



# Aquatic Resources Delineation Report

Bear Valley Solar Energy Project, San  
Bernardino County, California

PREPARED FOR

EDF Renewables Distribution-Scale  
Power

DATE

21 August 2024

REFERENCE

0739207



## DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.

DOCUMENT TITLE	Aquatic Resources Delineation Report
DOCUMENT SUBTITLE	Bear Valley Solar Energy Project, San Bernardino County, California
PROJECT NUMBER	0739207
Date	21 August 2024
Version	01
Author	Nicholas Smith, Managing Technical Consultant, Scientist
Client name	EDF Renewables Distribution-Scale Power

## DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
Version	001	Nicholas Smith	Ingrid Eich	Ian Todd	8.5.2024	
Version	002	Nicholas Smith	Mat Carson	Ian Todd	8.21.2024	
Version	003	Nicholas Smith	Mat Carson	Ian Todd	1.27.2025	



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## ACRONYMS AND ABBREVIATIONS

CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
CWA	Clean Water Act
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FR	Federal Register
NHD	National Hydrography Dataset
NWI	National Wetlands Inventory
OHWM	Ordinary High-Water Mark
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
Procedures	State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State
Project	Bear Valley Solar Energy Project
SWRCB	State Water Resources Control Board
USACE	United States Army Core of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VegCAMP	Vegetation Classification and Mapping Program
WOS	Waters of the State
WOUS	Waters of the United States

## 1. INTRODUCTION

On 1 July, 2024, Environmental Resources Management, Inc. (ERM) lead delineator Nicholas Smith and delineation support technician Marissa Juarez conducted a delineation of aquatic resources on an approximately 30-acre area located on privately owned land in an unincorporated area of the City of Big Bear City, San Bernardino County, California. The purpose was to determine whether wetlands and non-wetlands waters potentially subject to federal jurisdiction under Section 404 of the Clean Water Act (CWA) and potentially subject to state jurisdiction under Section 401 of the CWA, the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and Section 1600 of the California Fish and Game Code (CFGF) are present, and if so, their extent within the Project Area.

This report presents the methods and results of the delineation. United States Army Corps of Engineers (USACE) Arid West Wetland Determination datasheets completed in the field are provided in Appendix B. Representative photographs of the Project Area are included in Appendix C.

### 1.1 PROJECT LOCATION

The Project Area is located on privately-owned land in an unincorporated area southeast of the City of Big Bear City within the southwestern portion of San Bernardino County. The Project Area shares its western boundary with Lakewood Drive and a residence with an equestrian facility, its northern boundary with San Bernardino National Forest, its eastern boundary with undeveloped private property, and its southern boundary with Erwin Ranch Road. The Project Area consists of rural, undeveloped land and comprises one parcel, Assessor's Parcel Number 0314-401-29-0-000.

The Project Area is located on the North 1/2 of the Southwest 1/4 of the Southwest 1/4 and the Southeast 1/4 of the Southwest 1/4 of the Southwest 1/4 of Section 17, Township 2 North, Range 2 East, San Bernardino Meridian in the County of San Bernardino, State of California. The approximate Project Area centroid with a latitude / longitude of 34°15'08.80" N / 116°48'09.08" W.

### 1.2 PROJECT DESCRIPTION

On behalf of Bear Valley Electric Service (BVES; Applicant), EDF Renewables Distribution-Scale Power (EDFR-DSP) is developing the Bear Valley Solar Energy Project (Project), which is a 5.7-megawatt (MW) alternating current (ac) solar photovoltaic (PV) facility located on private land in unincorporated San Bernardino County. The Project will interconnect to the BVES grid and serve the local community with renewable energy. As the Applicant under the California Environmental Quality Act, BVES will own and operate the Project.

## 2. REGULATORY SETTING

### 2.1 FEDERAL REGULATION

On 29 August 2023, the United States Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) issued a final rule to amend the final "Revised Definition of 'waters of the United States'" rule (Federal Register [FR], 18 January 2023). This final rule conforms the definition of "waters of the United States" (WOUS) to the United States Supreme Court's 25 May 2023 decision in the case of Sackett v. Environmental Protection Agency. The conforming rule "Revised Definition of 'WOUS'" became effective on 8 September 2023. The amended January 2023 rule is not currently operative in certain states and for certain parties due to ongoing litigation. In California, where the January 2023 rule is not enjoined, the USACE is interpreting the phrase "waters of the United States" consistent with the 2023 rule as amended (88 FR 3143, 18 January 2023, as amended in 88 FR 61969, 8 September 2023).

Section 404 of the CWA regulates the discharge of dredged or fill material into "waters of the United States." Recently adopted 2023 federal regulations implementing the CWA (40 Code of Federal Regulations (CFR) Part 120.2(a)) define "waters of the United States" to include the following:

(a) Waters of the United States means:

(1) Waters which are:

- (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (ii) The territorial seas; or
- (iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

- (i) Waters identified in paragraph (a)(1) of this section; or
- (ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

(b) The following are not “waters of the United States” even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

- (1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;
- (2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;
- (3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;
- (4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
- (5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
- (6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;
- (7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and
- (8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

### 2.1.1 WETLANDS

Wetlands are defined in 33 CFR 328.3 (c) as:

*...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

Adjacent is defined as

*having a continuous surface connection.*

The basis for determining whether a given area is a wetland for the purposes of Section 404 of the CWA is outlined in the USACE Wetlands Delineation Manual (Environmental Laboratory 1987) and

the Regional Supplement to the Corps of Engineers Delineation Manual: Arid West Region (USACE 2008a).

