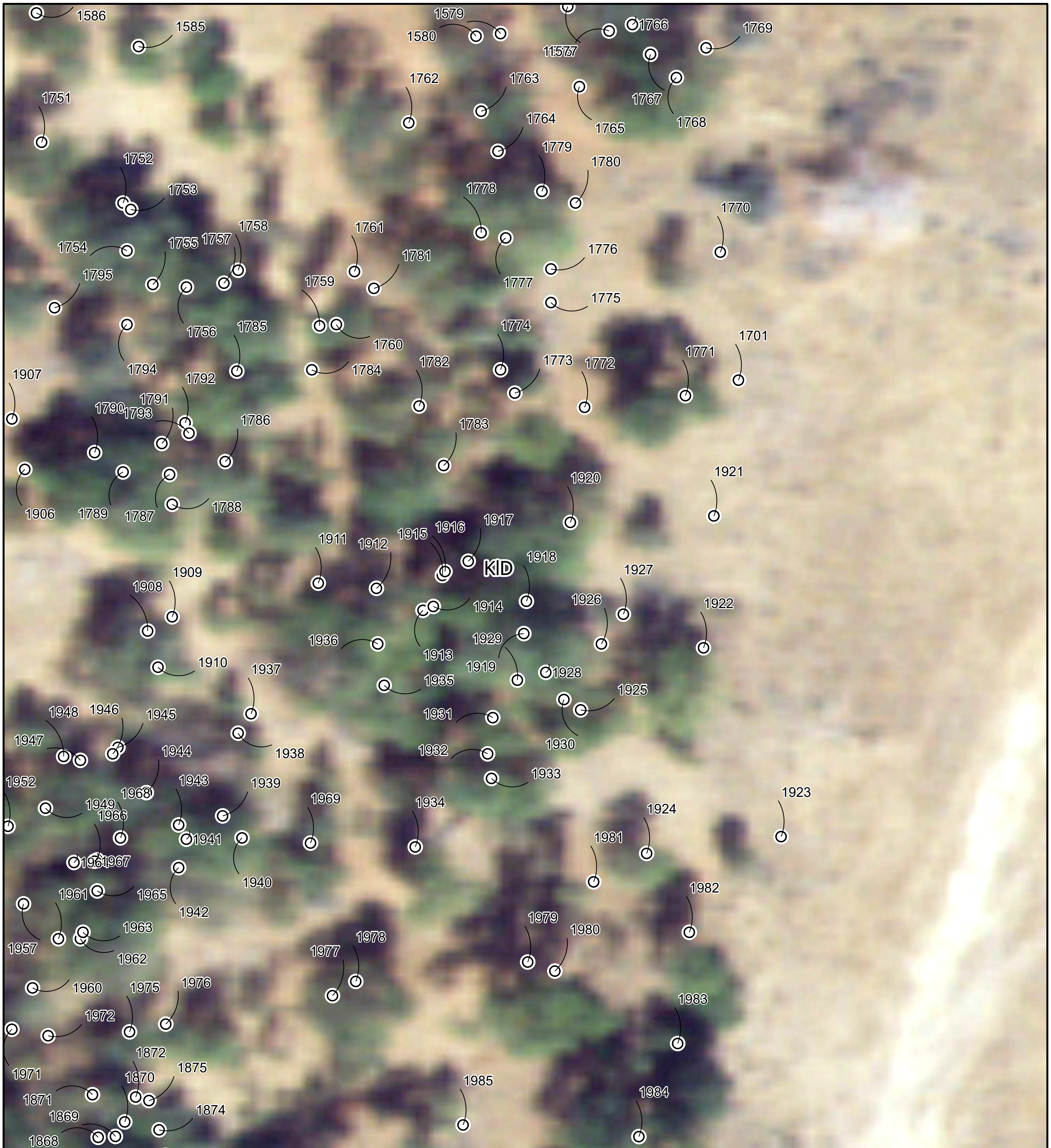
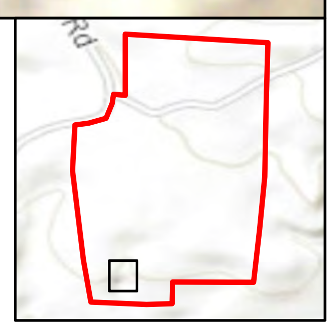


Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

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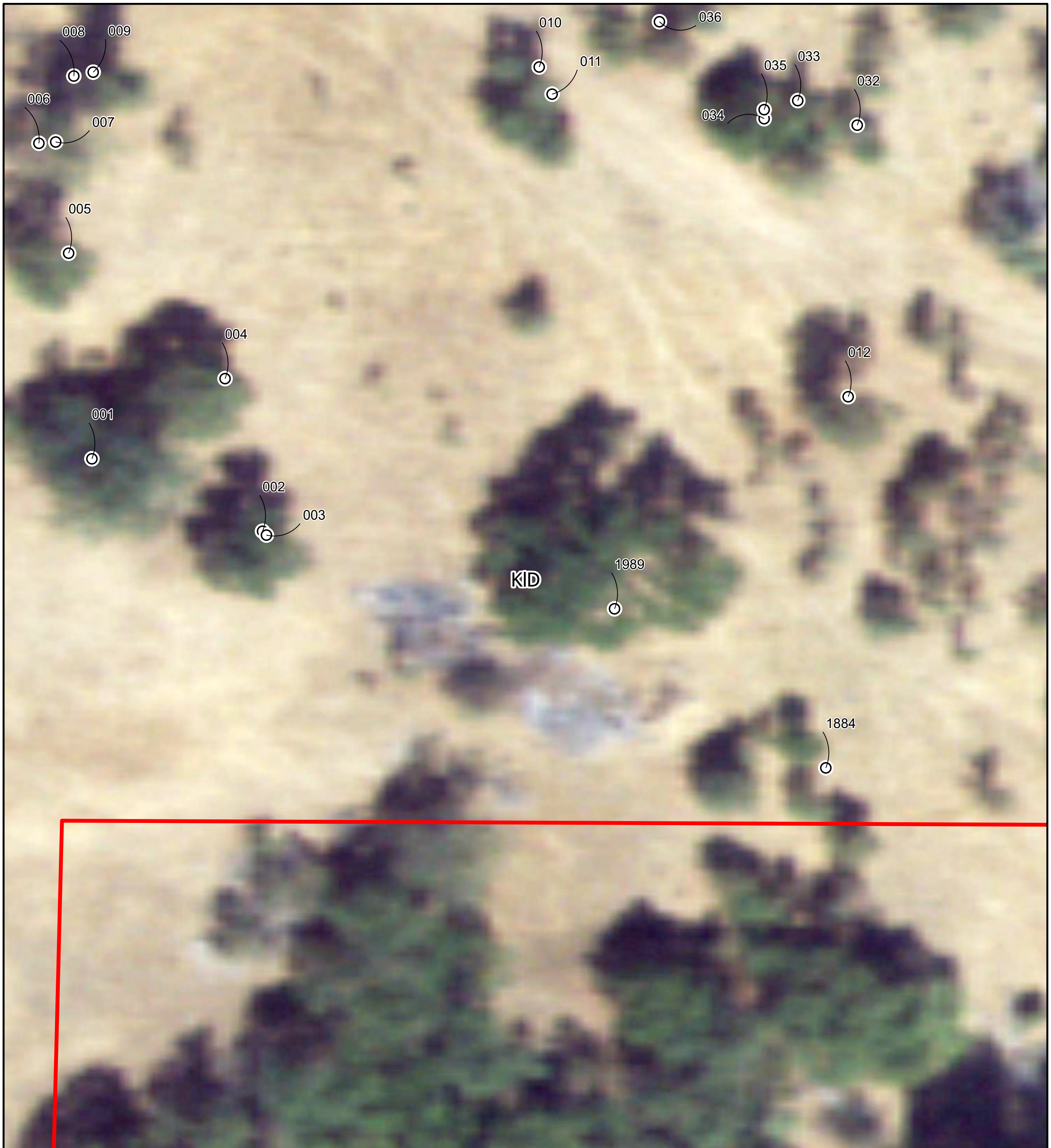

Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

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Figure 2. Tree Survey Results

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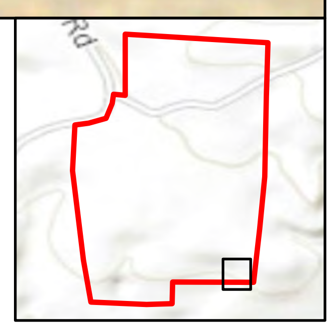

Survey Area (85.688 acres)

Soils

Tree Points

Soil Type
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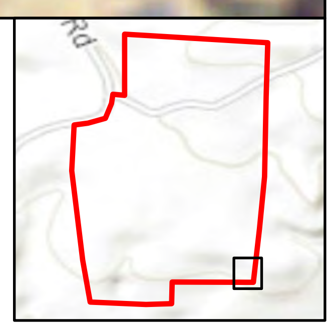
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

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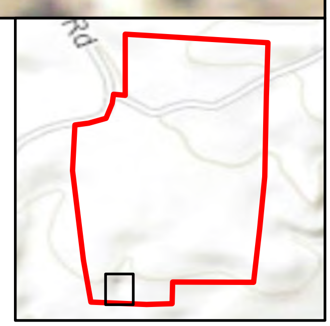
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

CmD - Cohasset stony loam

SuD - Supan very stony loam

PcD - Parrish loam

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Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

Tree Points

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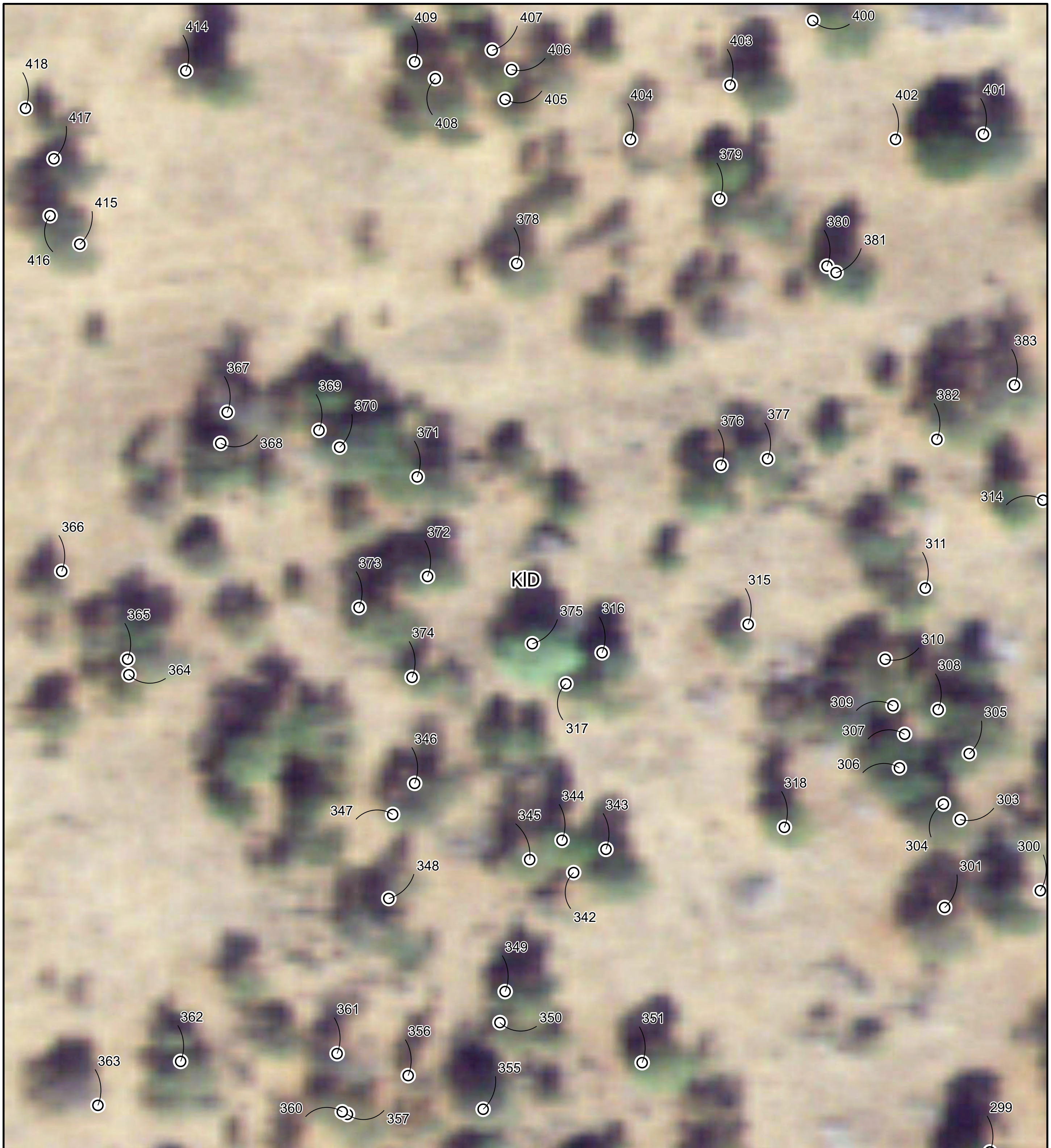
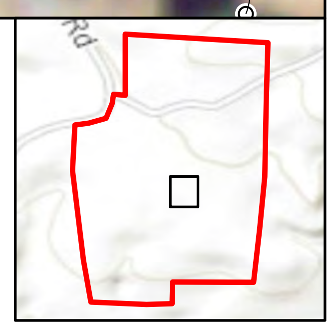


Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type
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SuD - Supan very stony loam
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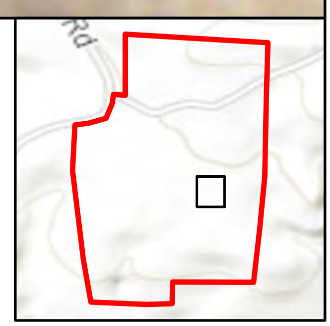
Figure 2. Tree Survey Results



Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

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SuD - Supan very stony loam

PcD - Parrish loam

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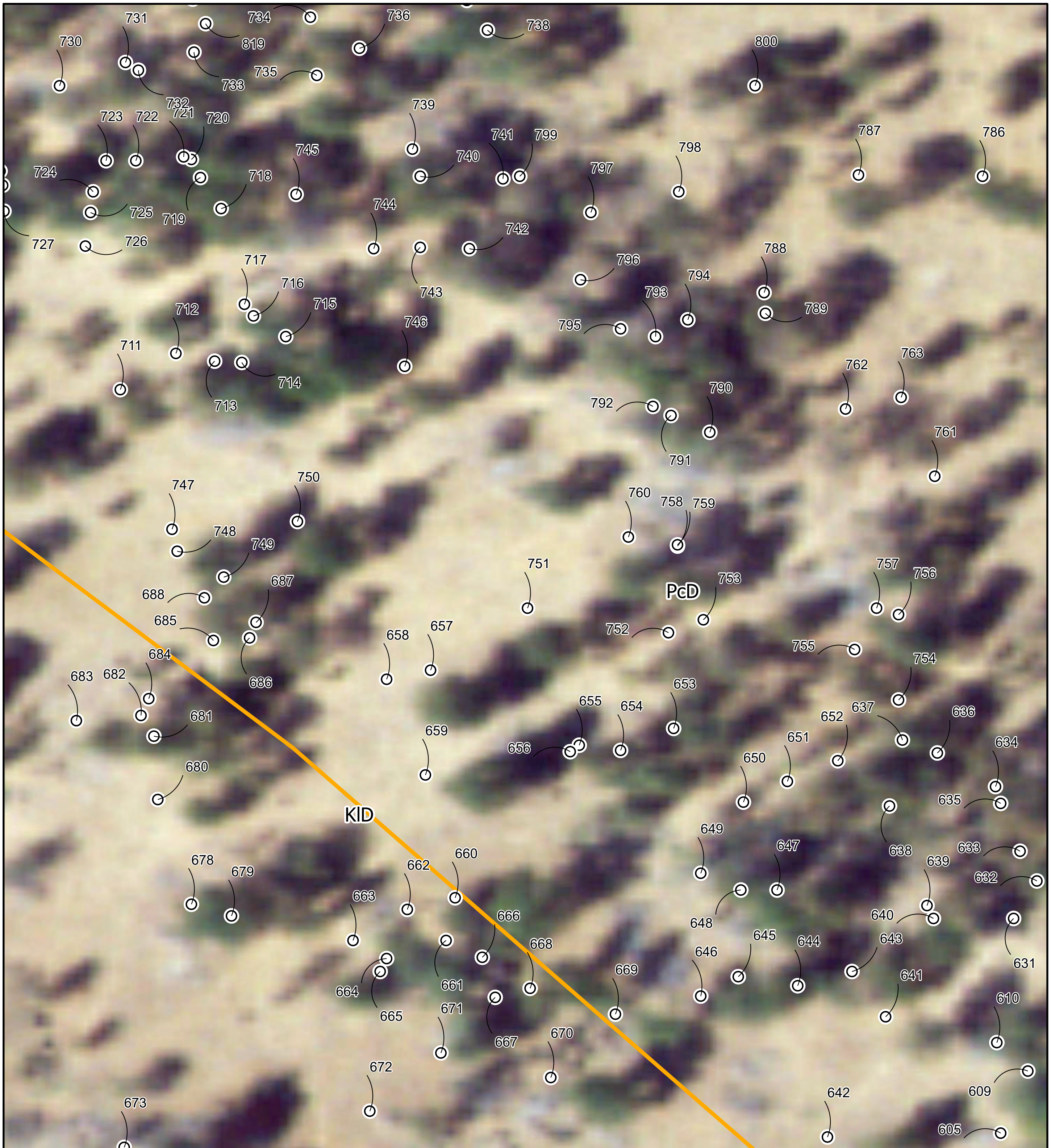

Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

CmD - Cohasset stony loam
SuD - Supan very stony loam
PcD - Parrish loam
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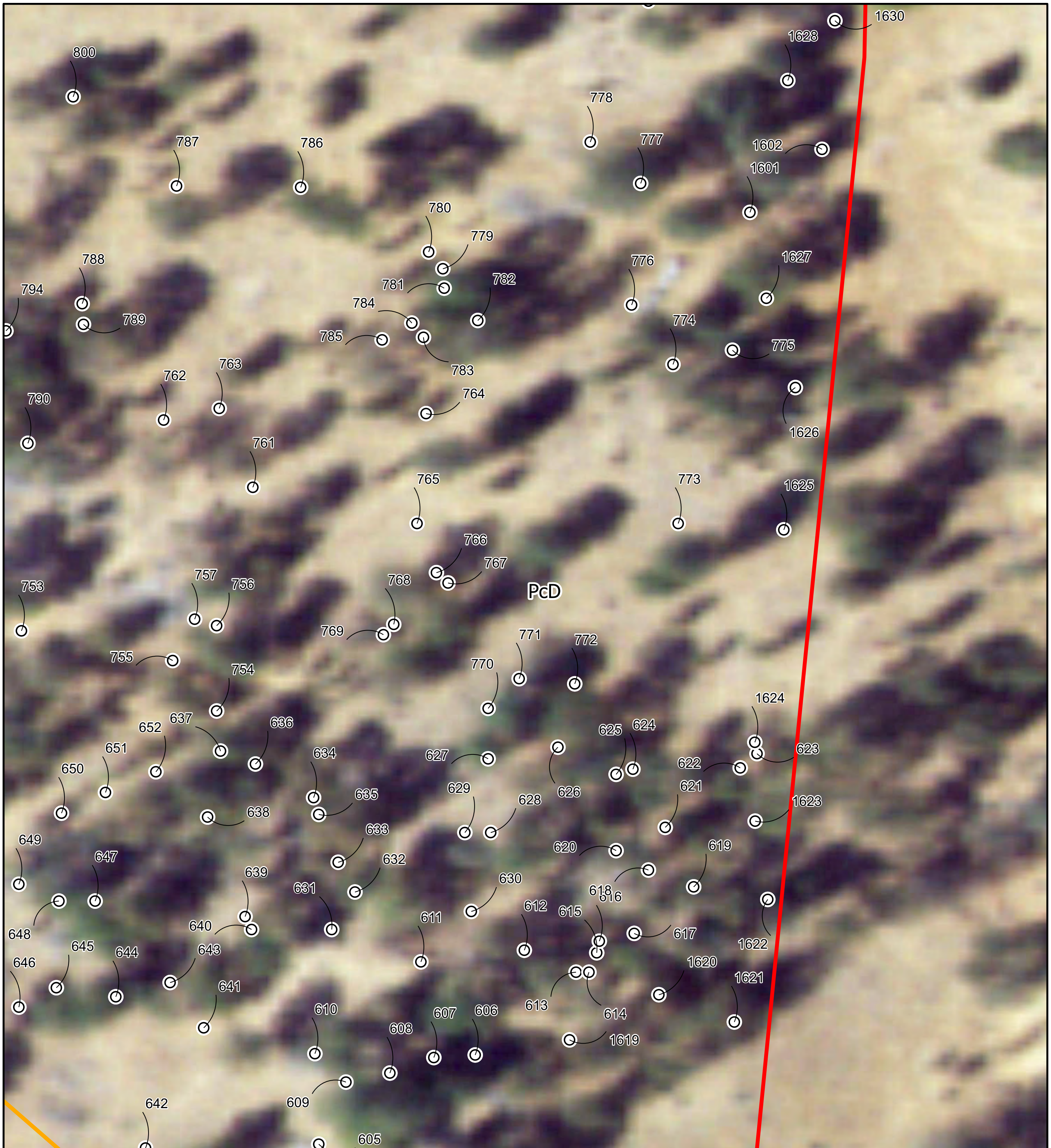

Figure 2. Tree Survey Results

Survey Area (85.688 acres)

Soils

Tree Points

Soil Type

CmD - Cohasset stony loam

SuD - Supan very stony loam

PcD - Parrish loam

KiD - Kilark very stony sandy clay loam

Appendix F – Nesting Birds Survey Report

July 1, 2020

Patrick Golden
Heritage Environmental Consultants, LLC
8071 East 33rd Avenue
Denver, CO 80238

SUBJECT: Round Mountain 500kV Area Dynamic Reactive Support Project – Nesting Bird Survey Report

Dear Patrick:

Per your request, we are providing you with the results of our nesting bird surveys for the proposed Round Mountain 500kV Area Dynamic Reactive Support Project (Project) located along Fern Road, in rural Shasta County, California (Figure 1).

In accordance with the California Department of Fish and Wildlife (CDFW), bird nesting and breeding surveys are to be conducted by a qualified biologist prior to construction activities. If actively nesting birds are observed, the biologist will consult with the CDFW to establish species-specific buffers and work activities will be avoided until the young have fledged. The survey area is located at a privately owned open space parcel with existing 500kV towers, several bee boxes, and is actively grazed by cattle in a blue oak/gray pine woodland and non-native annual grassland.

I conducted focused nesting bird surveys within the survey area (Figure 2) on April 24, May 22, and June 26, 2020. The surveys covered the entire proposed project area and surrounding habitats including adjacent lands out to and including a 300 foot-buffer for raptors and a 75 foot-buffer for passerines with additional focus on ridges and trees within 0.5-mile radius for bald and golden eagles. All suitable nest trees and structures were carefully searched for nests and suitable substrates for nesting birds. During the survey, the biologist walked the survey area and visually surveyed all the habitats. Potential active nests were observed for several minutes to determine the presence of birds or nesting activity. Birds present in the project area were observed for any evidence of breeding behavior (such as carrying food or nesting materials).

Details including weather conditions, timing and notes are included on the attached survey forms. While several assumed breeding pairs of passerines were observed (see attached species list), no active bird nests were located within the survey area. Additionally, 8 large non-active stick nests were observed in the transmission towers located within the survey area (see attached photos). These nests were the primary focus during the follow up surveys in May and June. During the April surveys, we observed a pair of Red-tailed Hawks inspecting two of the nests (one within the survey area, one outside the survey area to the south), but they did not end up using any of the nests during the 3 visits and they did not display any nest building behaviors.

Based on the results of the survey, consultation with CDFW is not currently required due to the lack of active nests within the survey area. While no active nests were observed, there could still be actively nesting birds present within the survey area during construction. If construction activities are required to occur between February and August of any given year, we recommend that a pre-construction nesting bird survey be conducted within 72-hours prior to the initiation of earth moving, tower maintenance, and/or any tree removal activities to comply with the Migratory Bird Treaty Act and California Fish and Game Code.

Please do not hesitate to contact me if you have any questions at (530) 710-4059 or by email at fostidae@yahoo.com.

Sincerely,

Jonathan Foster
Biologist

Cc: Dustin Joseph – KP Environmental

Attachments:
Figure 1. Project Location
Figure 2. Survey Area
Photos 1-4
Bird Species List
Survey Forms

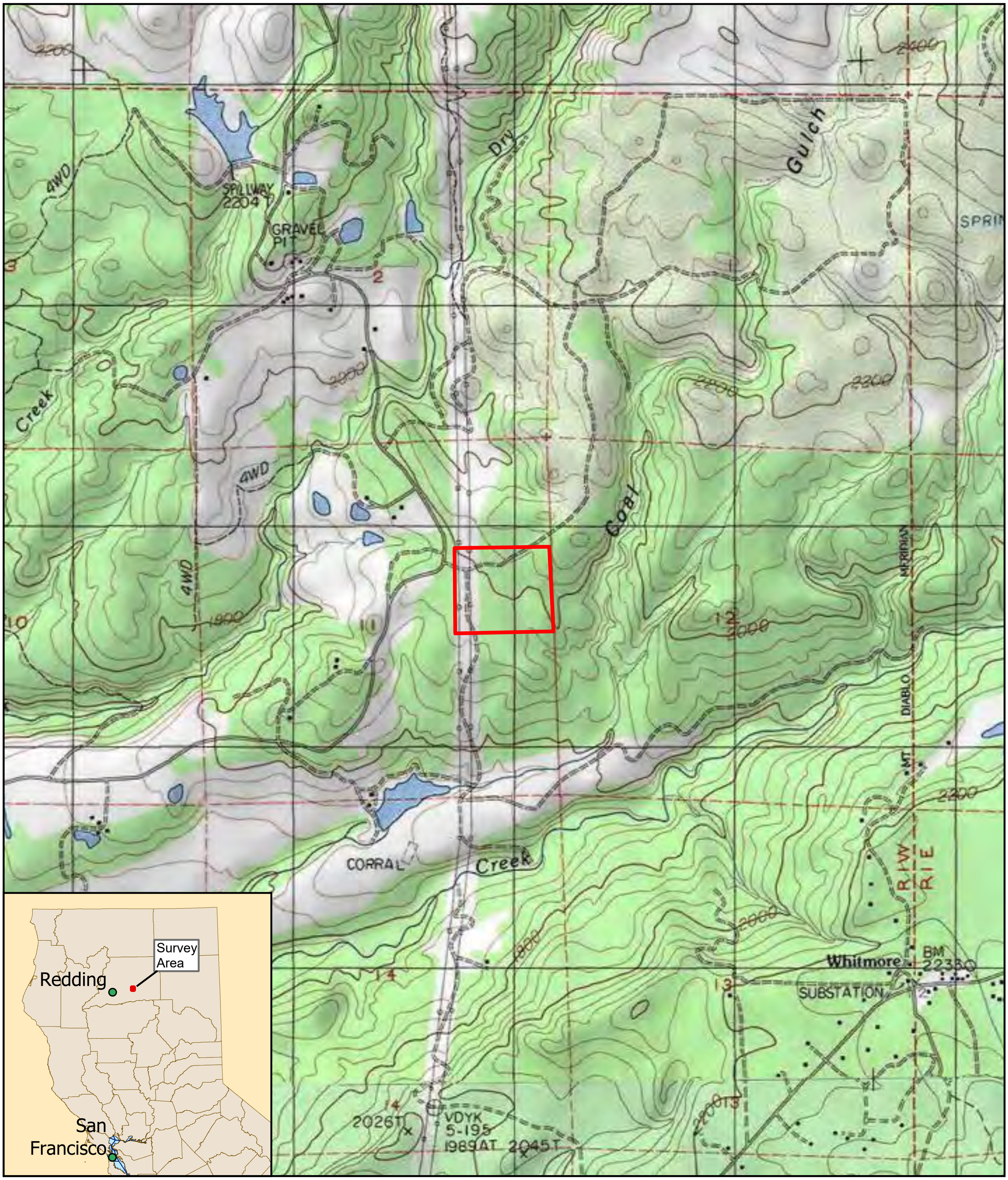

Figure 1: Project Location/Vicinity Map

Legend

Survey Area (41.668 total acre)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet

Scale: 1:24,000

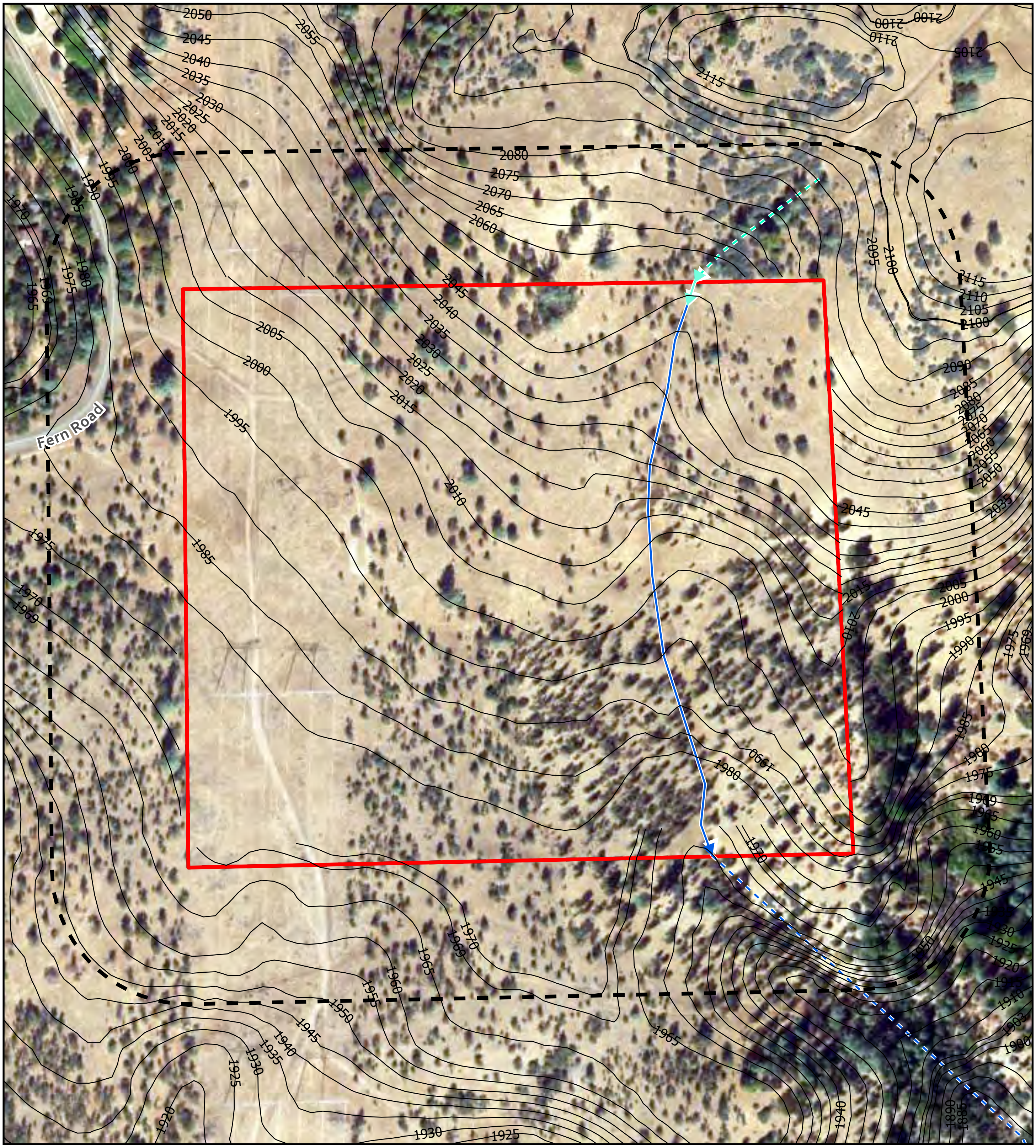

Figure 2: Round Mountain 500kV Area Dynamic Reactive Support Project Nesting Bird Survey Area

Legend

- Survey Area (41.668 total acres)
- 300-foot Survey Area
- Intermittent Stream
- Intermittent Stream out of survey area
- Ephemeral Stream
- Ephemeral Stream out of survey area

Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Contours derived from 3DEP
Aerial photo 2018 NAIP
Site visit April 7, April 24, May 22, and June 26, 2020 by Jonathan Foster
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet

1 inch equals 300 feet

Photo 1. Unoccupied nests in the 4 onsite towers. Towers 11/59 (foreground) and towers 11/58 (background).

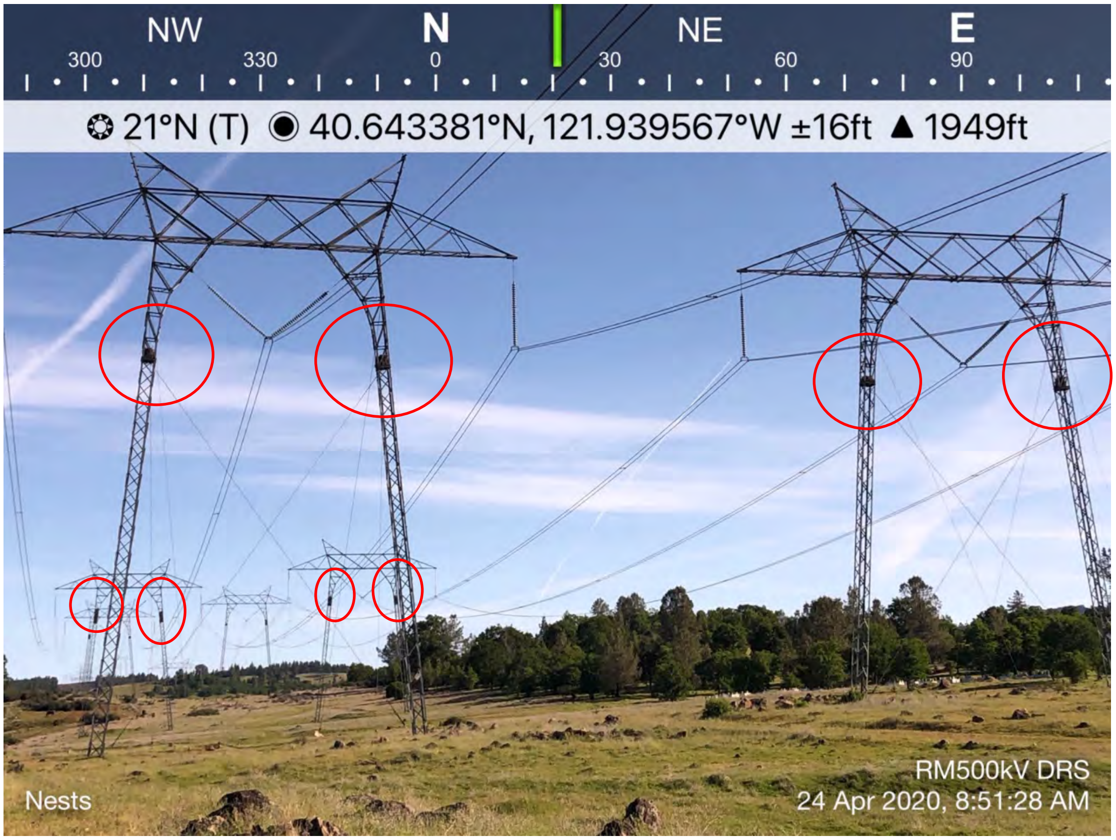

Photo 2. Unoccupied nests in the survey area. Towers 11/58 (foreground) and towers 11/57 (background).

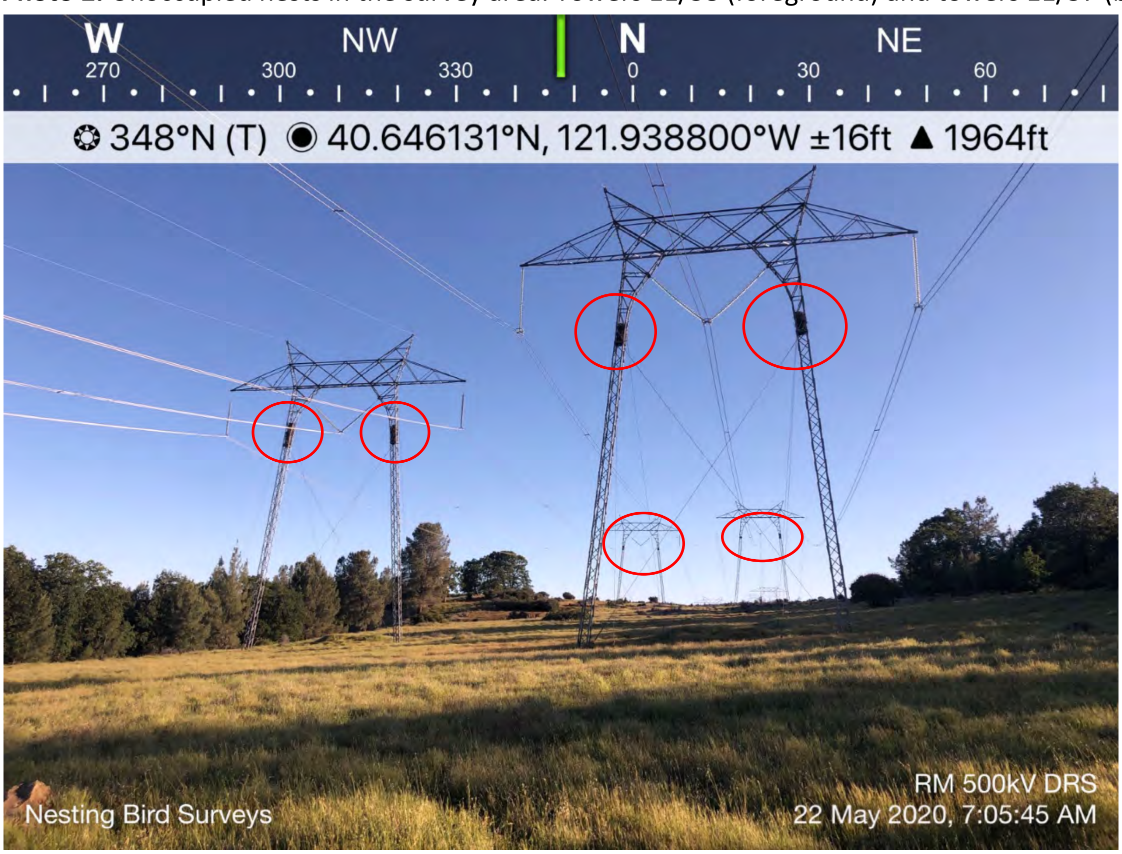

Photo 3. Unoccupied nests in the survey area. Towers 11/59 (foreground) and towers 11/60 (background).

