

General Biological Resources Assessment
And Jurisdictional Delineation
For the Big Bear Solar Observatory
Solis Telescope Project

City of Big Bear
San Bernardino County, California

Prepared for:

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Certification

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Certification: I hereby certify that the statements furnished herein, and in the attached exhibits present data and information required for this Biological Resources Report to the best of my ability, and the facts, statements, and information presented are true and correct to the best of my knowledge and belief. This report was prepared in accordance with professional requirements and standards. Fieldwork conducted for this assessment was performed by me. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project proponent and that I have no financial interest in the project.

A handwritten signature in black ink, appearing to read "Shay Lawrey", is written over a light gray rectangular background.

Shay Lawrey, Ecologist/Regulatory Specialist

Table of Contents

CERTIFICATION.....	ii
1 INTRODUCTION.....	1
1.1 PROJECT PURPOSE	1
1.2 PROJECT DESCRIPTION	2
1.3 LOCATION.....	2
1.4 ENVIRONMENTAL SETTING.....	2
2 SPECIAL STATUS SPECIES REGULATIONS.....	3
2.1 FEDERAL ENDANGERED SPECIES ACT	3
2.2 CALIFORNIA ENDANGERED SPECIES ACT	3
2.3 THE MIGRATORY BIRD TREATY ACT	3
2.4 JURISDICTIONAL WATERS.....	3
3 ASSESSMENT METHODOLOGY.....	4
3.1 BIOLOGICAL RESOURCES ASSESSMENT	4
3.2 JURISDICTIONAL DELINEATION	4
4 RESULTS.....	6
4.1 BIOLOGICAL RESOURCES ASSESSMENT – LITERATURE REVIEW	6
4.1.1 <i>Special Status Wildlife</i>	7
4.1.2 <i>Special Status Plants</i>	9
4.1.3 <i>Designated Critical Habitat</i>	12
4.2 BIOLOGICAL RESOURCES ASSESSMENT – FIELD STUDY	13
4.2.1 <i>Habitat</i>	13
4.2.2 <i>Wildlife Species Observed</i>	13
4.2.3 <i>Special Status Wildlife</i>	13
4.2.4 <i>Special Status Plants</i>	14
4.2.5 <i>Jurisdictional Delineation</i>	15
5 CONCLUSIONS AND RECOMMENDATIONS	17
5.1 SENSITIVE BIOLOGICAL RESOURCES	17
5.1.1 <i>Bald Eagle and Nesting Birds</i>	17
5.1.2 <i>Special Status Plants</i>	17
5.2 JURISDICTIONAL WATERS.....	18
5.2.1 <i>Lake or Streambed Alteration Agreement</i>	18
6 LITERATURE CITED.....	19

Table 2. Sensitive Species and Habitats Documented Within the *Fawnskin, Big Bear Lake, Big Bear City* and *Moonridge* USGS 7.5-minute Quadrangles

Figures 1-5

Site Photographs

1 Introduction

The Big Bear Solar Observatory (BBSO) is planning to install a new Solis Telescope within the existing BBSO campus, on the north side of Big Bear Lake, in San Bernardino County, California. The BBSO Solis Telescope Project (project) is a revision to an approved action to add a Solis telescope to the existing BBSO campus on a portion of 5.65 acres. On behalf of Transtech Engineers, Inc., Jericho Systems Inc. (Jericho) conducted a general biological resources assessment (BRA) for the project. The purpose of the BRA was to address potential effects of the project to designated critical habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA) or species designated as sensitive by the California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game) and/or the California Native Plant Society (CNPS).

The site was assessed for sensitive species known to occur locally. Attention was focused on those State- and/or federally-listed as threatened or endangered species and California Fully Protected species that have been documented in the project vicinity. This includes:

- Southern mountain yellow-legged frog (*Rana muscosa*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Southern rubber boa (*Charina umbratica*)
- Ash-gray paintbrush (*Castilleja cinerea*)
- Big Bear Valley sandwort (*Eremogone ursina*)
- Southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*)
- Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*)
- San Bernardino Mountains bladderpod (*Physaria kingii* ssp. *bernardina*)
- San Bernardino blue grass (*Poa atropurpurea*)
- Bird-foot checkerbloom (*Sidalcea pedata*)
- California dandelion (*Taraxacum californicum*)
- Slender-petaled thelypodium (*Thelypodium stenopetalum*)

In addition to the above listed species, the site was assessed for its potential suitability to support San Bernardino flying squirrel (*Glaucomys sabrinus californicus*). Although not a State- or federally-listed species, San Bernardino flying squirrel are a CDFW Species of Special Concern and are considered a particularly sensitive species within the region.

In addition to the biological resources and habitat assessment, Jericho's Shay Lawrey, a qualified regulatory specialist, conducted a routine Jurisdictional Delineation (JD) of the proposed project sites. Upon cursory review, the project site does not appear to be subject to Section 404 of the Clean Water Act (CWA). However, there is wetland/riparian associated habitat within the project site that may be subject to CDFW jurisdiction. Therefore, a formal JD was conducted to determine the extent of any potentially jurisdictional waters on site.

1.1 Project Purpose

The purpose of the project is to construct a concrete foundation upon which a new Solis telescope will be installed. The new Solis telescope has significant scientific importance to be running continuous and the BBSO site has been chose, worldwide, to be the best place to install and operate the telescope. The

telescope is currently being held at another facility in Tucson, Arizona, awaiting shipment to the BBSO site. There is a strict timeline for initiating the operation of the new Solis telescope, with which the project must conform to.

1.2 Project Description

The project consists of constructing an approximately 18-foot-wide by 50-foot-long concrete foundation for the new Solis telescope. The project footprint for the telescope foundation will be approximately 900 square feet (sf). The southernmost end of the project footprint is approximately 15 feet setback (north) from the Big Bear Lake high waterline, along the north shore of the lake (Figures 3 & 4). From there, it will extend 50 north. In addition to the permanent concrete foundation, a temporarily disturbed access area will be necessary to get equipment (including a crane) and materials to the project site. The project site is located approximately 100 feet south of North Shores Lane, which is an existing paved road (Figures 3 & 4). Construction access to the site will be from North Shores Lane, to the north. There are several juniper and willow trees that will need to be removed and/or trimmed to construct the concrete foundation and allow equipment access to the project site.