### 2.1.2 NON-WETLAND WATERS

The limit of federal jurisdiction in intermittent or perennial non-tidal, non-wetland waters, extends to the OHWM, which is defined in the federal regulations as:

*...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

## 2.2 STATE REGULATION

### 2.2.1 WATERS OF THE STATE

The California Porter-Cologne Act regulates the discharge of dredge or fill material into the “waters of the State” (WOS), which are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.” In April 2019 (and revised 6 April 2021), the State Water Resources Control Board (SWRCB) adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Procedures) (SWRCB 2021). The Procedures became effective 28 May 2020. The Procedures define the term “wetland” as follows:

*An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, of shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area’s vegetation is dominated by hydrophytes or the area lacks vegetation.*

The Procedures utilize existing USACE delineation guidance (Environmental Laboratory 1987; USACE 2008) and consider any WOUS as identified in an aquatic resource report verified by the USACE to meet the state definition of WOS. The Procedures also recognize wetlands that have no vegetation, wetlands that are natural or created by a modification of a WOS, and artificial wetlands that meet specific criteria. Artificial wetland specific criteria include: (1) a result of compensatory mitigation, (2) those identified in a water quality control plan, (3) those that resulted from historic human activity, and (4) those that are greater than one acre in size unless it was created for a specific purpose (SWRCB 2020). Exclusions to artificial wetlands include those that are for: (1) industrial or municipal wastewater treatment or disposal, (2) certain types of stormwater treatment facilities, (3) agricultural crop irrigation, (4) industrial processing or cooling, and (5) fields flooded for rice growing (SWRCB 2020). On

6 April 2021, the SRWCB adopted a resolution to confirm that the Procedures are in effect as state policy for water quality control.

### 2.2.2 SECTION 1602 OF THE CALIFORNIA FISH AND GAME CODE

Section 1602 of the CFGC regulates activities that substantially divert or obstruct the natural flow of—or substantially change or use any material from—the bed, channel, or bank of any river, stream, or lake. Such activities may require a Lake and Streambed Alteration Agreement with the California Department of Fish and Wildlife (CDFW). CDFW regulations define the term stream, which includes creeks and rivers, as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 California Code of Regulations Section 1.72).

## 3. METHODS

### 3.1 LITERATURE REVIEW

Prior to conducting the delineation and in the process of determining jurisdictional status in the field, reference materials were reviewed, including the following:

- California Department of Water Resources (DWR) Best Available Maps (BAM) 100-Year Floodplain Awareness Dataset (DWR 2024a);
- California DWR California's Groundwater Bulletin 118 – Bear Valley Groundwater Basin (DWR 2004);
- California DWR Sustainable Groundwater Management Act (SGMA) Data Viewer (DWR 2024b);
- Google Earth current and historic aerial photographs (Google Earth 2024);
- Federal Emergency Management Agency (FEMA) – Mapped Floodplain (FEMA, 2024).
- Nationwide Environmental Title Research (NETR) Historic Aerials (NETROnline 2024);
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2024);
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2024);
- USGS Big Bear City, California – San Bernardino County 7.5-minute topographic quadrangle map (USGS 2015a);
- USGS Geohydrology of Big Bear Valley, California: Phase 1—Geologic Framework, Recharge, and Preliminary Assessment of the Source and Age of Groundwater (USGS 2012); and
- USGS National Hydrography Dataset (NHD) (USGS 2024).

### 3.2 FIELD INVESTIGATION

A focused evaluation of indicators of wetlands and waters was performed within the Project Area on 1 July 2024. The methods used in this study to delineate jurisdictional features were based on the following:

- The USACE Wetlands Delineation Manual (Corps Manual; Environmental Laboratory 1987);
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Arid West Supplement; USACE 2008a);
- National OHWM Field Delineation Manual for Rivers and Streams: Interim Version (USACE 2022);
- A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States (USACE 2008b); and
- Ordinary High Flows and the Stage-Discharge Relationship in the Arid West Region (USACE 2011),

The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to USACE Section 404 jurisdiction within the Project Area. A general description of the Project Area, including plant communities, topography, and land use, was generated during the delineation. The methods for evaluating the presence of WOUS and WOS employed during the delineation are described in detail herein.

### 3.2.1 WATERS OF THE UNITED STATES

#### 3.2.1.1 CLEAN WATER ACT SECTION 404 WETLANDS

The Project Area was evaluated for indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and Arid West Supplement (USACE 2008a).

The three parameters used to delineate wetlands are the presence of: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils according to the Corps Manual (Environmental Laboratory 1987) for areas not considered “problem areas” or “atypical situations”:

*“...(E)vidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.”*

#### 3.2.1.2 CLEAN WATER ACT SECTION 404 NON-WETLAND WATERS OF THE UNITED STATES

All potential non-wetland WOUS were examined for indicators of an OHWM based upon 33 CFR 328.3(e) and the methods outlined in the *USACE Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), and *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2008b).

When linear aquatic features exhibiting indicators of an OHWM were encountered, OHWM widths were recorded (in feet) using an ESRI Fieldmap for ArcGIS application on a mobile device. The OHWM was manually measured at locations where transitions were apparent. Where notable features such as culverts or depressions were observed in the field but not visible on the aerial map, they were also recorded with an ESRI Fieldmap for ArcGIS. Other data recorded included bank-to-bank width, bank height and morphology, substrate type, and all vegetation within and adjacent to the feature. Where features were clearly visible on aerial photography, such as linear drainage features exhibiting sandy beds, the centerline was digitized by hand using ESRI ArcGIS Pro. The line was then buffered based on the widths measured in the field to create a polygon representing the approximate spatial extent of jurisdiction.

### 3.2.2 WATERS OF THE STATE

WOS are under the jurisdiction of the SWRCB and nine Regional Water Quality Control Boards. For the purposes of CWA Section 401 Certification, WOS are considered identical to USACE jurisdiction. In addition, the Project Area was evaluated for isolated wetlands that would not be subject to federal jurisdiction but would be potentially regulated under the Porter-Cologne Act.

### 3.2.3 SECTION 1602 OF THE CALIFORNIA FISH AND GAME CODE

Features potentially subject to Section 1602 of the CFGC under the jurisdiction of CDFW were mapped from top-of-bank to top-of-bank and examined for the presence of riparian vegetation.