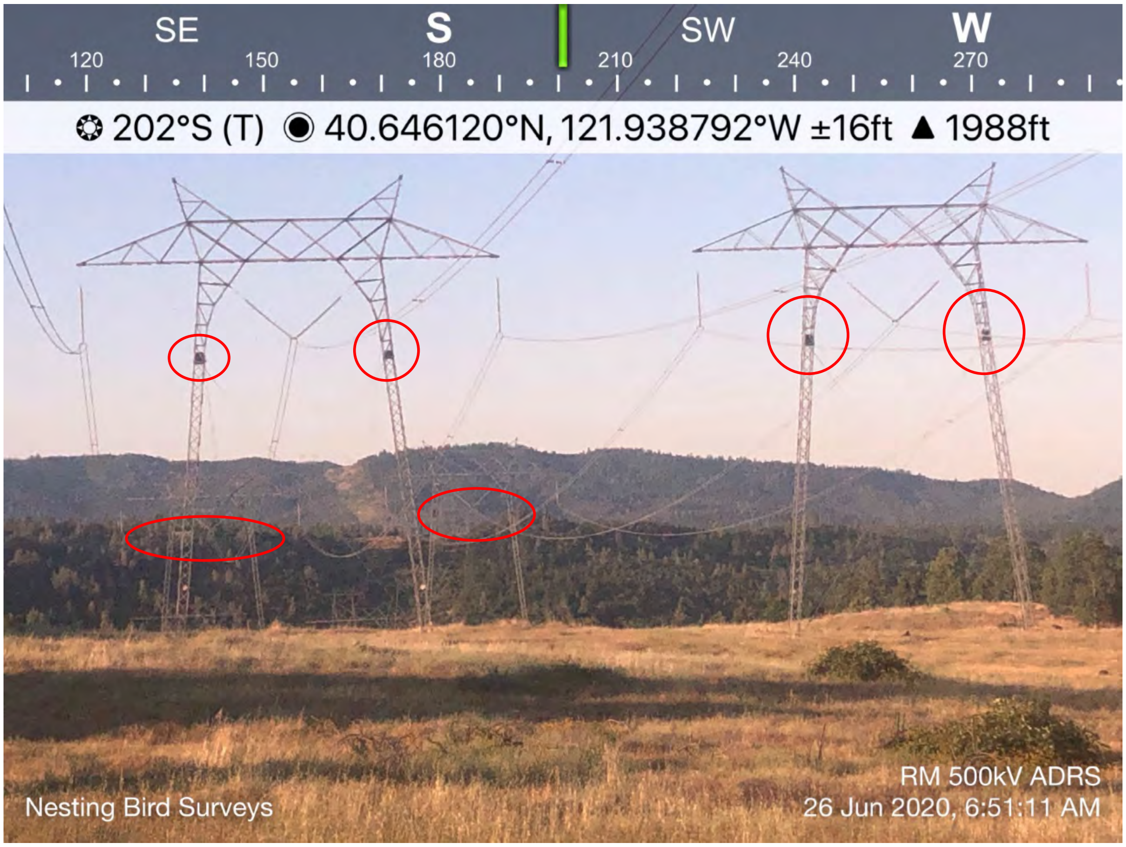

Photo 4. General habitat overview of the survey area.

Bird species observed in the survey area

Acorn Woodpecker (pair)
American Goldfinch (pair)
American Robin
Anna’s Hummingbird
Black Phoebe
Blue-gray Gnatcatcher
Brown-headed Cowbird
Bullock’s Oriole
Bushtit (pair)
California Quail (pair)
California Scrub Jay
Canada Goose
Dark-eyed Junco
European Starling
Lark Sparrow (pair)
Lesser Goldfinch (pair)
Lewis’s Woodpecker (pair)
Osprey
Red-tailed Hawk (pair)
Red-winged Blackbird
Swainson’s Thrush
Turkey Vulture
Western Wood-peewee
White-crowned Sparrow (pair)
Yellow-rumped Warbler

Nesting Bird Survey

Transmission line: RM 500kV DRS prj.

~~Tower No.:~~ 11/59

GPS coordinates: see Fig 1

Date: 4/24/20

Surveyor(s): J.Foster

Firm: Foster Consulting

Start time: 0745

End time: 1045

ROW Habitat (WHR): ~~blue oak/gray pine &~~ non-native grassland

Ownership: private & PGE ROW

Non-ROW Habitat (WHR): blue oak/gray pine woodland

Passerines survey radius: 75'

Raptors survey radius: 300'

Eagles: 0.5-mi radius (cursory survey)

Weather conditions: fall sun, clear, great vis wind 0-1 mph, 68-72F

Active Nest Observations

Species	Status	GPS coordinates	Distance to Tower	Azimuth to Tower
Ø				

Status: constructing (C), incubating/brooding (I), nestlings (N), fledglings (F)

Photographs

Photo No.	Description
	~~Transmission tower ID number~~
1	Photo of 8 unoccupied nests in the towers onsite

Other Observations

None of the nests in the towers visible onsite or offsite had active nesting birds or raptors. These ~~nests~~ stick nests were likely built during previous years by corvids or raptors. One pair of red-tailed hawks were acting territorial around tower 11/59 and other nests but were not focused on any one and did not provide any materials to build. Other raptors observed included a single Osprey flying through the ROW & multiple Turkey Vultures. Breeding bird pairs observed included CAGO, LEWO, LASP, WCSP, LEGO, BUSH, CAQU, BLPH, YRWA, ACWO & individual CAJA, RWBL, AMRO

Nesting Bird Survey

Transmission line: RM 500KV DRS prj.

Tower No.: 11/59

GPS coordinates: See Fig 1

Date: 5/22/20

Surveyor(s): Foster

Firm: Foster Consulting

Start time: 0700

End time: 0800

ROW Habitat (WHR): Non-native Annual grassland

Ownership: PGE ROW

Non-ROW Habitat (WHR): blue oak/gray pine forest

Passerines survey radius: 75 ft.
Raptors survey radius: 300 ft.
Eagles: 0.5-mi radius (cursory survey)

Weather conditions: clear, full sun, great vis., breezy, 2-5 mph wind, 46-52°F

Active Nest Observations

Species	Status	GPS coordinates	Distance to Tower	Azimuth to Tower
Ø				

Status: constructing (C), incubating/brooding (I), nestlings (N), fledglings (F)

Photographs

Photo No.	Description
	~~Transmission tower ID number~~
2	~~[illegible]~~ - nests on towers (unoccupied)

Other Observations

No bird activity at the stick nests in the towers or the adjacent towers. Other species included: STAR, SWTH, BUOR, LEWO, ACWO, CAQU, BLPH, CAJA, AMRO, RWBL. No raptors were observed.

Nesting Bird Survey

Transmission line: RM 500kV ADRS project

Tower No.: 11/59

GPS coordinates: See Figure 1. Location

Date: 6/26/20

Surveyor(s): J. Foster

Firm: Foster Consulting

Start time: 0645

End time: 0745

ROW Habitat (WHR): Non-native annual grassland

Ownership: private & PG&E ROW

Non-ROW Habitat (WHR): blue oak / gray pine woodland

Passerines survey radius: 75'

Raptors survey radius: 300'

Eagles: 0.5-mi radius (cursory survey)

Weather conditions: clear, sunny, little hazy, good ~~a~~ vis., wind 1-2 mph, 72°F

Active Nest Observations

Species	Status	GPS coordinates	Distance to Tower	Azimuth to Tower

Status: constructing (C), incubating/brooding (I), nestlings (N), fledglings (F)

Photographs

Photo No.	Description
	~~Transmission tower ID number~~
3	nests of towers (unoccupied)

Other Observations

No bird activity at the tower nests and no raptors observed.
Other spp. observed: STAR, ACWO, LEWO, CAQU, CAJA, AMRO
RWBL, BHCO

Appendix G – Aquatic Resources Survey Reports

Round Mountain 500kV Area Dynamic Reactive Support Project

Aquatic Resources Delineation Report

March 2021

Table of Contents

Introduction

This report presents the results of a revised delineation of aquatic resources for the proposed Round Mountain 500kV Area Dynamic Reactive Support Project (Project) in Shasta County, near Whitmore, California (Appendix A - Figure 1). LS Power Grid California is proposing to build a new substation and switching yard on an undeveloped private parcel along Fern Road in Shasta County. This report represents an expanded survey area from the July 2020 report with the same project title.

The Project's permanent footprint will occupy at least 20-acres within the approximately 86-acre survey area evaluated for this report. The survey area encompasses the proposed Project's building and staging areas, covering the entire area necessary to complete and meet the Project's purpose and need.

This delineation was prepared in support of a preliminary jurisdictional determination, meaning that applicant waives or sets aside questions regarding the jurisdictional status of aquatic resources on a particular site, as described in U.S. Army Corps of Engineers Regulatory Guidance Letter No. 16-01 (U.S. Army Corps of Engineers 2016).

This report describes site characteristics, the methods used to delineate potentially jurisdictional areas, and the characteristics of the potential jurisdictional features. Appendices to the report provide additional detail.

- Appendix A: Aquatic Resources Delineation Drawing & Figures
- Appendix B: Routine Wetland Determination Data Forms & OHWM Datasheets
- Appendix C: Plant Species Observed in the Survey Area
- Appendix D: Representative Site Photographs

Contact Information

Project Applicant:

LS Power Grid California
16150 Main Circle Drive
Suite 310
Chesterfield, MO 63017
(636) 532-2200

Project Consultant:

Heritage Environmental Consultants, LLC
Attn: Patrick Golden
8071 East 33rd Avenue
Denver, CO 80238
(303) 618-7910
pgolden@heritage-ec.com

Report Preparer:

Foster Consulting
Attn: Jonathan Foster
5427 Valleyridge Drive
Redding, CA 96003
(530) 710-4059
Foster.EnvConsulting@gmail.com

Driving Directions

From Redding take SR-44 East and turn left onto Old Highway 44, then turn right onto Whitmore Road, then turn left onto Fern Road. Follow Fern Road until arriving at the property gate at approximately 40°38'45.73"N, 121°56'20.48"W. The drive time is about 30 minutes and access and permissions are required to enter the gated property.

Location & Ownership

The survey area is located along Fern Road and the Round Mountain-Table Mountain 500kV power lines on the Whitmore Geological Survey (USGS) 7.5-minute quadrangle (Figure 1. in Appendix A) in Section 11, Township 23 North, Range 1 West, Mt. Diablo Meridian at coordinates 40°38'45.73"N, 121°56'20.48"W. The survey area is located within assessor parcel number 099-450-001, which the applicant has secured an option to purchase acreage sufficient to complete the Project.

Setting

The survey area is within the Cascade Range Foothills Subregion (Baldwin et al. 2012:39). Topography is composed of a mix of flat terrain with rolling hills, and an elevation at approximately 1900 to 2100 feet above mean sea level and is surrounded by rural land uses including residential, ranch land, utility right of way, and open space within Shasta County. The habitat within the survey area is comprised of non-native grassland and blue oak-gray pine woodland.

Climate

The climate in the survey area is characterized by hot, dry summers and cool, moist winters. The National Weather Service Cooperative Network weather stations closest to the survey area is the Round Mountain, California weather station (CA 047581), located about 10 miles north of the survey area at an approximate 1000-foot higher elevation. The mean annual precipitation is approximately 60 inches of rain mostly between October and May, with approximately 12 inches of snow between November and March (Western Regional Climate Center 2021).

Hydrology

The survey area is within the Sacramento-Lower Cow-Lower Clear watershed Hydrologic Unit Code 18020101) and drains to Old Cow Creek. The site contains segments of seven unnamed small streams and four seasonal wetlands.

Soils

Four soil series units have been mapped in the survey area (Natural Resources Conservation Service 2021), none of which are listed hydric soils (See Table 1. below).

Table 1. Soil Map Units in the Survey Area

Soil Map Unit	Soil Map Unit Name	Dominant Soil Texture	Restrictive Layer	Depth to Restrictive Layer	Drainage Class	Hydrologic Soil Group – Hydric?
CmD	Chohasset stony loam, 0-30% slopes	Loam	Paralithic bedrock	>60 inches	Well drained	B – No
PcD	Parrish loam, 8-30% slopes	Loam	Lithic bedrock	>38 inches	Well drained	D – No
SuD	Supan very stony loam, 0-30% slopes	Loam	Lithic bedrock	>33 inches	Well drained	C- No
KlD	Kilarc very stony sandy clay loam, 10-30% slopes	Clay loam	Paralithic bedrock	>44 inches	Moderately well drained	C- No

Vegetation Types

The survey area is predominantly mixed nonnative annual grassland and oak woodland (blue oak-gray pine forest). Vegetation types are described below.

Blue Oak/Gray Pine Woodland

Mixed blue oak and gray pine woodland is scattered across the survey area. Blue oak (*Quercus douglasii*) and gray pine (*Pinus sabiniana*) are the dominant species with open gaps between the tree crowns and small inclusions of black oak (*Quercus kelloggii*) and California buckeye (*Aesculus californica)*. There is a marginal shrub layer within the survey area with poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), and whitleleafed mazanita (*Arctostaphylos viscida*) and a herbaceous layer dominated by annual grasses described below.

Nonnative Annual Grassland

A mixed nonnative annual grassland with inclusions of native grasses is the dominant understory community within the survey area. The grasslands are dominated by wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), bluegrass (*Poa bulbosa*), medusa head (*Elymus caput-medusae*), seaside barley (*Hordeum marinum*) with an herbaceous layer that includes yellow star thistle (*Centaurea solstitialis*), heron bill (*Erodium botrys*), rose clover (*Trifolium hirtum*), lupine (*Lupine bicolor*), and butter ‘n eggs (*Triphysaria eriantha*). Additionally, the survey area was actively being grazed by cattle during the site visits.

National Wetlands Inventory

The National Wetlands Inventory (NWI) provides maps and information on the status, extent, characteristics, and functions of wetland, riparian, deepwater, and related aquatic habitats. The mapping is provided at a scale of 1:24,000 and uses the U.S. Fish and Wildlife Service’s wetland definition, which differs from the USACE definition in that requires the presence of only a single wetland parameter compared to USACE’s requirement of positive indicators of all three wetland factors. The NWI shows the extent of wetlands and deepwater habitats that can be determined with remotely sensed data, and originates from 1977 to the present. The NWI mapping can provide useful background information on the broad types of wetland and riparian vegetation communities, but cannot be used to delineate wetlands and other waters of the United States.

There are no wetlands mapped within the survey area in the NWI.

Methods

Fieldwork for the delineation was conducted on April 7th and 24th, 2020, and March 4th & 10th, 2021, by wetland ecologist Jonathan Foster of Foster Consulting. The surveyor used the routine on-site determination methods described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (U.S. Army Corps of Engineers 2008). Streams were mapped and delineated in the field in accordance with indicators and guidance in U.S. Army Corps of Engineers (USACE) Regulatory Guidance Letter No. 05-05, dated December 7, 2005 (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* (Lichvar and McColley 2008).