1.3 Location

The project site is generally located in the northwest corner of Section 18, Township 2 North, Range 1 East and is depicted on the *Fawnskin* U. S. Geological Survey's (USGS) 7.5-minute topographic map. The project site is specifically located on the north side of Big Bear Lake, between the lake shore to the south and North Shores Lane to the north, approximately 0.27 miles east of the intersection of North Shores Lane and CA State Route 38 (SR – 38) in the City of Big Bear, County of San Bernardino, California (Figures 1 & 2). The proposed project footprint encompasses an 18-foot-wide by 50-foot-long area within the larger 5.65-acre parcel (Figure 3). Land use in the surrounding area consists of the existing BBSO facilities, trailer resort, marina, and undeveloped land.

1.4 Environmental Setting

The Big Bear area is subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures typically peak at 81 degrees Fahrenheit (°F) in July, and fall to an annual minimum temperature of 21°F in December/January. Average annual precipitation is greatest from November through March and reaches a peak in January (4.13 inches). Precipitation is lowest in the month of June (0.15 inches). Annual precipitation averages 20.1 inches. Average annual snowfall for Big Bear is approximately 67 inches. The project site is situated along the north shore of Big Bear Lake in the San Bernardino Mountains, San Bernardino County. The elevation of the project site is approximately 6,763 feet above mean sea level (amsl).

Soils in the project area are dominated by Morical, very deep-Hecker families complex. Morical family soils are comprised of gravelly loam to gravelly clay loam and gravelly sandy loam derived from alluvium. Hecker family soils are comprised of gravelly fine sandy loam to very gravelly sandy clay loam and extremely gravelly loam derived from alluvium. These families are well drained with low to very low runoff. Hydrologically, the Big Bear area is located within the Bear Valley Hydrologic Sub-Area (HSA 801.71) which comprises a 34,333-acre drainage area within the larger Santa Ana River Watershed (HUC 18070203). The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. The closest tributary to the Santa Ana River is Big Bear Lake, which is just south of the project site. The general vicinity consists primarily of residential and commercial development and undeveloped. Habitat within the area surrounding the project site consists primarily of Jeffrey pine forest and montane meadow habitat.

2 Special Status Species Regulations

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to the continued existence and existing knowledge of population levels.

2.1 Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

2.2 California Endangered Species Act

The CDFW, formerly Fish and Game, administers the State CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species soon, in the absence of special protection or management. And a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under Section 3503.5 of the California Fish and Game Code (FGC). Species that are California fully protected include those protected by special legislation for various reasons, such as the California condor. Species of Special Concern (SSC) is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFW

2.3 The Migratory Bird Treaty Act

Nesting birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711). The MBTA provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State.

2.4 Jurisdictional Waters

In addition to potential impacts to designated critical habitats and special status species, potential impacts to jurisdictional waters must be considered. Impacts to jurisdictional waters typically require regulatory approvals from one or more of the following regulatory agencies: U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or CDFW.

3 Assessment Methodology

3.1 Biological Resources Assessment

Data regarding biological resources on the project site were obtained through literature review and field investigations. Prior to performing the surveys, available databases and documentation relevant to the project site was reviewed for documented occurrences of sensitive species in the area. The USFWS threatened and endangered species occurrence data overlay, as well as the most recent versions of the California Natural Diversity Database (CNDDDB) and California Native Plant Society Electronic Inventory (CNPSEI) databases were searched for sensitive species data on the *Fawnskin*, *Big Bear Lake*, *Big Bear City*, and *Moonridge* USGS 7.5-minute series quadrangles. The proposed project site is situated in the southeastern quarter of the *Fawnskin* USGS quad and the site's proximity to the *Big Bear Lake*, *Big Bear City*, and *Moonridge* quads lead to their inclusion in the review. These databases contain records of reported occurrences of State- and federally-listed species or otherwise sensitive species and habitats that may occur within the vicinity of the project site. Other available technical information on the biological resources of the area was also reviewed including previous surveys and recent findings.

Jericho biologists and regulatory specialists Shay Lawrey and Daniel Smith conducted a biological resources assessment of the project area on December 12, 2016. The survey area encompassed the entire project footprint, as well as a 200-foot buffer area, wherever access was not restricted by private property. Wildlife species were detected during field surveys by sight, calls, tracks, scat, or other sign. In addition to species observed, expected wildlife usage of the site was determined per known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. The focus of the faunal species surveys was to identify potential habitat for special status wildlife within the project area.

3.2 Jurisdictional Delineation

On December 12, 2016, Jericho biologist and regulatory specialist Shay Lawrey evaluated the project site for the presence of riverine/riparian/wetland habitat and jurisdictional waters, i.e. Waters of the U.S. (WoUS) as regulated by the USACE and RWQCB, and/or jurisdictional lake or streambed and associated riparian habitat as regulated by the CDFW. Ms. Lawrey is an experienced and qualified regulatory specialist who led the JD studies.

Prior to the field visit, historical aerial photographs were examined to gain an understanding of the impact of land-use on natural drainage patterns in the area. Where possible, surface drainage systems were traced using aerial imagery to downstream receiving waters. The U.S. Fish and Wildlife Service National Wetland Inventory and Environmental Protection Agency (EPA) Water Program "My Waters" data layer were also reviewed to determine whether any hydrologic features and wetland areas had been documented within the vicinity of the site. Similarly, the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey was used to identify the soil series in the area and to check these soils to determine whether they are regionally identified as hydric soils. A complete list of references is provided as part of report.

The delineation was conducted on foot and was based on aerial maps; global positioning units were used to assist in determining the limits of jurisdictional waters. All areas identified as supporting jurisdictional waters were measured to the nearest foot. Suspected jurisdictional areas were checked for the presence of definable channels and/or wetland vegetation, riparian habitat, soils, and hydrology. The JD was conducted in accordance with regulations set forth in 33CFR part 328 and the USACE guidance documents referenced below:

- *USACE Wetlands Research Program Technical Report Y-87-1 (on-line edition), Wetlands*

Delineation Manual, Environmental Laboratory, 1987 (Wetland Delineation Manual).