## 4. RESULTS

### 4.1 ENVIRONMENTAL SETTING

The Project Area consists of predominantly undeveloped land bordered by Erwin Ranch Road to the south, San Bernardino National Forest to the north, Lakewood Drive to the northwest, a residence with an equestrian facility to the west, and private property to the east. The Project Area is located approximately 2.5 miles to the southeast of Big Bear City, California, approximately 4 miles to the southeast of Big Bear Lake, approximately 1.5 miles to the south of Baldwin Lake, and approximately 0.6 miles northwest of Erwin Lake. The Project Area is located within Level IV EPA's Ecoregion 8f, also known as the Southern California Montane Conifer Forest, which occurs on the igneous-dominated mountains of the eastern Transverse Range and the Peninsular Ranges, at elevations generally ranging from 5,000 to 8,500 feet (Griffith 2016). The pinyon-juniper woodland hillside in the northern area of the Project Area contains an inactive gold mine. At the time of ERM's site visit, a partially backfilled excavation approximately 5 feet by 5 feet wide and 10 feet deep was observed on the northeastern portion of the Project Area. The excavation appears to be an abandoned mineshaft. The opening of the shaft is partially blocked with heavily weathered and degraded wooden planks. What appears to be a small tailing pile was observed adjacent to the mineshaft. A former ventilation shaft within a 10-foot by 10-foot concrete slab and production shaft with subgrade machinery were also observed approximately 250-300 feet northeast of the mineshaft. The ventilation shaft was capped, and the production shaft was backfilled with soil and covered with a metal grate. Wild donkeys were also observed on site during the field visit.

#### 4.1.1 TOPOGRAPHY

The Project Area is in the Big Bear Valley and consists of a sloped pinyon-juniper woodland in the north, a minor topographic depression dominated by upland mustards in the northwestern to north central area, and a flat big sagebrush plant community in the south (Appendix A, Figure 1, *Vicinity and Topographic Map*). The sloped pinyon-juniper woodland is characterized by 30 to 50 percent slopes and occurs between approximately 6,785 and 6,875 feet above mean sea level (Google Earth 2024). The minor topographic depression is characterized by 0 to 2 percent slopes at the toe-of-slope of the wooded hillside and occurs between approximately 6,780 and 6,785 feet above mean sea level. The flat big sagebrush community is characterized by 0 to 2 percent slopes and occurs between approximately 6,785 and 6,790 feet above mean sea level. The minor topographic depression is demarcated by slight changes in elevation (approximately 1 to 2 feet) associated with the toe of slope at the base of the woodland to the north, Lakewood Drive to the west, the residence with the equestrian facility to the southwest, the flat big sagebrush community to the south, and the 5-foot by 5-foot abandoned mineshaft and associated mining facilities to the east (Google Earth 2024).

#### 4.1.2 CLIMATE

Big Bear Valley has warm summers and cold winters with precipitation occurring as rainfall in the warmer months and snowfall in the colder months. Average daily summer temperatures range between 60 to 70 degrees Fahrenheit, and average daily winter temperatures range between 35

to 40 degrees Fahrenheit (NOAA 2024; USGS 2012). Due to the rain shadow effect of the San Bernardino Mountains, annual precipitation distribution within the valley is variable, ranging from approximately 35 inches on the western edge of Big Bear Lake to approximately 18 inches on the eastern edge of Baldwin Lake (USGS 2012).

Thirty-year climatological normals (1991-2020) for the 4-square-kilometer grid cell containing the Project Area interpolated by the data values among the surrounding grid cells indicate an annual average precipitation of 20.88 inches, (ranging from 0.12 inches in June, the driest month, to 4.73 inches in February, the wettest month) with an average July maximum temperature of 80.1 degrees Fahrenheit, and an average December minimum temperature of 23.1 degrees Fahrenheit (PRISM Climate Group 2023). Historical precipitation data from 2014 to 2023 indicates the most winter precipitation occurred in February 2019 (11.76 inches) and the most summer precipitation occurred in August 2023 (4.31 inches). The USACE Antecedent Precipitation Tool (APT) Version 2.0, which is a desktop tool that compares antecedent precipitation with normal ranges based on NOAA's Daily Global Historical Climatology Network, indicates that weather conditions at the time of the field investigation represent normal conditions (USACE 2023).

### 4.1.3 VEGETATION

The vegetative community of the pinyon-juniper woodland hillside within the northern area of the Project Area was identified as the *Pinus monophylla* – (*Juniperus osteosperma*) Woodland Alliance (Singleleaf pinyon – Utah juniper woodlands). The sparsely vegetated community within the minor topographic depression in the northwestern to north central area of the Project Area was identified as the *Brassica nigra* - *Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance (Upland mustards or star-thistle fields). The vegetative community within the flat, southern region of the Project Area was identified as the *Artemesia tridentata* Shrubland Alliance (Big sagebrush) (Appendix A, Figure 2, *Soils and Vegetation Communities Map*). These vegetation alliances were field verified on 1 July 2024 using the California Native Plant Society (CNPS) Manual of California Vegetation (CNPS 2024).

Singleleaf pinyon – Utah juniper woodlands are natural communities with an open to intermittent canopy that typically occur on alluvial fans, pediments, slopes, ridges, canyons, and ravines with well-drained soils. Within the Project Area, singleleaf pinyon (*Pinus monophylla*; [UPL]) is dominant in the tree canopy with lower relative canopy cover of California juniper (*Juniperus californica*; [UPL]). The intermittent to continuous shrub layer includes big sagebrush (*Artemesia tridentata*; [UPL]), rubber rabbitbrush (*Ericameria nauseosa*; [UPL]), plains pricklypear (*Opuntia polyacantha* [UPL]), and bitterbrush (*Purshia tridentata*; [UPL]). Vegetation in the herbaceous layer is sparse and includes cheatgrass (*Bromus tectorum*; [UPL]), winterfat (*Krascheninnikovia lanata*; [UPL]), and apricot mallow (*Sphaeralcea ambigua* var. *ambigua*; [UPL]).