Methods and standards conform to the USACE Sacramento District’s *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (U.S. Army Corps of Engineers, Sacramento District 2016) and *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program* (U.S. Army Corps of Engineers, South Pacific Division 2016).

In accordance with the 1987 Manual and the 2008 Arid West Region Supplement, data on vegetation, soil, and hydrology characteristics that were used as the basis for determining if wetland boundaries were present, were collected and recorded on data forms (Appendix B).

A *Bad Elf GNSS Surveyor* global positioning system (GPS) with capable sub-meter accuracy was used to record the location of jurisdictional boundaries and data points wherever possible. This unit and receiver system collect corrected GNSS data in real time. The data were downloaded and superimposed onto color orthorectified aerial photographs and edited as necessary to generate the aquatic resources delineation map (Appendix A) in compliance with USACE minimum standards (USACE 2016).

A list of plant species observed in the survey area was compiled, and the scientific name and wetland indicator status of each species are provided following Lichvar et al. (2016) (Appendix C). Additionally, photographs were taken to show representative views of the survey area and contain location information on them (Appendix D).

Results

A total of 0.274 acre of potentially jurisdictional aquatic resources was identified in the survey area consisting of seven small stream segments and four small seasonal wetlands.

Appendix A depicts the survey area and stream mapped on a 2018, orthorectified true-color aerial photograph at a scale of 1 inch = 350 feet. A wetland delineation data form (upland representative area) and OHWM Delineation Datasheets documenting representative stream segments is located in Appendix B. A list of plants observed in the survey area is provided in Appendix C, with their scientific and common names and wetland indicator status (Lichvar 2012; Lichvar et al. 2012; U.S. Army Corps of Engineers 2016a). Lastly, representative photographs are provided in Appendix D.

Table 2. Aquatic Resources Identified in the Survey Area

Label	Feature Type	Cowardin Type	Area (Acres)	Average Width (ft)	Length (ft)	Depth (inches)
W-1	Seasonal Wetland	PAB3	0.033	-	-	1-2
W-2	Seasonal Wetland	PAB3	0.005	-	-	1-4
W-3	Seasonal Wetland	PAB3	0.020	-	-	1-2
W-4	Seasonal Wetland	PAB3	0.005	-	-	1-3
INT-1	Intermittent Stream	R4SB3	0.067	3	976	1-3
INT-2	Intermittent Stream	R4SB3	0.039	4	423	1-4
INT-3	Intermittent Stream	R4SB3	0.083	5	724	1-6
EPH-1	Ephemeral Stream	R4SB3	0.003	3	46	0-2
EPH-2	Ephemeral Stream	R4SB3	0.010	1	450	0-2
EPH-3	Ephemeral Stream	R4SB3	0.006	1	256	0-2
EPH-4	Ephemeral Stream	R4SB3	0.003	1	140	0-3
Totals			**0.274**		**3201**	

Intermittent Streams

Three unnamed intermittent stream segments (INT-1 through -3) were identified in the survey area and were determined to be intermittent based on their size, defined channel, presence of flowing water during the site visits, aquatic insects, frogs, and the presence of continuous and distinct OHWM indicators. These stream segments are likely to dry up in late spring or early summer in typical years and are influenced by groundwater from the surrounding landscape. Each of these stream segments are also fed by an ephemeral stream and/or seasonal wetland, which are described below. Limited vegetation was associated with this stream segments, mostly consisting of small intermediate patches of non-riparian facultative hydrophydic plants. Photographs in Appendix D show segments of each intermittent stream and the surrounding areas.

Ephemeral Streams

Four unnamed ephemeral stream segments (EPH-1 through -4) were identified in the survey area and were determined to be ephemeral based on their size, less defined channel, limited amount of flowing water 2 days after rains and less pronounced OHWM indicators. These stream segments contained low flowing and standing water during the April 7, 2020 and March 10, 2021 site visits. These segments do not appear to receive ground water influence and were dry during the April 24, 2020 and March 4, 2021 site visits. Additionally, only facultative upland and upland plant species were observed adjacent to these stream segments.

Seasonal Wetlands

A total of 0.063 acre of seasonal wetlands were identified in the project area, comprising of four small depressional areas (W-1 through -4). Seaside barley (*Hordeum marinum*) and navarretia (*Navarrettia intertexta*) are the dominant species for W-1 and W-2 while yellow monkey flower (*Erythranthe guttata*), seaside barley (*H. marinum*), and navarretia (*N. intertexta*) are the dominant species for W-3 and W-4. Both of these areas had other facultative wetland species intermixed within the shallow digressional areas. Data forms (Appendix B) provide information on these two sets of wetlands. Photographs in Appendix D also show the seasonal wetlands.

Jurisdictional Status

The streams and wetlands described above located within the survey area meet the criteria to be considered jurisdictional under both current state and federal clean water act laws and under California Department of Fish and Wildlife's (CDFW) Lake and Streambed Alteration Program. It is recommended to obtain a verification of this report and drawing with all applicable agencies prior to any earth moving activities in potential waters of the U.S. or State.

In summary, the stream segments located in the survey area flow offsite and enters an irrigation canal that receives its water from Old Cow Creek and then returns to Old Cow Creek downstream. Old Cow Creek is a tributary to Cow Creek, a tributary to the Sacramento River, which is a tributary to the San Francisco Bay and Pacific Ocean.

The small stream segments that are labeled ephemeral (EPH-1 through -4) and the seasonal wetlands not associated with any stream segments (W-1 and W-2) may not be considered federal Waters of the United States under the newly published Navigable Waters Protection Rule, but could be subject to change and should be verified as non-jurisdictional by the U.S. Army Corps of Engineers prior to proceeding with any construction activities that could result in fill entering these areas.

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APPENDIX A – Aquatic Resources Delineation Drawing & Figures

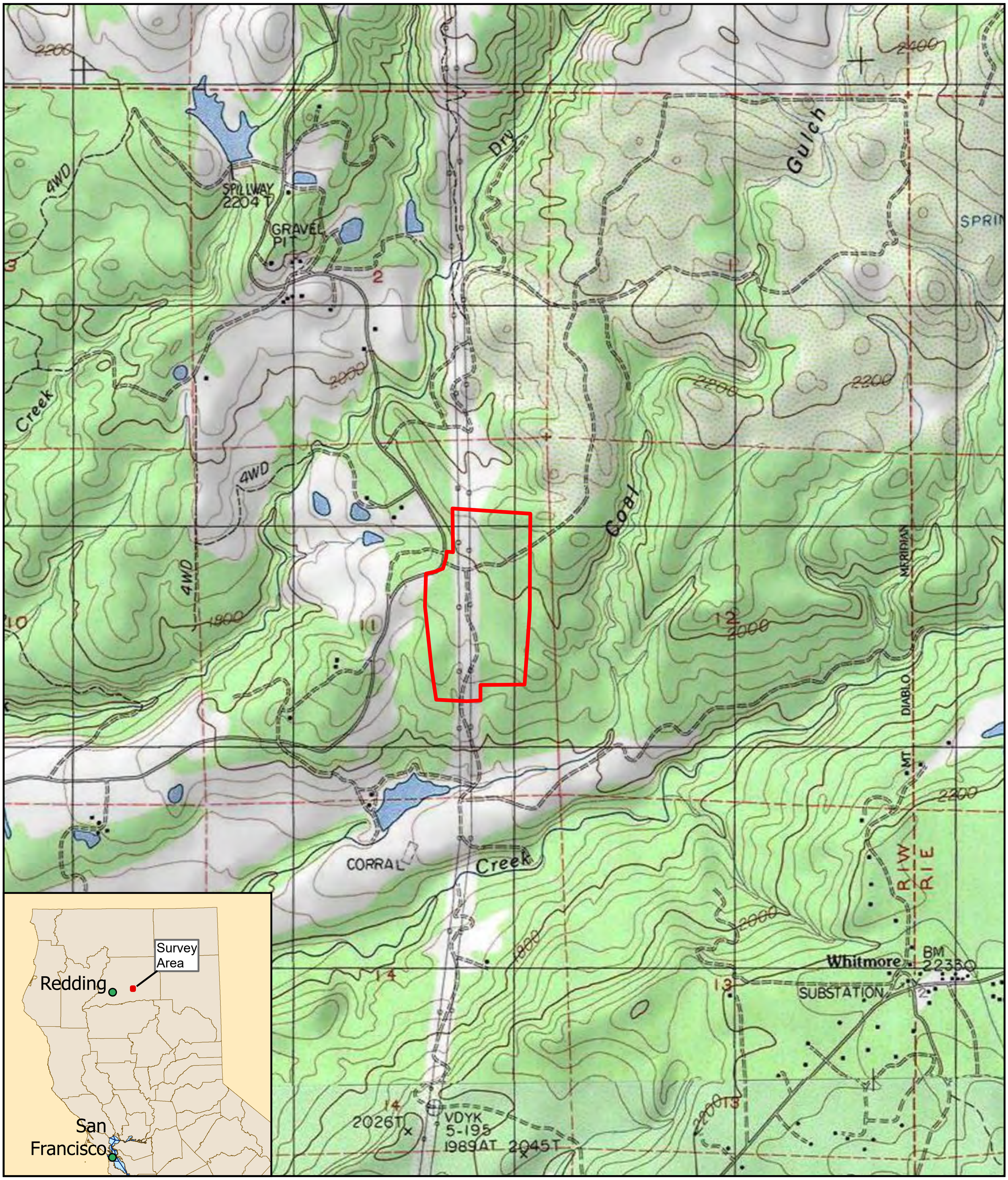


Figure 1. Project Location/Vicinity Map

Legend

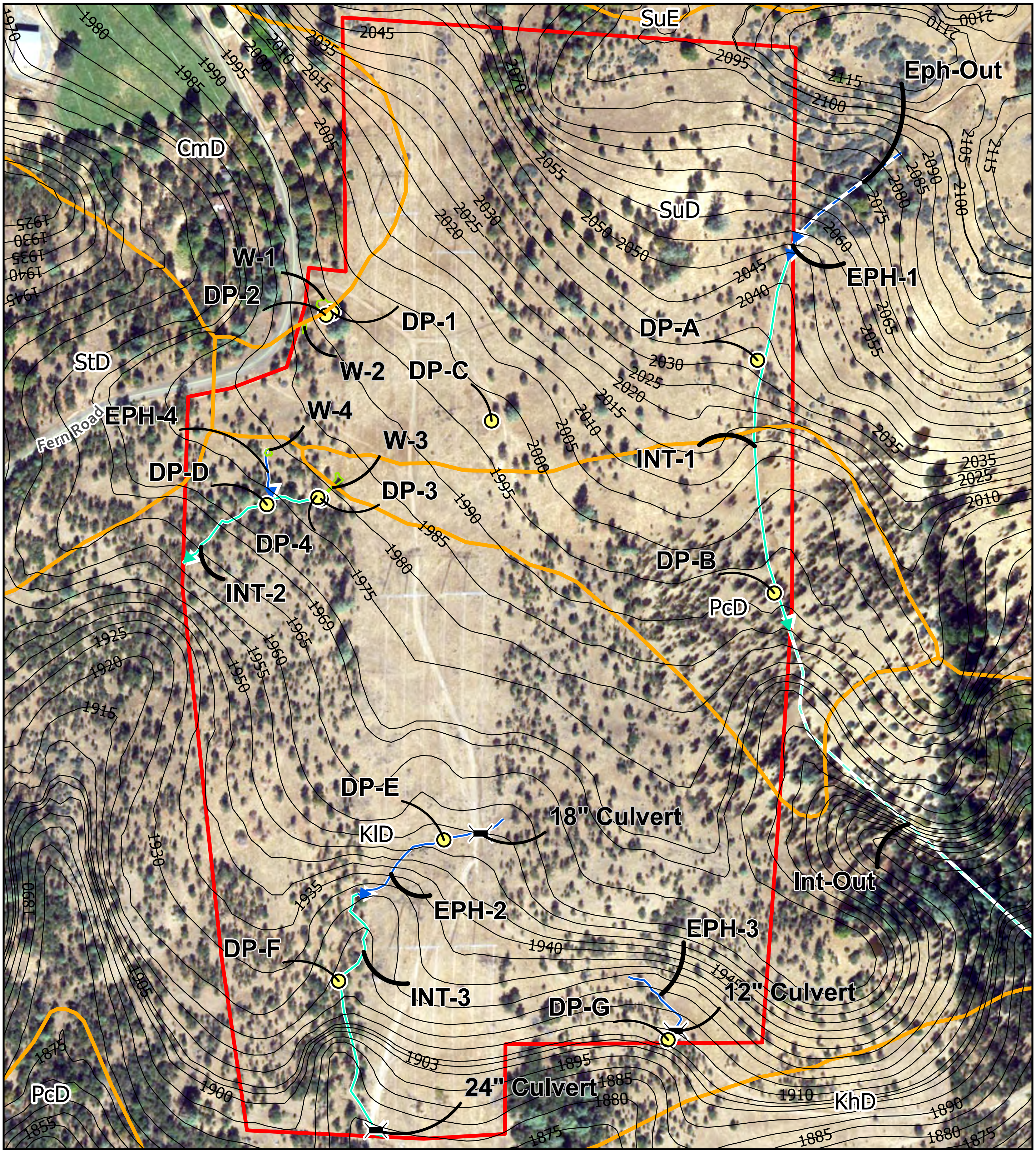
Survey Area (85.688 total acre)

Round Mountain 500kV Area Dynamic Reactive Support Project
Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Coordinates: 121°56'14"W 40°38'42"N