- *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010.*
- *USACE Minimum Standards for Acceptance of Preliminary Wetlands Delineations, November 30, 2001 (Minimum Standards).*
- *USACE Jurisdictional Determination Form Instructional Guidebook, May 30, 2007 (JD Form Guidebook).*
- *USACE A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States, August 2014 (Delineation Manual).*

Ms. Lawrey carefully assessed for indicators of active surface flow (presence of hydrophytic vegetation, staining, cracked soil, ponding, etc.). All apparent flow regimes and corresponding hydrogeomorphic features were subsequently identified. The lateral extent of USACE jurisdiction is measured at the Ordinary High Watermark (OHWM), which is indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris.

Evaluation of CDFW jurisdiction followed guidance in the FGC. Specifically, CDFW jurisdiction was delineated by measuring the elevations of land that confine a stream to a definite course when its waters rise to their highest level and to the extent of associated riparian vegetation. Here the extent of associated wetland/riparian vegetation was used to mark the lateral extent of the jurisdictional areas.

Other data recorded included shoreline height and morphology, substrate type, and all vegetation within the adjacent lake and riparian vegetation adjacent to the shoreline. Upon completion of fieldwork, all data collected in the field were incorporated into a Geographic Information System (GIS) along with basemap data. The GIS was then used to quantify the extent of jurisdictional waters. Upstream and downstream connectivity of waterways was reviewed in the field and on aerial photographs and topographic maps to determine jurisdictional status per the CWA.

The site was assessed for indicators of active surface flow (presence of hydrophytic vegetation, staining, cracked soil, ponding, etc.). Potential wetland areas were surveyed for hydrophytes and depressions/ponded areas where water would likely collect. Features previously indicated on aerial photographs (dark/saturated areas, associated riparian vegetation, etc.) were field verified during the site visit. Plant species were identified and given an indicator status as prescribed in the 2016 National Wetland Plant List (Western Mountains, Valleys & Coast Region) (Lichvar, 2016). Vegetation nomenclature follows The Jepson Manual, Vascular Plants of California, 2nd Edition (Baldwin, 2012). When The Jepson Manual does not list a common name, common name nomenclature follows the United States Department of Agriculture, Natural Resources Conservation Service (USDA) Plants Database (USDA, 2014a).

To be considered a *jurisdictional wetland* under Section 404, an area must possess three (3) wetland characteristics: *hydrophytic vegetation*, *hydric soils*, and *wetland hydrology*.

- ▶ ***Hydrophytic vegetation:*** Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 percent of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. Hydrophytic species are those included on the 2013 National Wetland Plant List (Arid West Region) (Lichvar, 2013). Each species on the list is rated per a wetland indicator category, as shown in Table 1. To be considered hydrophytic, the species must have *wetland indicator status*, i.e., be rated as OBL, FACW or FAC.

Table 1: Wetland Indicator Vegetation Categories

Category	Probability
Obligate Wetland (OBL)	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland (FACW)	Usually occur in wetlands (estimated probability 67 to 99%)
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands (estimated probability 34 to 66%)
Facultative Upland (FACU)	Usually occur in non-wetlands (estimated probability 67 to 99%)
Obligate Upland (UPL)	Almost always occur in non-wetlands (estimated probability >99%)

- ▶ **Hydric Soil:** Soil maps from the USDA-NRCS Web Soil Survey (USDA 2016) were reviewed for soil types found within the subject property. Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. There are several indirect indicators that may signify the presence of hydric soils including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration. Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of flood plains (entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans.

The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper part of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Gretag/Macbeth, 2000). Soil pits were dug to an approximate depth of 18 inches to evaluate soil profiles for indications of anaerobic and redoximorphic (hydric) conditions in the subsurface.

- ▶ **Wetland Hydrology:** The wetland hydrology criterion is satisfied at a location based upon conclusions inferred from field observations that indicate an area has a high probability of being inundated or saturated (flooded, ponded, or tidally influenced) long enough during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (USACE, 1987 and 2008b).

4 Results

4.1 Biological Resources Assessment – Literature Review

Per the CNDDDB, CNPSEI, and other relevant literature and databases, 98 sensitive species (71 plant species and 27 animal species) and two sensitive habitats have been documented in the *Fawnskin*, *Big Bear Lake*, *Big Bear City*, and *Moonridge* USGS 7.5-minute series quadrangles. This list of sensitive species and habitats includes any State- and/or federally-listed threatened or endangered species, California Fully Protected species, CDFW designated SSC, and otherwise Special Animals. “Special Animals” is a general term that refers to all the taxa the CNDDDB is interested in tracking, regardless of their legal or protection

status. This list is also referred to as the list of “species at risk” or “special status species.” The CDFW considers the taxa on this list to be those of greatest conservation need.

Of the 18 State- and/or federally-listed species documented within the *Fawnskin*, *Big Bear Lake*, *Big Bear City*, and *Moonridge* quads, 13 have been documented in the project vicinity. An analysis of the likelihood for occurrence of all CNDDDB sensitive species documented in the *Fawnskin*, *Big Bear Lake*, *Big Bear City*, and *Moonridge* quads is provided in Table 2. This analysis considers species range as well as documentation within the vicinity of the project area and includes the habitat requirements for each species and the potential for their occurrence on the site, based on required habitat elements and range relative to the current site conditions. Per the databases, no USFWS designated critical habitat, occurs within or adjacent to the project site.

Although not a State- or federally-listed species, San Bernardino flying squirrel are a CDFW SSC and are considered a particularly sensitive species within the region. Furthermore, this species has been documented within a few miles of the project site. Therefore, San Bernardino flying squirrel will be included in the discussion below.

4.1.1 Special Status Wildlife

Southern mountain yellow-legged frog – Endangered (Federal and State)

The State- and federally-listed as endangered southern mountain yellow-legged frog (MYLF) is one of 10 California native species that belongs to the family Ranidae and one of only two (2) species within the family (along with *R. sierra*) that are endemic to California. They inhabit high-elevation streams usually above 4,000 feet. They are typically found in swift moving streams in the chaparral belt (Zweifel 1955), and cool and cold, rocky, mountain watercourses shaded by trees, rocks, and other shelter, where the flow comes from springs and snowmelt (Jennings and Hayes 1994b) and where no predatory fishes have been introduced. The decline of MYLF in southern California has been severe, with extinction at >99% of historical sites (Backlin et al., 2004). In 2002 the species was listed as endangered in southern California under the federal ESA and the USFWS designated critical habitat for the southern MYLF in 2006.