Upland mustard fields are semi-natural herbaceous communities with an open to continuous canopy that occur in fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, riparian areas, cleared roadsides, and waste places. Soils typically consist of clays or sandy loams. Members of this community are highly variable though often contain over 80% relative cover of non-native ruderal forbs (CNPS 2024). Within the Project Area, non-native plant species observed were tansy mustard (*Descurainia sophia*; [UPL]), dwarf mallow (*Malva neglecta*;

[UPL]), tumble mustard (*Sisymbrium altissimum*; [FACU]), quack grass (*Elymus repens*; [FAC]), European stickseed (*Lappula squarrosa*; [UPL]), and rough pigweed (*Amaranthus retroflexus*; [FACU]). Trace occurrences of native plants encountered within this community were mugwort (*Artemisia ludoviciana*; [FACU]), Pacific lupine (*Lupinus lepidus*; [UPL]), yarrow (*Achillea millefolium*; [FACU]), and rattlesnake sandmat (*Euphorbia albomarginata*; [UPL]). A small population (two individuals) of Big Bear Valley milk vetch (*Astragalus lentiginosus* var. *sierrae*; [UPL]), a CNDDDB 1B.2 Special Status Plant (fairly threatened in California), was observed on the periphery of this vegetation community (CDFW 2024).

Big sagebrush shrublands are natural communities with open to continuous canopies that occur on plains, alluvial fans, bajadas, pediments, lower slopes, valley bottoms, hills, ridges, seasonal and perennial stream channels, and dry washes within well-drained, deep, sandy to loamy soils. Within the Project Area, big sagebrush (*Artemesia tridentata*; [UPL]), rubber rabbitbrush (*Ericameria nauseosa*; [UPL]), tansy mustard (*Descurainia sophia*; [UPL]), and quack grass (*Elymus repens* [FAC]) were observed. Trace populations of blue flag iris (*Iris missouriensis*, [FACW]) were observed in minor topographic depressions within this section of the site.

#### 4.1.4 SOILS

The USDA NRCS Web Soil Survey (NRCS 2024) was reviewed to determine the soil types mapped as occurring within the Project Area (Appendix A, Figure 2, *Soils and Vegetation Communities Map*). The Project Area consists of three different soil complexes including:

**Aquents-Grunney complex, 0 to 4 percent slopes (2dvmq)** – This complex of poorly drained soils is comprised of Aquents and Grunney soils. Aquents soils formed in mixed alluvium and occur in floodplains and treads. They are typically comprised of sandy loam, have an occasional frequency of flooding, and are characterized as hydric soils. Grunney soils formed in mixed alluvium and occur in floodplains and treads. They are typically comprised of muck, mucky loam, and sandy loam, have an occasional frequency of flooding and ponding, range from non-saline to very slightly saline, and are characterized as hydric soils.

**Moonridge-Shayroad-Cariboucreek complex, 0 to 4 percent slopes (2dvn1)** – This complex of well-drained soils is comprised of Moonridge, Shayroad, and Cariboucreek soils. Moonridge soils formed in alluvium derived primarily from granite and related rocks and occur within alluvial fans and treads. They are typically comprised of loam, have an occasional frequency of flooding, and are not characterized as hydric soils. Shayroad soils formed in alluvium derived primarily from granite and related rocks and occur within alluvial fans and treads. They are typically comprised of sandy loam, range from non-saline to very slightly saline, and are not characterized as hydric soils. Cariboucreek soils formed in mixed alluvium and occur within alluvial fans and treads. They are typically comprised of loam and clay loam, have an occasional frequency of flooding, and are not characterized as hydric soils.

**Goldmountain-Deadmansridge-Deadpan complex, 30 to 50 percent slopes (2dvn6)** – This complex of well-drained is comprised of Goldmountain, Deadmansridge, and Deadpan soils. Goldmountain soils formed in colluvium derived from metasedimentary rock and occur on mountain slopes. They are typically comprised of very gravelly loam to extremely gravelly loam with lithic bedrock restriction at approximately 20 and 30 inches of depth and are not

characterized as hydric soils. Deadmansridge soils formed in colluvium derived from igneous and metamorphic rock and occur on mountain slopes. They are typically comprised of very gravelly loam to very cobbly loam and are not characterized as hydric soils. Deadpan soils formed in colluvium derived from igneous and metamorphic rock and occur on mountain slopes. They are typically comprised of cobbly loam to cobbly clay loam and are not characterized as hydric soils.

The field investigation confirmed hydric soils within the entire extent of the minor topographic depression in the northwestern to north central portion of the Project Area, corresponding with the Aquent-Grunney complex mapped by NRCS. Soils in this region of the Project Area contained a dark matrix with low chroma and value (2.5Y 2.5/1), approximately 1- 2% redox concentrations (2.5YR 4/8), and a sandy loam texture. Soils within the flat big sagebrush community corresponded with the Moonridge-Shayroad-Cariboucreek complex, exhibited a uniform matrix of (2.5Y 4/1) with no redox concentrations, a clay loam texture, and were therefore identified as non-hydric. Soils within the pinyon-juniper woodland in the northern portion of the parcel were not sampled, as this region lies outside of the proposed development site.

#### 4.1.5 HYDROLOGY

On a sub-basin scale, the Project Area is located within the Santa Ana watershed (HUC8 18070203), which drains to the Santa Ana River and ultimately to the Pacific Ocean, a Traditional Navigable Water. On a local sub-watershed level, the Project Area is within the Baldwin Lake watershed (HUC12 180702030101), which drains to Baldwin Lake, a natural, isolated, intermittent (periodically dry), alkali lake. Baldwin Lake does not exhibit a surface water drainage outlet, and it is unknown if subsurface hydrologic connectivity occurs between Baldwin Lake and Big Bear Lake (USGS 2012). The Project Area is also within the Bear Valley Groundwater Basin, an approximate 30.6 square mile area that extends from Big Bear Lake in the west to Baldwin Lake in the east and is bound by the crystalline rocks of the San Bernardino Mountains (DWR 2004; USGS 2012). The primary source of groundwater recharge is from percolation of precipitation and runoff and underflow from fractured crystalline rocks (DWR 2004).