N

0 500 1,000 2,000 Feet

Scale: 1:24,000



Appendix A. Round Mountain 500kV Area Dynamic Reactive Support Project Delineation Drawing

Survey Area (85.688 acres)
Wetland (0.063 Total Acres)
Soils
Ephemeral Stream (0.023 Total Acres)
Ephemeral Stream out of survey area
Intermittent Stream (0.188 Total Acres)
Intermittent Stream out of survey area
Data Point
Culvert

Potential Waters of the U.S.	Length (Linear Feet)	Width (Feet)	Area (Acres)
Seasonal Wetland (W-1)	60	24	0.033
Seasonal Wetland (W-2)	35	6	0.005
Seasonal Wetland (W-3)	80	11	0.020
Seasonal Wetland (W-4)	20	20	0.005
Intermittent Stream (INT-1)	967	3	0.067
Intermittent Stream (INT-2)	423	4	0.039
Intermittent Stream (INT-3)	724	5	0.083
Ephemeral Stream (EPH-1)	46	3	0.003
Ephemeral Stream (EPH-2)	450	1	0.010
Ephemeral Stream (EPH-3)	256	1	0.006
Ephemeral Stream (EPH-4)	140	1	0.003
Totals	3,201		0.274

Soil Type .
CmD - Cohasset stony loam
SuD - Supan very stony loam
PcD - Parrish loam
KiD - Kilark very stony sandy clay loam

Whitmore 7.5' USGS Quadrangle
Portion of Section 11, T32N, R01W MDB&M
Contours derived from 3DEP
Aerial photo 2018 NAIP
Site visit March 4, 2021
by Jonathan Foster
Coordinates: 121°56'18"W 40°38'40"N

N

0 500 1,000 2,000 Feet

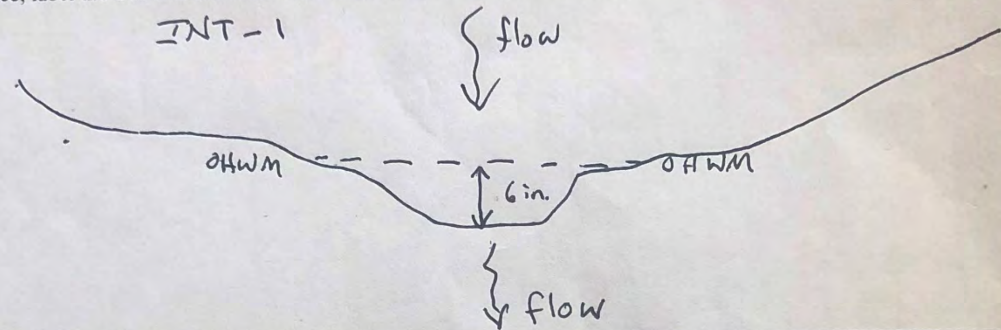
1 inch equals 350 feet

APPENDIX B – Wetland Delineation Data Sheets

Datasheet # A

OHWM Delineation Datasheet

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☒ Gentle (< 30°) | ☐ None

Notes/Description: Pasture influenced / disturbed

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	95%			5%		Y
Below OHWM	85%		5%	10%		Y

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

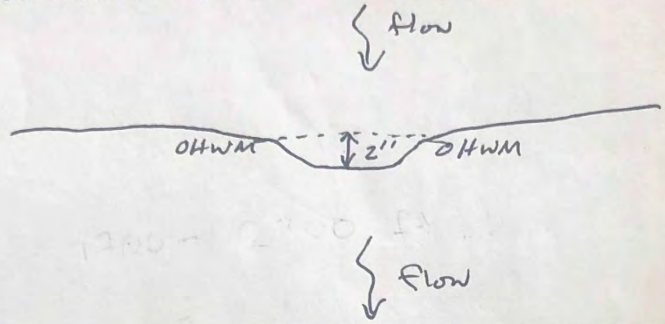
	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM			95	5
Below OHWM			10	90

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Datasheet # B **OHWM Delineation Datasheet** Page 2 of 2

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☑ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	90			10		Y
Below OHWM	85		5	10		Y

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM			95	5
Below OHWM			5	95

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LS Power - Fern Rd City/County: Shasta Sampling Date: 4/7/20

Applicant/Owner: ROW State: CA Sampling Point: C

Investigator(s): Foster Section, Township, Range: 11, 23N, 1W

Landform (hillslope, terrace, etc.): terrace, plateau Local relief (concave, convex, none): concave Slope (%): 3-30

Subregion (LRR): C Lat: 40° 38' 41.79 Long: 121° 56' 14.17 Datum: WGS

Soil Map Unit Name: Parrish loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______ No ✓	Is the Sampled Area within a Wetland?	Yes ______ No ✓
Hydric Soil Present?	Yes ______ No ✓		
Wetland Hydrology Present?	Yes ✓ No ~~✓~~		

Remarks:
Upland point at a small depressional area, likely man-made/associated w/ maint. road

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	______ = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	______ = Total Cover		
Herb Stratum (Plot size: 5² ft.)			
1. Rumex crispus	10	N	FAC
2. Leontodon saxatilis	20	Y	FACU
3. Erodium botry	15	N	FACU
4. Avena fatua	20	Y	UPL
5. Bromus diandrus	20	Y	FACU
6. Ranunculus arvensis	5	N	FACU
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	______ = Total Cover		

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust ∅

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- __ Dominance Test is >50%
- __ Prevalence Index is ≤3.0[1]
- __ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

SOIL

Sampling Point: #C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5YR 4/3	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): <1

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

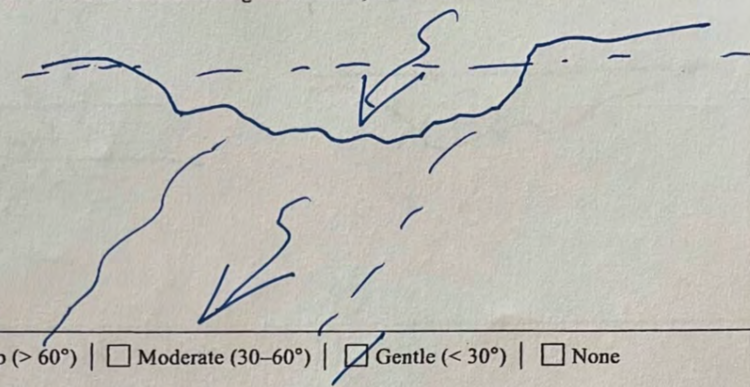
Remarks:

Some water was present from heavy weekend rains. It appears to hold run-off water from the bee area for short period, but not long enough to create wetland habitat.

Datasheet # D	OHWM Delineation Datasheet	Page ___ of ___

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

INT-2



H_2O present ~3in avg.

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☑ Gentle (< 30°) | ☐ None

Notes/Description:

well defined channel & stream

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	60	10	10	10	10	Y
Below OHWM	10	10	30	30	20	N

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	15	10	60	15
Below OHWM			50	50

Notes/Description:

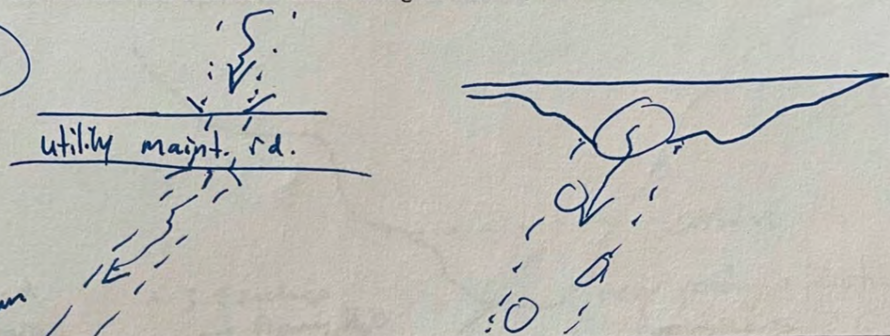
Varies depending on segment, but upper portion was vegetated

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Datasheet # E **OHWM Delineation Datasheet** Page ___ of ___

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

EPH-2



very small, but defined ephemeral stream

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☒ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Below ~~Above~~ OHWM	5	10	70	10	5	N
Above ~~Below~~ OHWM	65	5	10	20		Y

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM			90	10
Below OHWM			10	90

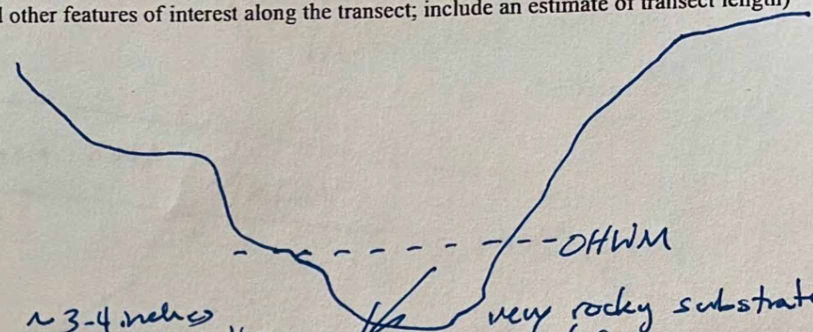
Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Datasheet # F **OHWM Delineation Datasheet** Page ____ of ____

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

INT-3



very defined streamway

~3-4 inches of flowing H_2O

very rocky substrate w/ fines

Break in Slope at OHWM: ☐ Sharp (> 60°) | ☑ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	45	10	10	20	15	Y
Below OHWM	15	25	25	25	10	N

Notes/Description:

has a lot of sediment (sand) load

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	15-20	10	60	10
Below OHWM			5	95

Notes/Description:

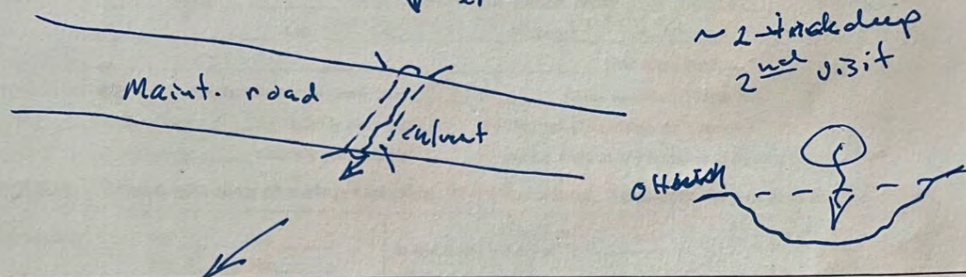
Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Datasheet # 6 **OHWM Delineation Datasheet** Page ____ of ____

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)

EPH-3

ephemeral stream, no water 1st visit
~2 inch deep 2nd visit



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☑ Gentle (< 30°) | ☐ None

Notes/Description:

small feature, headwaters, increases in size down gradient

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	80	0	20			Y
Below OHWM		10	20	70		Y

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	35	10	40	15
Below OHWM			20	80

Notes/Description:

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LS Power – Fern Rd. City/County: Shasta Sampling Date: 3/4/21

Applicant/Owner: ______ State: CA Sampling Point: 1

Investigator(s): Foster Section, Township, Range: 11, 32N, 1W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): C Lat: 40° 38' 46.29" N Long: 121° 56' 25.06" W Datum: WAAS + PPP

Soil Map Unit Name: SuD NWI classification: PAB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No ___	Points for W-2 & W-1	
Hydric Soil Present? Yes ✓ No ___	Is the Sampled Area within a Wetland?	Yes ✓ No ___
Wetland Hydrology Present? Yes ✓ No ___		

Remarks: Water present after 2 dry weeks, mixed veg but FAC + and soils/Hydro support it. Seasonal depressional wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 10² ft)			
1. Rumex crispus	5	N	FAC
2. Navarretia intertexta	20	Y	FACW
3. Hordeum marinum	20	Y	FAC
4. Bromus diandrus	15	Y	FACU
5. Erodium botrys	5	N	FACU
6. Trifolium arvense	<1	N	FACU
7.			
8.			
= Total Cover	65		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Sampling Point: 1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR 3/2	98	10YR 5/6	2	RM	M	clay-loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1 inch

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LS Power - Fern Rd. City/County: Shasta Sampling Date: 3/4/21

Applicant/Owner: ______ State: CA Sampling Point: 2

Investigator(s): Foster Section, Township, Range: 11, 32N, 1W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): ______ Slope (%): ______

Subregion (LRR): C Lat: 40° 38' 45.98" Long: 121° 56' 25.22" Datum: ______

Soil Map Unit Name: SuD NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ______ No ✓	Is the Sampled Area within a Wetland? Yes ______ No ✓
Hydric Soil Present?	Yes ______ No ✓	
Wetland Hydrology Present?	Yes ______ No ✓	

Remarks: upland point-pair taken between W-1 & W-2

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10' Ft)			
1. Q. douglasii	10		FACU
2.			
3.			
4.			
= Total Cover	10		
Sapling/Shrub Stratum (Plot size: 10' Ft)			
1. Ceanothus cuneatus	10		UPL
2. Toxicodendron diversilobum	5		FACU
3.			
4.			
5.			
= Total Cover	15		
Herb Stratum (Plot size: 10' Ft)			
1. Elymus caput-medusae	40		FACU
2. Bromus diandrus	15		FACU
3. Lupine bicolor	5		FACU
4. Vicia villosa	10		FACU
5. Erodium botrys	10		FACU
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10-0 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- __ Dominance Test is >50%
- __ Prevalence Index is ≤3.0[1]
- __ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks:

Sampling Point: 2

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 3/3	100%					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ______

Water Table Present? Yes ____ No ____ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LS Power - Fern Rd. City/County: Shasta Sampling Date: 3/4/21

Applicant/Owner: ______ State: CA Sampling Point: 3

Investigator(s): J. Foster Section, Township, Range: 11, 32N, 1W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): ______ Slope (%): 0

Subregion (LRR): C Lat: 40.645348°N Long: 121.940644°W Datum: WGS

Soil Map Unit Name: KID NWI classification: PAB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ______ (If no, explain in Remarks.)