MYLF have been documented approximately 2.2 miles west of the proposed project site, within Grout Creek. However, this area was surveyed by USGS in 2001 and no MYLF were found. This species is believed to be extirpated from the vicinity, except for a population that exists within City Creek, approximately 16 miles northwest of the project area.

Southwestern willow flycatcher – Endangered (Federal and State)

The southwestern willow flycatcher (SWFL) is a State- and federally-listed endangered bird species. This willow flycatcher breeds in dense riparian habitats along rivers, streams, and other wetlands. They have been documented to establish territories in elevations ranging from sea level to 8,500 feet (Sogge 1997). Plant species closely associated with the flycatcher include willows (*Salix* sp.), boxelder (*Acer negundo*), mulefat (*Baccharis salicifolia*), with an overstory of cottonwood (*Populus fremontii*) (62 FR 39129). Occupied habitat is generally dominated by shrubs and trees 13 to 23 feet or more in height, which provide dense lower and mid-story vegetation approximately 13 feet aboveground. This dense vegetation is often interspersed with open water, small openings, or sparse vegetation, creating a mosaic that is not uniformly dense (62 FR 39129). SWFL generally begin to arrive from their wintering range in Central America and establish breeding territories by mid-March to late-March.

A rapid decrease in the numbers of SWFL in California and other southwestern states prompted the USFWS to designate it as a Category 1 candidate species in 1991. One year later in 1992, the California Fish and

Game Commission listed the species as endangered, under the California Endangered Species Act (CESA) of 1970. On July 23, 1993, the SWFL was proposed for listing as endangered by the USFWS and was then listed as Federally endangered on February 27, 1995, under the Endangered Species Act (ESA) of 1973 (60 FR 10694). The USFWS designated revised critical habitat for this species in 2013 (78 FR 343 534).

SWFL has been documented approximately 1.7 miles south of the proposed project site, within suitable riparian habitat along Metcalf Creek.

Bald eagle – Delisted (Federal)/ Endangered (State)

The bald eagle (BEAE) was a federally-listed species until 2007 when it was delisted because of the increase in population. However, it remains a State-listed endangered species and is covered under the Migratory Bird Treaty Act (MBTA). BEAE are distinguished by a white head and white tail feathers, are powerful, brown birds that may weigh 14 pounds and have a wingspan of 8 feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of 6 feet. Sometimes confused with Golden Eagles, BEAE are mostly dark brown until they are four to five years old and acquire their characteristic coloring. They live near rivers, lakes, and marshes where they can find fish, their staple food. BEAE will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. BEAE require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts (CDFW 2016). In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering (CDFW 1999). They mate for life, choosing the tops of large trees to build nests, which they typically use and enlarge each year. In most of California, the breeding season lasts from about January through July or August (CDFW 2016). Nests may reach 10 feet across and weigh a half ton. They may also have one or more alternate nests within their breeding territory (CDFW 2016). The young eagles are flying within three months and are on their own about a month later.

The US Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area is in January and early February (Walter and Garrett 1981). Since 2012, at least one resident pair has been documented, which nested successfully in 2012 and 2015. These eagles typically nest in the Fawnskin area of Big Bear Lake, within approximately 1.5 miles of the project site.

Perches in the immediate vicinity of lakeshores form an essential habitat requirement for BAEA in the Big Bear Valley and the major threat to the continued existence of wintering BAEA in this area comes from development and modification of habitat near the shoreline (Walter and Garrett 1981). Therefore, protecting existing known perch trees and limiting construction projects that are adjacent to major eagle use areas to the period from April through November is critical for avoiding adverse impacts to BAEA (Walter and Garrett 1981).

Southern rubber boa – Threatened (State)

The State-listed as threatened southern rubber boa (rubber boa) is a small, rather stout-bodied snake with smooth scales and a blunt head and tail (Stewart et al. 2005). Adults grow to about 49.5-55.9 centimeters (cm) in length. Adults are light brown or tan in dorsal color with an unmarked yellow venter; juveniles are pale without a distinct margin between dorsal and ventral coloration (Stewart et al. 2005). Rubber boas are primarily fossorial and are rarely encountered on the surface, except on days and nights of high humidity and overcast sky. During warm months, it is active at night and on overcast days. It hibernates during

winter, usually in crevices in rocky outcrops. Other potential hibernacula may be rotting stumps.

Typical habitat for this species is mixed conifer-oak forest or woodland dominated by two or more of the following species: Jeffrey pine (*Pinus jeffreyi*), yellow pine (*P. ponderosa*), sugar pine (*P. lambertiana*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and black oak (*Quercus kelloggii*) (Stewart et al., 2005). Rubber boas are usually found near streams or wet meadows or within or under surface objects with good moisture retaining properties such as rotting logs (CDFW 2014). Much of the literature suggests that the rubber boa prefers mixed conifer-oak forests and woodlands between 5,000 and 8,000 feet in elevation, especially in canyons and on cool, north facing slopes (CDFW 1987). However, the factors of overriding importance seem to be access to hibernation sites below the frost line and access to damp soil (Keasler 1982).

Rubber boa have not been documented within the *Fawnskin* USGS quad.

San Bernardino flying squirrel – SSC

The San Bernardino flying squirrel (flying squirrel) is a medium-sized squirrel with a total length of about 26 cm. Flying squirrels are nocturnal and secretive and therefore rarely observed, but are easily distinguished from other sympatric arboreal squirrels (*Sciurus* and *Tamiasciurus*) by the presence of a furred patagium connecting the fore and hind limbs from ankle to wrist. This flying squirrel historically occurred as three isolated populations in the San Gabriel, San Bernardino, and San Jacinto mountain forests. The flying squirrel occurs in a range of coniferous and deciduous forest, including riparian forests. They have been reported in mixed conifer forests of Jeffrey pine and white fir. Sumner (1927) reported the habitat as white fir and black oak (*Quercus kelloggii*) woodlands (Bolster 1998). The literature contains different conclusions on the importance of old growth versus second-growth stands and the density of suitable tree cavities as habitat parameters that influence squirrel densities (Bolster 1998).