According to the NWI imagery, the Project Area does not contain any mapped aquatic resource features. NWI imagery depicts a seasonally flooded, riverine intermittent stream bed (R4SBC) approximately 65 feet from the northwestern area of the parcel, a semi-permanently flooded riverine system with an unconsolidated bottom (R5UBF) approximately 125 feet from the northwestern area of the Project Area, and a seasonally saturated palustrine emergent wetland (PEM1B) approximately 290 feet from the northwestern area of the Project Area (USFWS 2024). Historic aerial imagery from 1938 indicates surface hydrologic connectivity between the northern sections of the Project Area and the adjacent seasonally saturated palustrine emergent wetland (Appendix A, Figure 3, *NWI Overview Map*); however, all subsequent aerial imagery displays no evidence of surface hydrologic connectivity (NETROnline 2024).

The Federal Emergency Management Agency (FEMA) mapped floodplain classifies the entire Project Area as an area of minimal flood hazard (FEMA 2024). However, the DWR BAM Awareness dataset mapped the northwestern area of the parcel as within a 100-year floodplain (DWR 2024a). While DWR BAM Awareness 100-year floodplains are not intended to replace FEMA regulatory

floodplains, these maps identify areas where storm flows have a 1% chance of being equaled or exceeded in any year (DWR 2024a) (Appendix A, Figure 4, *FEMA Effective and DWR BAM 100-YR Floodplain Awareness Map*). Although the County does not contain permitting requirements for projects located within a DWR BAM Awareness floodplain, consultation with the County's Land Use Services Department or Public Works Flood Control District may inform the need of a hydrology study or other requirement for Project review and approval.

The field investigation did not identify any hydrologic indicators within the Project Area. Oxidized rhizospheres associated with the fibrous roots of upland vegetation were observed along with hydric soils at the soil pit examined in the northwestern region of the Project Area (SP01); however, these iron oxide coatings occupied less than 2% of the volume of the layer, which is below the USACE Arid West Regional Supplement's threshold for a hydrologic indicator (USACE 2008a). Surface soil cracks were observed in proximity to the soil pit examined in the southern region of the Project Area (SP02); however, this hydrologic indicator occurred along non-hydric soils with a clay content and is likely associated with temporary ponding during the non-growing season.

The abandoned mining shaft in the north central area of the site contained standing water at an approximate depth of 10-15 feet during the time of the field investigation. This corresponds with normal conditions observed by DWR periodic groundwater level measurements taken from Vaqueros Well (State Well Number 02N02E19A008S) approximately 0.4 miles southwest of the Project Area (DWR 2024b). Within the past five years (2019 – 2024), these measurements indicate that the typical depth to groundwater fluctuates between approximately 20 to 30 feet during the summer growing season with seasonal spikes to between approximately 3 to 8 feet in spring melt seasons following years of high levels of winter precipitation (DWR 2024b).

## 4.2 JURISDICTIONAL DELINEATION RESULTS

The results of this jurisdictional delineation are based on the best professional judgement of the qualified delineators. However, all conclusions regarding potential jurisdiction in this report should be considered preliminary and at the final discretion of the regulatory agencies.

### 4.2.1 WATERS OF THE UNITED STATES

Despite the presence of hydric soils in the northwestern section of the Project Area and soil surface cracks in the southern section of the Project Area, the absence of hydrophytic vegetation throughout the entirety of the Project Area suggests that this site is not subject to jurisdiction under the current definition of WOUS. Therefore, no Section 404 permitting would be required for impacts within the Project Area.

### 4.2.2 WATERS OF THE STATE

As WOS are evaluated with the same criteria set forth as WOUS determinations, the absence of hydrophytic vegetation within the Project Area suggests that this site is not subject to jurisdiction under the current definition of WOS.

### 4.2.3 CDFW STREAMBED

Due to the absence of aquatic features containing a defined bed, bank, channel, or OHWM within the Project Area, it suggests that this site is not subject to CDFW jurisdiction. Therefore, no CFGC Section 1602 Streambed Alteration Agreement permitting would be required for impacts within the Project Area.

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# APPENDIX A FIGURES

Figure 1. Vicinity and Topographic Map



Figure 1  
Topographic Map  
Bear Valley Solar Energy Project  
San Bernardino County, CA