Are Vegetation ______, Soil ______, or Hydrology ______ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ______

Are Vegetation ______, Soil ______, or Hydrology ______ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ______	Point for W-3 & W-4
Hydric Soil Present?	Yes ✓ No ______	Is the Sampled Area within a Wetland? Yes ✓ No ______
Wetland Hydrology Present?	Yes ✓ No ______	

Remarks:
Very shallow depressions, but defined & both outlets to INT-2

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 10² ft)			
1. Erythranthe guttata	15	Y	FACW
2. Hordeum marinum	15	Y	FAC
3. Navarretia intertexta	15	Y	FACW
4. Polypogon monspeliensis	5	N	FACW
5. Trifolium arvense	5	N	FACU
6.			
7.			
8.			
= Total Cover	55		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ______

Remarks:

Sampling Point: 3

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 3/1	98	10YR 4/5	2	RM	M	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2 in

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: LS Power - Fern Rd. City/County: Shasta Sampling Date: 3/4/21

Applicant/Owner: ______ State: CA Sampling Point: 4

Investigator(s): J. Foster Section, Township, Range: 11, 32N, 1W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): ______ Slope (%): 0-1

Subregion (LRR): C Lat: 40.645251°N Long: 121.946699°W Datum: WGS

Soil Map Unit Name: KID NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	Is the Sampled Area within a Wetland?	Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓		
Wetland Hydrology Present?	Yes ____ No ✓		

Remarks: Upland point between W-3 & W-4

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10²ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Q. douglasii	15	Y	FACU
2.			
3.			
4.			
= Total Cover	15		
Sapling/Shrub Stratum (Plot size: 10²ft.)			
1. Toxicodendron diversilobum	5	N	FACU
2.			
3.			
4.			
5.			
= Total Cover	5		
Herb Stratum (Plot size: 10²ft)			
1. Vicia villosa	10	N	FACU
2. Trifolium arvense	5	N	FACU
3. Ranunculus arvense	5	N	FACU
4. Poa bulbosa	<1	N	FACU
5. Lupine bicolor	<1	N	FACU
6. Lasthenia californica	15	Y	FACU
7. Hordeum marinum	15	Y	FAC
8. Bromus diandrus	15	Y	FACU
= Total Cover	65		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum ______ % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ______ (A)

Total Number of Dominant Species Across All Strata: ______ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ______ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ______	x 1 = ______
FACW species ______	x 2 = ______
FAC species ______	x 3 = ______
FACU species ______	x 4 = ______
UPL species ______	x 5 = ______
Column Totals: ______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR 4/3	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C – List of Plants Species Observed

Appendix C. List of Plant Species Observed in the Survey Area

Species	Common Name	Indicator Status[1]
Aesculus californica	Buckeye	UPL
Arctostaphylos viscida	Whiteleaf manzanita	UPL
Aristolochia californica	California pipevine	UPL
Avena fatua	Wildoats	UPL
Briza minor	Rattlesnake grass	FAC
Bromus diandrus	Ripgut brome	FACU
Carduus pycnocephalus	Italian thistle	FACU
Ceanothus cuneatus	Buckbrush	UPL
Centaurea solstitialis	Yellow star thistle	FACU
Cercocarpus betuloides	Mountain mahogany	UPL
Chlorogalum pomeridianum	Soaproot	UPL
Corylus cornuta	Beaked hazelnut	FACU
Cynoglossum grande	Houndstongue	FACU
Cynosurus echinatus	Dogtail grass	FACU
Dichelostemma capitatum	Blue dicks	FACU
Elymus caput-medusae	Medusa head	FACU
Erodium botrys	Big heron bill	FACU
Erythranthe guttata	Yellow monkey flower	FACW
Festuca perennis	Italian rye grass	FACU
Fragaria vesca	Wild strawberry	UPL
Galium parisiense	Wall bedstraw	UPL
Heracleum maximum	Common cowparsnip	FACW
Hordeum marinum	Seaside barley	FAC
Hypochaeris glabra	Smooth cats ear	FACU

[1] OBL – Obligate Wetland; FACW – Facultative Wetland; FAC- Facultative; FACU – Facultative Upland; UPL – Upland

Juncus balticus	Wire rush	OBL
Lasthenia californica	Goldfields	FACU
Leontodon saxatilis	Hawkbit	FACU
Lupine bicolor	Lupine	FACU
Matricaria discoidea	Pineapple weed	FACU
Navarretia intertexta	Interwoven navarretia	FACW
Navarretia tagetina	Marigold navarretia	FACW
Pedicularis densiflora	Indian warrior	UPL
Phoradendron leucarpum	Mistletoe	UPL
Pinus sabiniana	Gray pine	FACU
Plantago lanceolata	Ribwort	FAC
Poa bulbosa	Bulbous blue grass	FACU
Polypogon monspeliensis	Rabbit's-foot grass	FACW
Primula hendersonii	Mosquito bill	UPL
Quercus douglasii	Blue oak	FACU
Quercus kelloggii	Black oak	UPL
Quercus wislizeni	Interior live oak	UPL
Ranunculus arvensis	Field buttercup	FACU
Ranunculus californicus	Common buttercup	FACU
Rubus armeniacus	Himalayan blackberry	FAC
Rumex crispus	Curley dock	FAC
Trifolium arvense	Hop clover	FACU
Trifolium hirtum	Rose clover	FACU
Triphysaria eriantha	Butter 'n' eggs	UPL
Toxicodendron diversilobum	Poison oak	FACU
Vicia villosa	Hairy vetch	FACU
Vitis californica	Wild grape	FACU

[1] OBL – Obligate Wetland; FACW – Facultative Wetland; FAC- Facultative; FACU – Facultative Upland; UPL – Upland

APPENDIX D – Representative Site Photos

Photo 1. Intermittent Stream (INT-1) at the northern end of the survey area (DP-A) [April 2020].

Photo 2. Intermittent Stream (INT-1) downstream from Photo 1 at DP-B [April 2020].

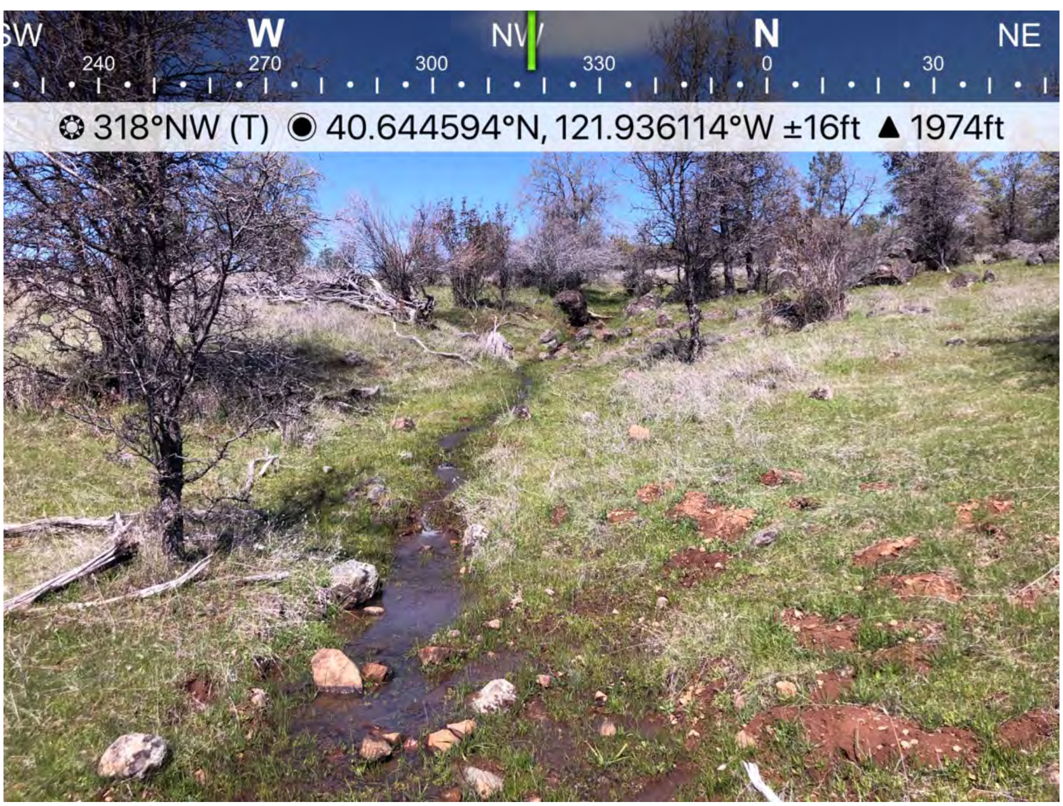


Photo 3. Ephemeral Stream (EPH-1) into INT-1 at the north end of the survey area.

Photo 4. General site overview [April 2020].

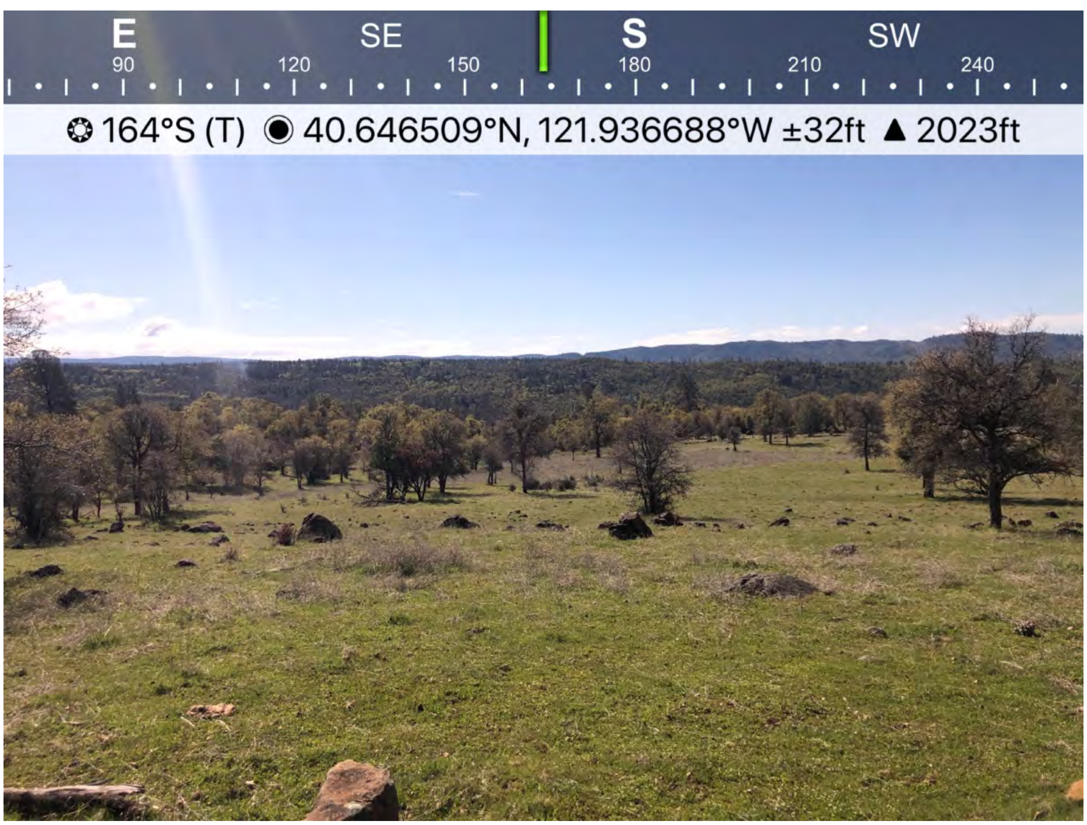


Photo 5. Location of DP-C with managed and active bee boxes in background [April 2020].

Photo 6. Seasonal Wetland (W-2) along western fence line.

Photo 7. Seasonal Wetland (W-3).

Photo 8. Intermittent Stream (INT-2).

Photo 9. Ephemeral Stream (EPH-2) and culvert at utility line maintenance road.

Photo 10. Intermittent Stream (INT-3) at road culvert.

Photo 11. Seasonal wetland (W-1).