Flying squirrel populations are adversely affected by habitat fragmentation. Rosenberg and Raphael (1984) found that in northwestern California, the abundance of squirrels increased with stand size, they were generally absent in stands smaller than 20 hectares (ha), and approximately 75% of stands over 100 ha had flying squirrels. An additional problem with fragmented habitats is the constraints that open spaces pose to the movements of individuals and the colonization of unoccupied habitat patches. Mowrey and Zasada (1982) reported an average gliding distance of about 20 meters (m) in *sabrinus*, with a maximum of 48 m, and concluded that movements are unimpeded in areas with average openings of 20 m and occasional openings of 30 to 40 m (Bolster 1998).

Per the CNDDDB the most recent documented flying squirrel occurrence (1973) in the general vicinity is located approximately 3.3 miles southwest of the project site, near Bluff Lake.

4.1.2 Special Status Plants

Ash-gray paintbrush – Threatened (Federal)

The federally-listed as threatened ash-gray paintbrush is a hemiparasitic, perennial herb in the broomrape family (Orobanchaceae), with several ascending to decumbent (trailing) grayish stems sprouting from the rootcrown. The stems are 1 to 2 decimeters (4 to 8 inches (in) tall (Munz 1974, p. 795). Ash-gray paintbrush is distinguished from other species of *Castilleja* within its range by its perennial nature, ashy-puberulent (covered with short hairs) stems and leaves, yellowish or reddish flowers, with calyx lobes of equal length (Wetherwax et al. 2012, p. 957). Host plants include *Eriogonum kennedyi* var. *austromontanum*, *Eriogonum kennedyi* var. *kennedyi*, *Eriogonum wrightii* var. *subscaposum*, *Artemisia tridentata* ssp. *tridentata*, *Artemisia nova*, and other *Artemisia* taxa (USFWS 2013). However, because this species also

possesses photosynthetic green leaves that are capable of producing sugars, it is termed hemiparasitic and does not require a host plant species for its survival (USFWS 2013). This species occupies the meadow/forest ecotone (transitional area of vegetation between two different plant communities) of the San Bernardino Mountains at elevations between 1,800 and 3,300 m (5,905 to 10,827 feet.) and has been recorded in the following ecological communities: pebble plains, dry and wet forest meadows, mixed conifer forests, open pine forests, and pinyon-juniper woodlands (USFWS 2013). However, the primary habitat for this species is pebble plains, supporting one or more of the host plant species for ash-gray paintbrush (USFWS 2013). This species typically blooms from June to August (Calflora 2016).

Per the CNDDDB, ash-gray paintbrush has been documented (2000) within approximately 320 feet northeast of the project site, on the north side of North Shore Lane, within pebble plain/meadow edge transition in Jeffrey pine forest openings.

Big Bear Valley sandwort – Threatened (Federal)

The federally-listed as threatened Big Bear Valley sandwort is a low, tufted perennial herb in the pink family (Caryophyllaceae). Individual plants are green, with stems from 10 to 18 cm (3.9 to 7.1 in) long. The leaves are opposite and 0.5 to 1 cm (0.2 to 0.39 in) long. The flowers are white, five-petaled, and arranged in open cymes (clusters). The petals are 0.2 to 0.45 cm (0.1 to 0.18 in) long (USFWS 2015). This species is found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 1,950 and 2,100 m (6,393 to 6,885 feet.) (USFWS 2015). Pebble plains are treeless, open patches within pine forests and pinyon-juniper woodlands (USFS 2002, pp. 12, 15). Big Bear Valley sandwort is restricted to pebble plain habitat and is one of three indicator plant species, along with *Eriogonum kennedyi* var. *austromontanum*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain (USFWS 2015). This species typically blooms from May to August (Calflora 2016).

Per the CNDDDB, the nearest documented Big Bear Valley sandwort occurrence (2001) is approximately 0.6 miles northwest of the project site, within pebble plain habitat.

Southern mountain buckwheat – Threatened (Federal)

The federally-listed as threatened southern mountain buckwheat is a woody-based, cushion-like, perennial plant in the buckwheat family (Polygonaceae). Individual plants are 8 to 15 cm (3.1 to 5.9 in) tall, with stems forming loose, leafy mats, 14 to 36 cm (5.5 to 14.1 in) wide. The leaves are oblanceolate (broadest above the middle and tapering toward the base) and 0.5 to 1 cm (0.2 to 0.4 in) long, with dense white hair. The inflorescences (flower clusters) are 8 to 15 cm (3.2 to 5.9 in) high, bearing head-like inflorescences. The perianth is white to rose, and composed of inner and outer lobes that are similar in appearance (USFWS 2015). This species is found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 2,000 and 2,200 m (6,557 to 7,213 feet.) (USFWS 2015). Southern mountain buckwheat is restricted to pebble plain habitat and is one of three indicator plant species, along with *Eremogone ursina*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain (USFWS 2015). This species typically blooms from June to September (Calflora 2016).

Per the CNDDDB, the nearest documented southern mountain buckwheat occurrence (2007) is approximately 0.5 miles northwest of the project site, within pebble plain habitat surrounded by Jeffrey pine forest.

Cushenbury buckwheat – Endangered (Federal)

The federally-listed as endangered Cushenbury buckwheat is a low, densely-matted perennial plant in the buckwheat family (Polygonaceae). The flowers are whitish-cream, darkening to a reddish or purple color with age, and are borne on flowering stalks reaching 10 cm (4 in) in height. The leaves are 0.8 to 1.5 cm (0.3 to 0.6 inches) long, round to ovate, and white-woolly on both surfaces. The diameter of mats is typically 15 to 25 cm (6 to 10 inches), but they may reach up to 51 cm (20 in) (USFWS 2009). Cushenbury buckwheat occurs within openings of pinyon woodland, pinyon-juniper woodland, Joshua tree woodland, and blackbush scrub communities between 1,400 and 2,400 m. (4,600 and 7,900 feet) in elevation on limestone or other carbonate substrates (USFWS 2009). This species typically blooms from May to August (Calflora 2016).

Per the CNDDDB, the nearest documented Cushenbury buckwheat occurrence (2012) is approximately 2.6 miles east of the project site, on limestone marble, grey dolomitic limestone and exposed white bedrock near the east end of Big Bear Lake.