Figure 2. Soils and Vegetation Communities Map

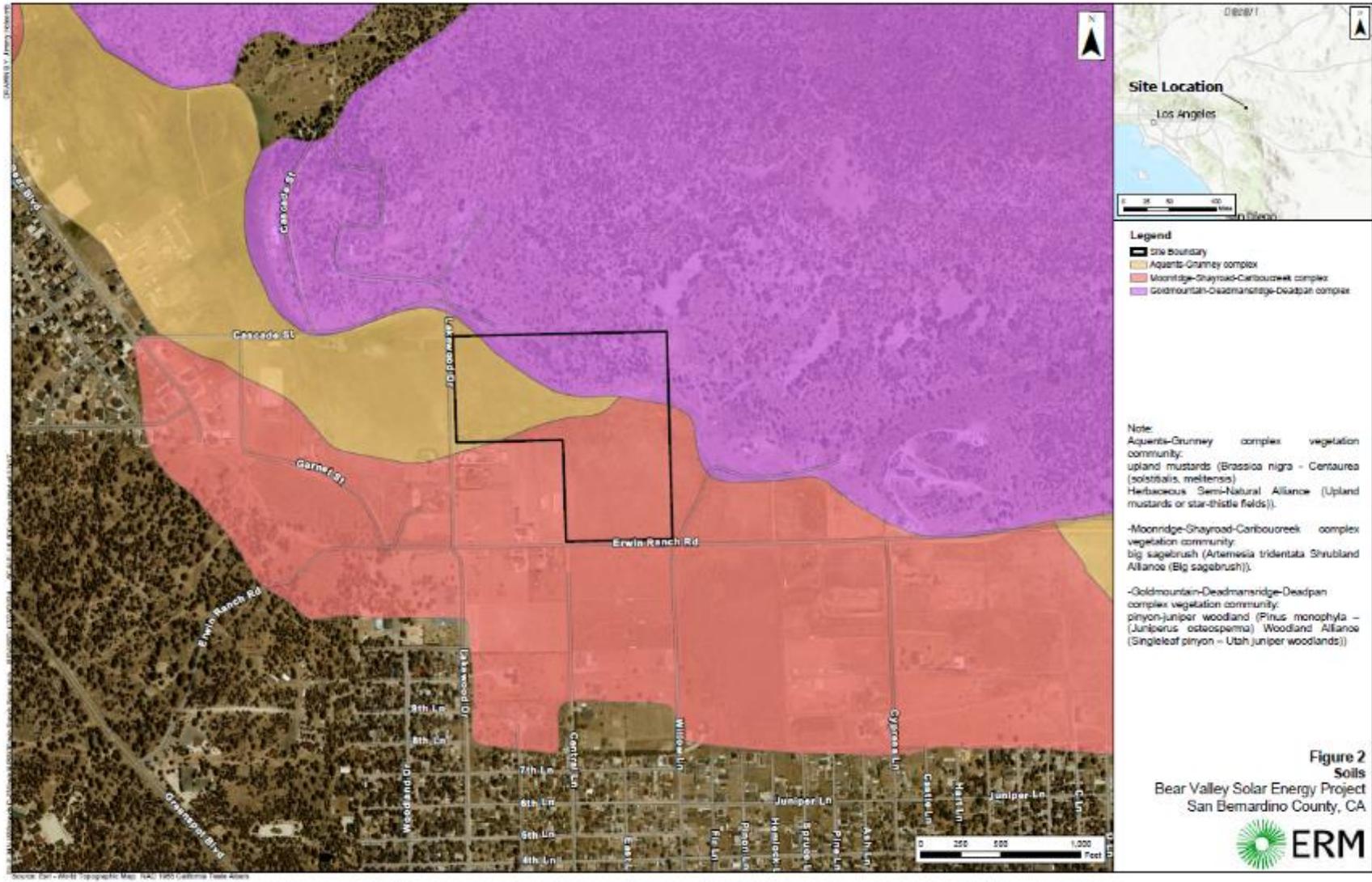


Figure 3. National Wetland Inventory (NWI) Map





# APPENDIX B USACE WETLAND DATASHEETS

<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Arid West Region</b> See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Bear Valley Solar Energy Project City/County: Big Bear/ San Bernardino County Sampling Date: 07/01/2024  
 Applicant/Owner: EDF Renewables Distributed Solutions State: CA Sampling Point: SP01  
 Investigator(s): Nick Smith & Marissa Juarez Section, Township, Range: 17, T02N, R02E  
 Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 1-2%  
 Subregion (LRR): LRR C Lat: 34.253809 Long: -118.804349 Datum: WGS84  
 Soil Map Unit Name: Aquents-Grunney complex, 0 to 4 percent slopes NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>    </u> No <u>X</u> Hydric Soil Present? Yes <u>X</u> No <u>    </u> Wetland Hydrology Present? Yes <u>    </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>    </u> No <u>X</u>
---	---

Remarks:  
 1% oxidized rhizospheres present on upland vegetatino at the periphery of sample point, falling below the USACE Arid West Regional Supplement's threshold for a hydrologic indicator

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>10'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>10.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of:                      Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>2</u> x 3 = <u>6</u> FACU species <u>4</u> x 4 = <u>16</u> UPL species <u>9</u> x 5 = <u>45</u> Column Totals: <u>15</u> (A) <u>67</u> (B) Prevalence Index = B/A = <u>4.47</u>
<b>Sapling/Shrub Stratum (Plot size: <u>10'</u>)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
<b>Herb Stratum (Plot size: <u>10'</u>)</b> 1. <u>Malva neglecta</u> 5                      Yes                      UPL 2. <u>Descurainia sophia</u> 1                      Yes                      UPL 3. <u>Sisymbrium altissimum</u> 1                      Yes                      FACU 4. <u>Artemisia ludoviciana</u> 1                      Yes                      FACU 5. <u>Elymus repens</u> 2                      Yes                      FAC 6. <u>Lupinus lepidus</u> 1                      Yes                      UPL 7. <u>Achillea millefolium</u> 1                      Yes                      FACU 8. <u>Lappula squarrosa</u> 1                      Yes                      UPL _____ = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>10'</u>)</b> 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>85</u> % Cover of Biotic Crust <u>0</u>				
<b>Hydrophytic Vegetation Indicators:</b> ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 <sup>1</sup> ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>    </u> No <u>X</u>				

Remarks:  
 Early successional non-native vegetation dominates.

VEGETATION Continued – Use scientific names of plants.

Sampling Point: SP01

<u>Tree Stratum</u>	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants less than 3 in. DBH, regardless of height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size.  <b>Woody Vine</b> – All woody vines, regardless of height.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
			=Total Cover	
<u>Sapling/Shrub Stratum</u>				
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
13. _____	_____	_____	_____	
			=Total Cover	
<u>Herb Stratum</u>				
9. <i>Amaranthus retroflexus</i>	1	Yes	FACU	
10. <i>Euphorbia albomarginata</i>	1	Yes	UPL	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
13. _____	_____	_____	_____	
14. _____	_____	_____	_____	
15. _____	_____	_____	_____	
16. _____	_____	_____	_____	
17. _____	_____	_____	_____	
18. _____	_____	_____	_____	
19. _____	_____	_____	_____	
20. _____	_____	_____	_____	
			15 =Total Cover	
<u>Woody Vine Stratum</u>				
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
			=Total Cover	

Remarks:



<b>U.S. Army Corps of Engineers</b> <b>WETLAND DETERMINATION DATA SHEET – Arid West Region</b> See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R	<b>OMB Control #: 0710-0024, Exp: 11/30/2024</b> <b>Requirement Control Symbol EXEMPT:</b> <b>(Authority: AR 335-15, paragraph 5-2a)</b>
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Project/Site: Bear Valley Solar Energy Project City/County: Big Bear/ San Bernadino County Sampling Date: 07/01/2024  
 Applicant/Owner: EDF Renewables Distributed Solutions State: CA Sampling Point: SP02  
 Investigator(s): Nick Smith & Marissa Juarez Section, Township, Range: 17, T02N, R02E  
 Landform (hillside, terrace, etc.): outer edge of depression Local relief (concave, convex, none): none Slope (%): 1-2%  
 Subregion (LRR): LRR C Lat: 34.252054 Long: -116.802304 Datum: WGS84  
 Soil Map Unit Name: Moonridge-Shayroad-Cariboucreek complex, 0 to 4 percent slopes NWI classification: none  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X 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.**