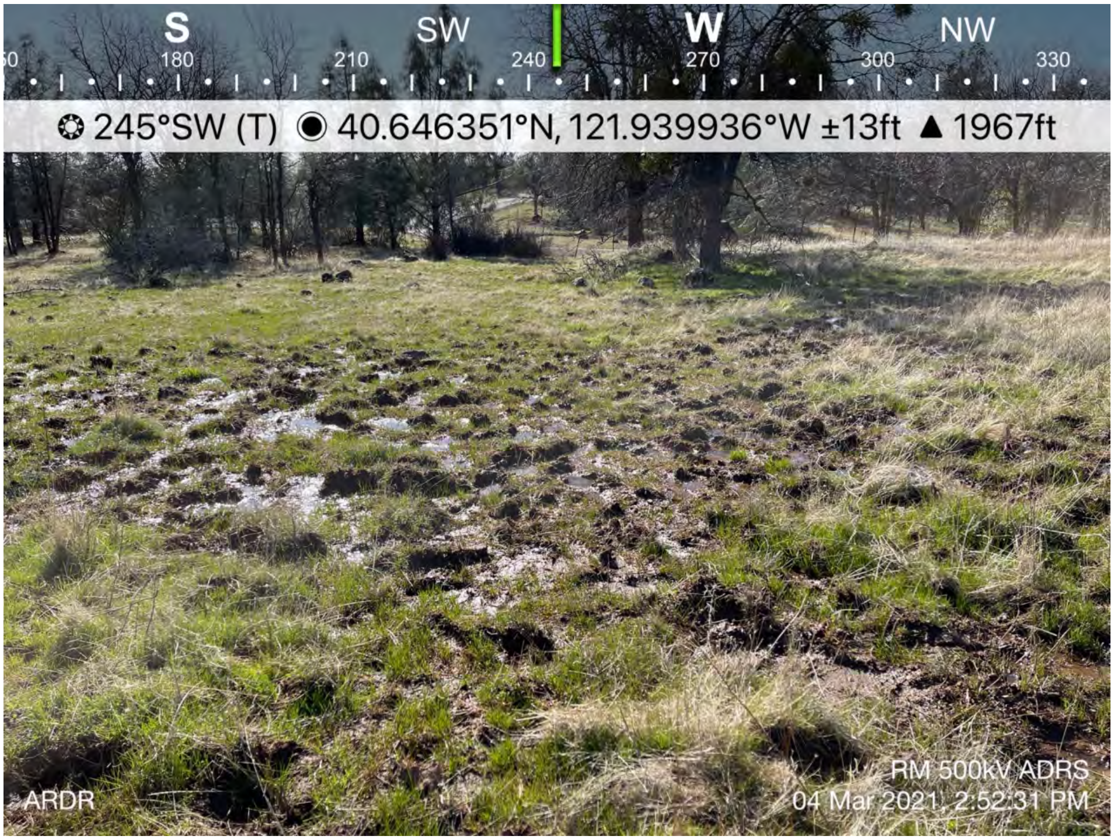


Photo 12. Ephemeral Stream (EPH-3) from access road.

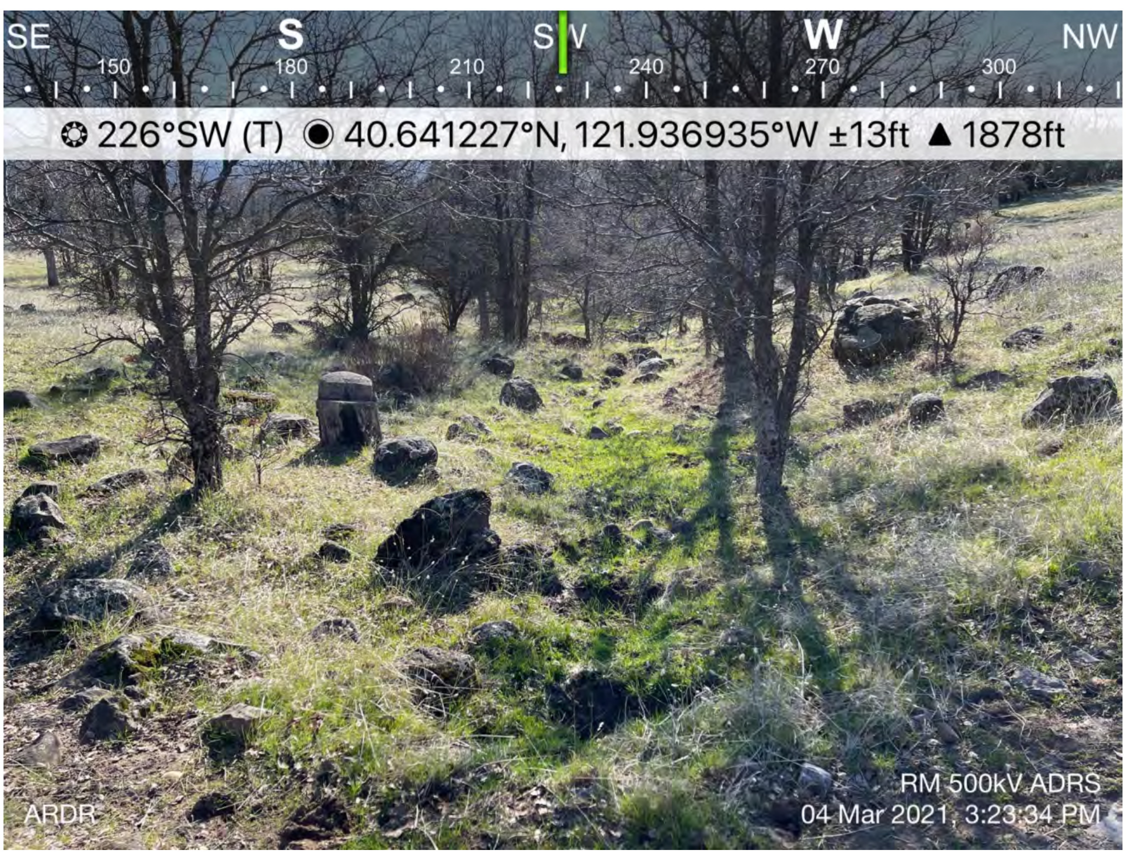


Photo 13. Seasonal Wetland (W-4) during rain event.

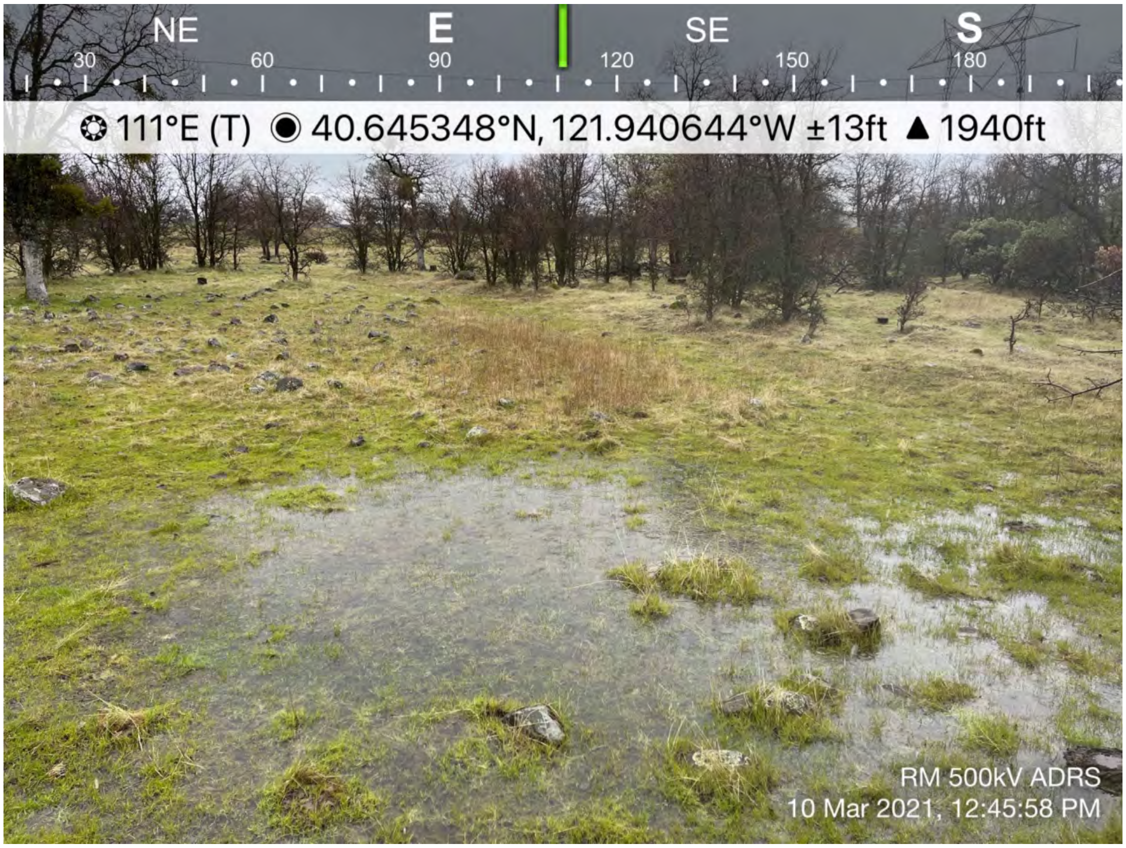


Photo 14. Ephemeral Stream (EPH-4) during rain event.

Appendix H – Observed Species

Scientific Name	**Common Name**
Plants	
Acmispon brachycarpus	Short-podded lotus
Aesculus californica	Buckeye
Allium sp. (not rare)	Onion
Amsinckia menziesii	Fiddleneck
Arctostaphylos viscida	Whiteleaf manzanita
Aristolochia californica	California pipevine
Athysanus pusillus	Dwarf athysanus
Avena fatua	Wild oats
Briza minor	Little rattlesnake grass
Brodiaea elegans	Elegant brodiaea
Bromus diandrus	Ripgut brome
Calochortus superbus	Yellow mariposa
Calochortus tolmiei	Hairy star tulip
Calystegia occidentalis ssp. occidentalis	Chaparral false bindweed
Carduus pycnocephalus	Italian thistle
Castilleja attenuata	Narrow-leaved owl's clover
Ceanothus cuneatus	Buck brush
Centaurea solstitialis	Yellow star-thistle
Centaurium tenuiflorum	Slender centaury
Centromadia fitchii	Fitch spikeweed
Cerastium fontanum ssp. vulgare	Common chickweed
Cercis occidentalis	Western redbud
Cercocarpus betuloides	Mountain mahogany

Scientific Name	**Common Name**
Chlorogalum pomeridianum	Soaproot
Clarkia gracilis	Graceful clarkia
Clarkia purpurea	Purple clarkia
Convolvulus arvensis	Field bindweed
Corylus cornuta	Beaked hazelnut
Cryptantha intermedia	Common cryptanth
Cynoglossum grande	Houndstongue
Cynosurus echinatus	Dogtail grass
Daucus carota	Queen Anne's lace
Delphinium variegatum	Royal larkspur
Dichelostemma capitatum	Blue dicks
Dichelostemma congestum	Fork-toothed ookow
Elymus caput-medusae	Medusa head
Erodium botrys	Big heron bill
Erythranthe guttata	Yellow monkey flower
Festuca perennis	Italian rye grass
Fragaria vesca	Wild strawberry
Galium parisiense	Wall bedstraw
Hemizonia fitchii	Spikeweed
Heracleum maximum	Common cowparsnip
Hordeum marinum	Seaside barley
Hypericum perforatum	St. John's wort
Hypochaeris glabra	Smooth cats ear
Juncus balticus	Wire rush
Lasthenia californica	Goldfields

Scientific Name	**Common Name**
Leontodon saxatilis	Hawkbit
Lepidium nitidum	Shining pepper grass
Lupinus bicolor	Lupine
Madia citriodora	Lemon scented tarweed
Matricaria discoidea	Pineapple weed
Micropus califronicus	Q tips
Navarretia intertexa	Interwoven navarettia
Naverretia tagetina	Marigold navarretia
Parentucellia viscosa	Yellow parentucelia
Pedicularis densiflora	Indian warrior
Phoradendron leucarpum	Mistletoe
Pimpinella saxifrage	Solidstem burnet-saxifrage
Pinus sabiniana	Gray pine
Plantago erecta	California plantain
Plantago lanceolata	Ribwort
Poa bulbosa	Bulbous blue grass
Polypogon monspeliensis	Annul beard grass
Primula hendersonii	Mosquito bill
Quercus douglasii	Blue oak
Quercus kelloggii	Black oak
Quercus wislizeni	Interior live oak
Ranunculus arvensis	Field buttercup
Ranunculus californicus	Common buttercup
Rhus aromatica	Fragrant sumac
Rubus armeniacus	Himalayan blackberry

Scientific Name	**Common Name**
Rumex crispus	Curley dock
Sanicula bipinnatifida	Purple sanicle
Serardia arvensis	Field madder
Solanum parishii	Parish's purple nightshade
Thysanocarpus curvipes	Common fringe pod
Torilis arvensis	Field hedge parsley
Trifolium arvense	Rabbitfoot clover
Trifolium dubium	Small hop clover
Trifolium hirtum	Rose clover
Triphysaria eriantha	Butter 'n' eggs
Triteleia hyacinthina	White hyacinth
Toxicodendron diversilobum	Poison oak
Vicia vollosa	Hairy vetch
Vitis californica	California wild grape
Wyethia angustifolia	Narrow-leaved mule ears
Zeltnera sp.	Centaury
Birds	
Melanerpes formicivorous	Acorn woodpecker
Spinus tristis	American goldfinch
Turdus migratorious	American robin
Calypte anna	Anna's hummingbird
Sayornis nigricans	Black phoebe
Polioptila caerulea	Blue-gray gnatcatcher
Molothrus ater	Brown-headed cowbird
Icterus bullockii	Bullock's oriole

Scientific Name	**Common Name**
Psaltriparus minimus	Bushtit
Callipepla californica	California Quail
Aphelocoma californica	California scrub jay
Branta canadensis	Canada goose
Junco hyemalis	Dark-eyed junco
Sturnus vulgaris	European starling
Chondestes grammacus	Lark sparrow
Spinus psaltria	Lesser goldfinch
Melanerpes lewis	Lewis's woodpecker
Pandion haliaetus	Osprey
Buteo jamaicensis	Red-tailed hawk
Agelaius phoeniceus	Red-winged blackbird
Catharus ustulatus	Swainson's thrush
Cathartes aura	Turkey vulture
Contopus sordidulus	Western wood-peewee
Zonotrichia leucophrys	White-crowned sparrow
Setophaga coronata	Yellow-rumped warbler
Insects	
Apis Sp.	Honeybee