San Bernardino Mountains bladderpod – Endangered (Federal)

The federally-listed as endangered San Bernardino Mountains bladderpod is a silvery, short-lived perennial member of the mustard family (Brassicaceae). The leaves are wavy-margined to shallow-toothed. The outer basal leaves are diamond-shaped to round, and the inner leaves are elliptic with petioles 2 to 5 cm (0.8 to 2 inches) long. Flowers are borne in terminal racemes. The petals are yellow and 5.5 to 13 mm (0.2 to 0.5 inches) long, and styles are 3 to 4 mm (0.12 to 0.16 inches) long (USFWS 2009). This species is typically found within single leaf pinyon-mountain juniper and white fir forest (Neel 2000, p. 162) on dolomite soils and gentle to moderate slopes (USFWS 2009). San Bernardino Mountains bladderpod typically blooms from May to June (Calflora 2016).

Per the CNDDDB, the nearest documented San Bernardino Mountains bladderpod occurrence (2012) is approximately 2.4 miles east of the project site, on carbonate hills near the east end of Big Bear Lake.

San Bernardino blue grass – Endangered (Federal)

The federally-listed as endangered San Bernardino blue grass is a tufted perennial grass in the Poaceae family that has separate male and female plants (i.e. dioecious), and creeping rhizomes (USFWS 2008). This species is restricted to montane meadow habitat in San Bernardino and San Diego counties at elevations from 1,800 to 2,300 m (5,906 to 7,546 feet.) (USFWS 2008). San Bernardino bluegrass typically blooms from May to July (Calflora 2016).

Per the CNDDDB, the nearest documented San Bernardino blue grass occurrence (2012) is approximately 1.4 miles southeast of the project site, within wet meadow and spring habitat surrounded by Jeffrey pine forest, along the south shore of Big Bear Lake.

Bird-foot checkerbloom – Endangered (Federal and State)

The State- and federally-listed as endangered bird-foot checkerbloom is a multi-stemmed perennial herb in the mallow family (Malvaceae). The 20 to 40 decimeters (7 to 16 in) plant has erect stems that arise from a fleshy, nonrhizomatous taproot. The typically reddish stems are broad and pubescent. The predominantly basal leaves are palmately five to seven parted into narrow, three lobed divisions, which are further dissected into linear to oblong segments. The few stem leaves are small and divided into three segments that are also dissected into linear segments. The five-parted flowers, which occur in many-flowered, loose, spike-like terminal racemes (inflorescence), may vary in color from pink to magenta with

darker veins; petals are 9 to 12 mm (0.4 to 0.6 in) long (USFWS 2011). This checkerbloom is primarily found on vernal moist meadows and sparsely vegetated, drier meadow sites at elevations from 1,600 to 2,500 m (5,250 to 8,200 feet.) in the Big Bear Valley, San Bernardino Mountains of California (USFWS 2011). Bird-foot checkerbloom typically blooms from May to August (Calflora 2016).

Per the CNDDDB, the nearest documented bird-foot checkerbloom occurrence (1980) is approximately 0.6 miles east of the project site, along the north shore of Big Bear Lake.

California dandelion – Endangered (Federal)

The federally-listed as endangered California dandelion is a thick-rooted perennial herb in the sunflower family (Asteraceae). Individual plants are 5 to 20 cm (2 to 8 in) tall, with 10 to 20 basal leaves, light green, oblanceolate (much longer than broad, with rounded apex and tapering base), generally toothed, occasionally lobed proximally from 5 to 12 cm (2 to 5 in) long and 1 to 3 cm (0.4 to 1.2 in) wide. The yellow flowers are clustered in heads on leafless stalks. The outer phyllaries (bracts of the inflorescence) are erect, lanceolate to widely ovate and 5 to 7 mm (0.2 to 0.3 in) long while the inner phyllaries are lanceolate, and 12 to 15 mm (0.5 to 0.6 in) long. California dandelion is endemic to the San Bernardino Mountains, ranging from the Holcomb and Bear Valleys to South Fork Meadows in the Santa Ana River watershed (USFWS 2013). This species occurs from 1,600 to 2,800 m (5,300 to 9,000 feet.) and occupied sites tend to be relatively flat and may occur along perennial streams (USFWS 2013). Suitable habitat includes vernal wet montane meadows without closed tree canopy or other montane wetland areas dominated by wetland-associated grasses in forest openings (USFWS 2013). California dandelion typically blooms from May to August (Calflora 2016).

Per the CNDDDB, the nearest documented California dandelion occurrence (1988) is immediately adjacent the project site, approximately 50 feet to the east.

Slender-petaled thelypodium – Endangered (Federal and State)

The State- and federally-listed as endangered slender-petaled thelypodium is an herbaceous biennial in the mustard family (Brassicaceae). This species is glabrous (lacks hairs) biennial with simple stems, 30 to 80 cm (12 to 31 in) tall, with one to many branches per plant. The oblanceolate leaves (2 to 15 cm (1.6 to 5.9 in)) are thickish, purple-tinged, arranged in a basal rosette, and wither soon after blooming. The 2 to 5 cm (1.6 to 2 in) long stem leaves are sessile, arrowhead-shaped or auriculate-clasping at the base. The leaf margins are variably entire to few-toothed or shallowly lobed. The lavender to whitish flowers are borne in open, many-flowered racemes (inflorescence). The calyx (outermost group of floral parts) has a purplish tinge that gives the inflorescence a purple hue. The linear petals are 10 to 14 mm (0.4 to 0.6 in) long and crinkled at the base. The narrow, linear fruits are 3 to 5 cm (1 to 3 in) long. Slender-petaled thelypodium is primarily found on vernal moist alkaline meadows at elevations from 1,600 to 2,500 m (5,250 to 8,200 feet.) in the Big Bear Valley, San Bernardino Mountains of California. Alkaline flats and lakeshores are also considered suitable habitat (USFWS 2011). Slender-petaled thelypodium typically blooms from May to September (Calflora 2016).

Per the CNDDDB, the nearest documented slender-petaled thelypodium occurrence (2010) is approximately 1.3 miles southeast of the project site, within the same soils (Morical, very deep-Hecker families complex) as those found on site, near the Big Bear Lake south shore.

4.1.3 Designated Critical Habitat

The project site is not located within or adjacent to any USFWS designated critical habitat. The proposed project will not impact any critical habitat.