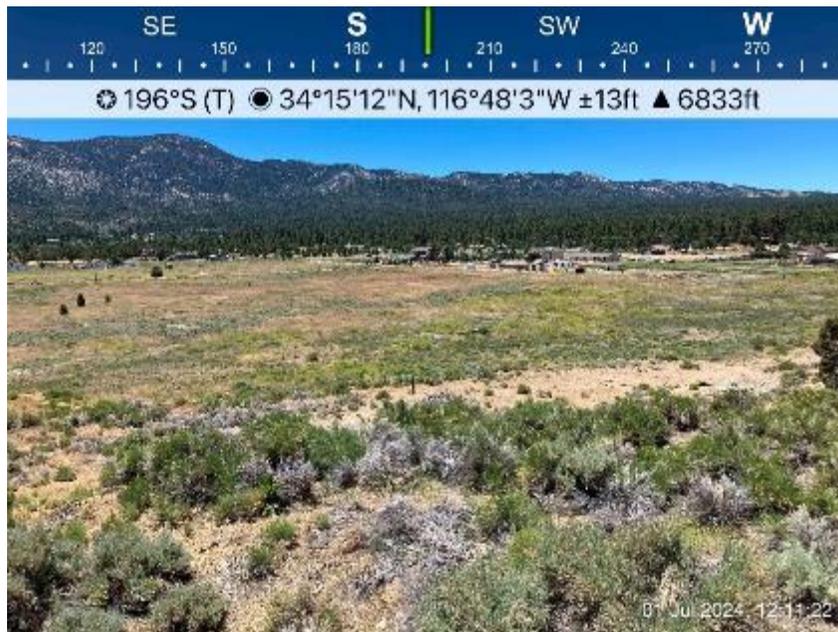
Hydrophytic Vegetation Present? Yes <u>    </u> No <u>X</u> Hydric Soil Present? Yes <u>    </u> No <u>X</u> Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	<b>Is the Sampled Area within a Wetland?</b> Yes <u>    </u> No <u>X</u>
Remarks: Surface soil cracks observed in small topographic depressions, likely due to puddling and the clay content in the soil.	

**VEGETATION – Use scientific names of plants.**

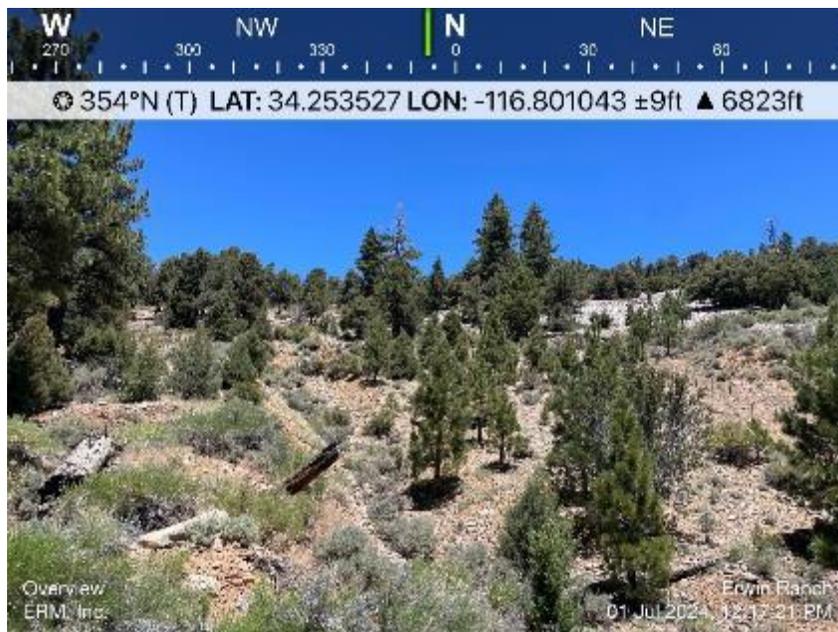
Tree Stratum	(Plot size: <u>10</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1.					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
2.					
3.					
4.					
		=Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>10</u> )				
1.	<u>Artemisia tridentata</u>	<u>45</u>	<u>Yes</u>	<u>UPL</u>	<b>Prevalence Index worksheet:</b> Total % Cover of:                      Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>80</u> x 5 = <u>300</u> Column Totals: <u>85</u> (A) <u>315</u> (B) Prevalence Index = B/A = <u>4.85</u>
2.	<u>Ericameria nauseosa</u>	<u>10</u>	<u>No</u>	<u>UPL</u>	
3.					
4.					
5.					
		=Total Cover			
Herb Stratum	(Plot size: <u>10</u> )				
1.	<u>Descurainia sophia</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>	<b>Hydrophytic Vegetation Indicators:</b> ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 <sup>1</sup> ___ Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2.	<u>Elymus repens</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3.					
4.					
5.					
6.					
7.					
8.					
		=Total Cover			
Woody Vine Stratum	(Plot size: <u>10</u> )				
1.					<b>Hydrophytic Vegetation Present?</b> Yes <u>    </u> No <u>X</u>
2.					
		=Total Cover			
% Bare Ground in Herb Stratum <u>40</u>		% Cover of Biotic Crust <u>0</u>			
Remarks:					



## APPENDIX C PHOTOGRAPHS



**Photograph 1.** Overview photo of the proposed solar development site taken from the hillside near the northern boundary of the Project Area facing south.



**Photograph 2.** Representative photo of the wooded hillside near the northern boundary of the Project Area facing north.