4.2 Biological Resources Assessment – Field Study

No State- and/or federally-listed threatened or endangered species, or other sensitive species were observed on site during the reconnaissance-level field survey. However, there is some habitat within the proposed project footprint, as well as the project vicinity, that is suitable for several sensitive species identified in the literature review (Table 2) and several sensitive species have been documented in the immediate vicinity of the project site. It is acknowledged that sensitive plant species may not have been detectable at the time of the survey, because it was conducted outside of the bloom period for the species. No focused surveys were conducted.

4.2.1 Habitat

The habitat on site and adjacent area consists primarily of a mix of Jeffrey pine forest (*Pinus jeffreyi* Forest Alliance) and Montane meadow habitat dominated by fragile sheath sedge (*Carex fracta*) and Baltic rush (*Juncus balticus*). Common native plant species within the project area include colonial bentgrass (*Agrostis idahoensis*), fragile sheath sedge, rubber rabbitbrush (*Ericameria nauseosa*), and Baltic rush, as well as several shattered trees including western juniper (*Juniperus occidentalis*), Jeffrey pine, and arroyo willow (*Salix lasiolepis*). Please refer to the attached Site Photographs for a view of conditions on site at the time of survey.

4.2.2 Wildlife Species Observed

Birds were the only wildlife group observed during survey. Species observed or otherwise detected on or near the project site during the reconnaissance-level survey included common raven (*Corvus corax*), dark-eyed junco (*Junco hyemalis*), acorn woodpecker (*Melanerpes formicivorus*), California towhee (*Melospiza crissalis*), American robin (*Turdus migratorius*) and mourning dove (*Zenaidura macroura*).

4.2.3 Special Status Wildlife

Southern mountain yellow-legged frog

Findings: There is no suitable MYLF habitat within the proposed project site. There are no permanent water sources within the project site. Therefore, suitable habitat for this species does not exist within the project site. MYLF are considered absent from the project area and vicinity. The proposed project will not impact MYLF and no further investigation relative to this species is warranted or required.

Southwestern willow flycatcher

Findings: No suitable habitat exists within the project area for this species. There is very little suitable riparian vegetation for this species present within the project area, consisting of only a few scattered willows (*Salix* spp.). The proposed project will not impact SWFL and focused surveys for this species are not warranted or recommended.

Bald eagle

Findings: The project is near the Big Bear Lake shoreline and there is suitable perching and foraging habitat for this species within the project vicinity. To protect BAEA during the wintering period, motorized vehicles (including construction equipment) are restricted from accessing areas along the Big Bear Lake shoreline from December 1st to April 1st, except for existing travel routes. Additionally, preconstruction Nesting Bird Surveys are recommended prior to any project activities that may occur within the BAEA nesting season, which is typically January – July.

Southern rubber boa

Findings: The project site lacks sufficient suitable habitat to support rubber boa. There are no rock outcrops, fallen logs, or other cover on site, which consists mostly open habitat with several trees. The site consists mostly of grass-like species and is lacking a sufficient duff layer that could potentially provide cover for this species. Furthermore, the site is situated on the north side of Big Bear Lake and has a complete south-facing exposure, which is consequently why the site was chosen for the new Solis telescope. The south-facing aspect of the site combined with the absence of cover objects (i.e. no rock outcrops, fallen logs, or other cover) most likely result in an environment that would be considered much too dry and exposed for rubber boa, which are reported to prefer cool, north facing slopes and damp soil. Therefore, suitable habitat for this species does not exist within the project site. The proposed project is not likely to impact rubber boa and focused surveys for this species are not warranted or recommended.

San Bernardino flying squirrel

Findings: Much of the project site and adjacent area consists of open meadow that would restrict flying squirrel movement. Nearby roads and other development further reduce the suitability of the habitat onsite for this species, which typically occupies large stands of dense forest. Furthermore, the project site is on the edge of the montane meadow habitat and there are only a few small to mid-size willows and junipers that will need to be trimmed and/or removed as part of the project. Therefore, the proposed project not likely to impact flying squirrel. Focused surveys for this species are not warranted or recommended.

4.2.4 Special Status Plants

Several sensitive plant species have been documented in the project vicinity and the project site and adjacent areas contain habitat that is typically associated with some of these sensitive plant species. As previously stated, sensitive plant species may not have been detectable at the time of the survey, because it was conducted outside of the bloom period for the species and no focused surveys were conducted.

Ash-gray paintbrush

Findings: Ash-gray paintbrush has been documented within several hundred feet of the project site. However, this species primarily occurs within pebble plains habitat, which does not exist within the project area. The project site is comprised mostly of montane meadow habitat near the Big Bear Lake shoreline and this species is typically associated with drier upland habitats. Therefore, the proposed project site is not very suitable for this species and the project is not likely to impact this species. Focused botanical surveys for this species are not warranted or recommended.

Big Bear Valley sandwort

Findings: Big Bear Valley sandwort is restricted to pebble plain habitat, which does not exist within the project site. Therefore, the proposed project site is not considered suitable for this species and the project is not likely to impact this species. Focused botanical surveys for this species are not warranted or recommended.

Southern mountain buckwheat

Findings: Southern mountain buckwheat is restricted to pebble plain habitat, which does not exist within the project site. Therefore, the proposed project site is not considered suitable for this species and the project is not likely to impact this species. Focused botanical surveys for this species are not warranted or recommended.

Cushenbury buckwheat

Findings: Cushenbury buckwheat requires soils derived from carbonate substrate. The soils on site consist of Morical, very deep-Hecker families complex, which are not carbonate soils and would not be considered suitable for this species. Therefore, the proposed project site is not considered suitable for this species and the project is not likely to impact this species. Focused botanical surveys for this species are not warranted or recommended.

San Bernardino Mountains bladderpod

Findings: San Bernardino Mountains bladderpod requires soils derived from carbonate substrate. The soils on site consist of Morical, very deep-Hecker families complex, which are not carbonate soils and would not be considered suitable for this species. Therefore, the proposed project site is not considered suitable for this species and the project is not likely to impact this species. Focused botanical surveys for this species are not warranted or recommended.

San Bernardino blue grass

Findings: Habitat that San Bernardino blue grass is associated with (i.e. montane meadow habitat) does exist within the project area and this species has been documented approximately 1.4 miles southeast of the project site, along the Big Bear Lake south shore. Therefore, the proposed project site is considered suitable for this species. Focused botanical surveys are needed to determine whether the project may potentially impact this species.