**Photograph 3.** Representative overview of the sparsely vegetated area in the minor topographic depression of the northwestern to north central section of the Project Area facing northeast.



**Photograph 4.** Representative overview of the sparsely vegetated area in the minor topographic depression of the northwestern to north central section of the Project Area facing southeast.



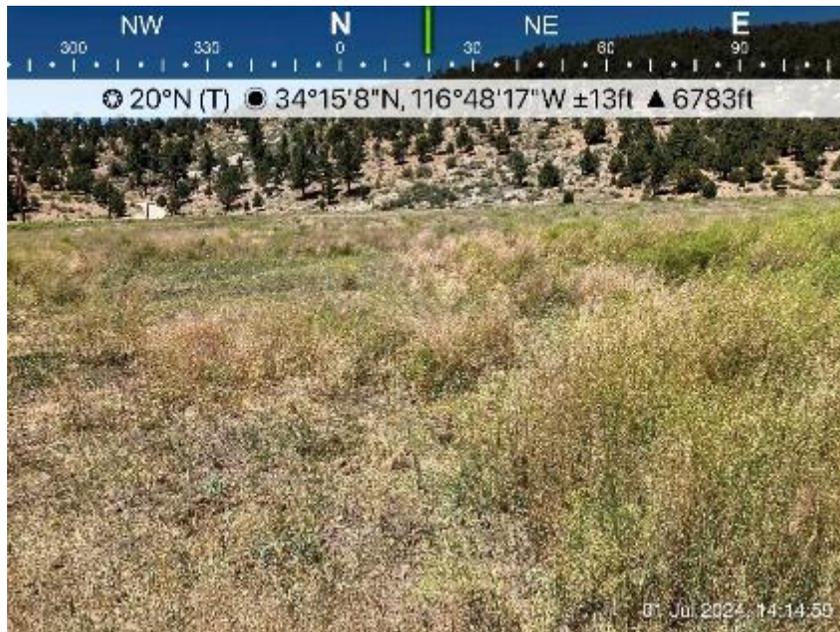
**Photograph 5.** Overview of Sample Point 01 (SP01) soil pit in the sparsely vegetated topographic depression facing south.



**Photograph 6.** Close-up of upper 6 inches of soil from Sample Point (SP01) facing northwest.



**Photograph 7.** Overview of the outer boundary of the minor topographic depression, indicating higher non-native upland mustard cover facing east.



**Photograph 8.** Overview of the transitional zone between the sparsely vegetated minor topographic depression and higher non-native upland mustard cover facing north.



**Photograph 9.** Representative overview of the flat big sagebrush area of the southern section of the Project Area with the neighboring equestrian facility in the background facing southwest.



**Photograph 10.** Representative overview of the flat big sagebrush area of the southern section of the Project Area facing north.



**Photograph 11.** Overview of Sample Point 02 (SP01) soil pit in the flat big sagebrush area of the southern section of the Project Area facing east.



**Photograph 12.** Soil surface cracks from the flat big sagebrush region of the southern section of the Project Area facing south.



**Photograph 13.** Abandoned mineshaft containing standing water at a depth of 10 to 15 feet at the time of the field investigation facing northwest.



**Photograph 14.** Drainpipe (foreground) emerging from the abandoned mineshaft (midground) in front of a concrete barrier (background) in the north central section of the Project Area facing northeast.



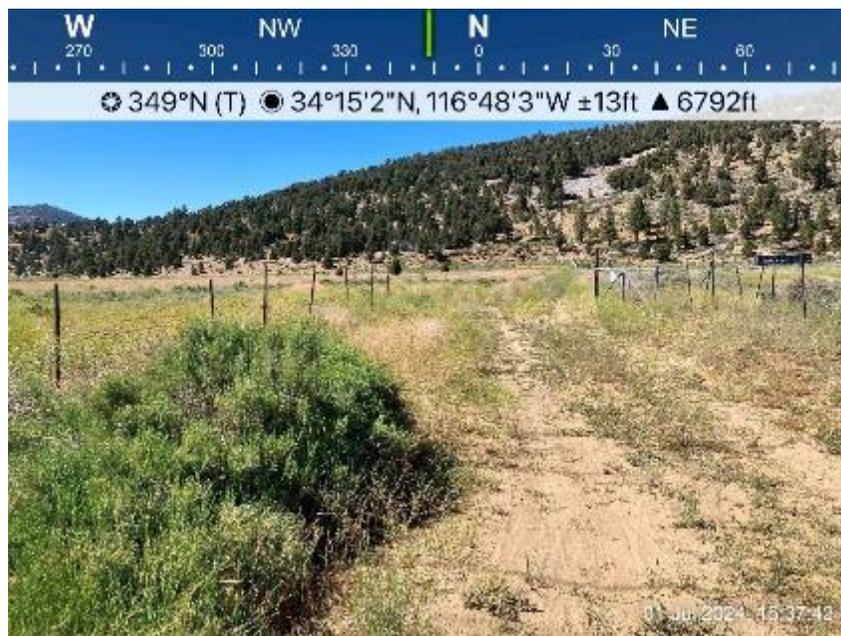
**Photograph 15.** Close-up of Big Bear Valley milk vetch (*Astragalus lentiginosus* var. *sierrae*) in the north central section of the Project Area facing southeast.



**Photograph 16.** Overview of vegetation community within the minor topographic depression with evidence of ungulate presence (scat) in the center right facing east.



**Photograph 17.** Animal burrow in the sparsely vegetated area of the northwestern section of the Project Area facing southeast.



**Photograph 18.** Unpaved access road from Erwin Ranch Road facing north.



# ERM

ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

Argentina	The Netherlands
Australia	New Zealand
Belgium	Peru
Brazil	Poland
Canada	Portugal
China	Puerto Rico
Colombia	Romania
France	Senegal
Germany	Singapore
Ghana	South Africa
Guyana	South Korea
Hong Kong	Spain
India	Switzerland
Indonesia	Taiwan
Ireland	Tanzania
Italy	Thailand
Japan	UAE
Kazakhstan	UK
Kenya	US
Malaysia	Vietnam
Mexico	
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