Bird-foot checkerbloom

Findings: Habitat that bird-foot checkerbloom is associated with (i.e. montane meadow habitat) does exist within the project area and this species has been documented approximately 0.6 miles east of the project site, along the Big Bear Lake north shore. Therefore, the proposed project site is considered suitable for this species. Focused botanical surveys are needed to determine whether the project may potentially impact this species.

California dandelion

Findings: Habitat that California dandelion is associated with (i.e. montane meadow habitat) does exist within the project area and this species has been documented within approximately 50 feet to the east of the project site. Therefore, the proposed project site is considered suitable for this species. Focused botanical surveys are needed to determine whether the project may potentially impact this species.

Slender-petaled thelypodium

Findings: Habitat that slender-petaled thelypodium is associated with (i.e. montane meadow habitat) does exist within the project area and this species has been documented approximately 1.3 miles southeast of the project site, within the same soils (Morical, very deep-Hecker families complex) as those found on site, near the Big Bear Lake south shore. Therefore, the proposed project site is considered suitable for this species. Focused botanical surveys are needed to determine whether the project may potentially impact this species.

4.2.5 Jurisdictional Delineation

The project site is within the Bear Valley Hydrologic Sub-Area (HSA 801.71) which comprises a 34,333-

acre drainage area within the larger Santa Ana River Watershed (HUC 18070203). This watershed is primarily within San Bernardino County and includes Riverside and Orange Counties with a small portion of Los Angeles Counties. The Santa Ana Watershed is bound on the north by the Mojave and Southern Mojave Watersheds, on the southeast by the Whitewash and San Jacinto Watersheds, and on the west by the San Gabriel, Seal Beach, Newport Bay, and Aliso-San Onofre Watersheds. The Santa Ana Watershed encompasses a portion of the San Gabriel and San Bernardino Mountains in the south and is approximately 3,000 square miles in area. The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. The closest tributary to the Santa Ana River is Big Bear Lake, which is just south of the project site.

Waters of the U.S.

The USACE has authority to permit the discharge of dredged or fill material in waters of the U.S. under Section 404 CWA. WoUS are defined as: “All waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters” (Section 404 of the CWA; 33 CFR 328.3 (a). CWA jurisdiction exists over the following:

1. all traditional navigable waters (TNWs);
2. all wetlands adjacent to TNWs;
3. non-navigable tributaries of TNWs that are relatively permanent waters (RPWs) i.e., tributaries that typically flow year-round or have continuous flow at least seasonally; and
4. every water body determined to have a significant nexus with TNWs.

No WoUS, as defined above, exist within the project site. There are no TNWs, RPWs, or any other water bodies that could be determined to have a significant nexus with a TNW. The project site is outside of the high waterline of the adjacent Big Bear Lake. Additionally, there are no areas meeting all three wetland characteristics, which would be designated as USACE jurisdictional wetlands. Although hydrophytic vegetation (*Carex fracta*, *Juncus balticus*, and *Salix lasiolepis*) is present within portions of the site, hydric soils and wetland hydrology are absent from the project site. Based on the absence of hydric soil indicators and wetland hydrology, the project site does not meet all three wetland characteristics and does not contain any designated USACE wetlands. Therefore, there are no waters subject to the CWA under the jurisdictions of the USACE or RWQCB and the project will not require CWA Sections 401/404 permits from the RWQCB or USACE.

State Lake/Streambed

The southern portion of the project site contains montane meadow habitat dominated by fragile sheath sedge (*Carex fracta*) and Baltic rush (*Juncus balticus*). Additionally, there are several scattered arroyo willow (*Salix lasiolepis*) near the southern end of the site. There is riparian vegetation associated with the adjacent Big Bear Lake present within the project site. Therefore, the portion of the project site consisting of montane meadow habitat with associated riparian vegetation would be considered subject to the FGC under the jurisdiction of the CDFW. Approximately 900 square feet of montane meadow habitat consisting of riparian vegetation associated with the adjacent Big Bear Lake will be impacted by the project. Please refer to Figure 5 for a summary of acreages of riparian habitat subject to the FGC under the jurisdiction of the CDFW. Any project-related impacts to the montane meadow habitat and on site will likely require a Lake or Streambed Alteration (LSA) Agreement from the CDFW, as per Section 1602 of the FGC.

5 Conclusions and Recommendations

This section summarizes the findings and recommendations for Project Measures to be implemented during construction to avoid, minimize and mitigate for potential impacts. *If the Project Measures are implemented, the project should not have a significant impact on the identified resources and there is no foreseeable reason why the project should not proceed as planned.*

5.1 Sensitive Biological Resources

Based on known habitat requirements and documented occurrences, the following five State- and/or federally-listed species have a moderate to high potential to occur within the project area:

- Bald eagle (*Haliaeetus leucocephalus*)
- San Bernardino blue grass (*Poa atropurpurea*)
- Bird-foot checkerbloom (*Sidalcea pedata*)
- California dandelion (*Taraxacum californicum*)
- Slender-petaled thelypodium (*Thelypodium stenopetalum*)

Please refer to Table 2 for an analysis of the likelihood for occurrence of all CNDDDB sensitive species, including all SSC and Watch List species, documented in the *Fawnskin, Big Bear Lake, Big Bear City, and Moonridge* quads.

5.1.1 Bald Eagle and Nesting Birds

The project is near the Big Bear Lake shoreline, where there is suitable perching and foraging habitat that is important for overwintering individuals of this species. As previously discussed, motorized vehicles (including construction equipment) are restricted from accessing areas along the Big Bear Lake shoreline from December 1st to April 1st, except for existing travel routes. Therefore, project construction activities must be conducted during the period from April to November, which is **outside the BAEA wintering period** (when the highest number of eagles are present in the area). However, BAEA have been documented nesting in the project vicinity, within approximately 1.5 miles of the project site. Additionally, vegetation suitable for other species of nesting birds exists throughout the proposed project site. As discussed, most birds are protected by the MBTA. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally January/February to August/September, and by conducting a worker environmental awareness training. However, if all work cannot be conducted outside of nesting season, a project-specific Nesting Bird Management Plan can be prepared to determine suitable buffers.

Preconstruction Nesting Bird Surveys are recommended prior to the commencement of any project activities that may occur within the nesting season (January to September), to avoid any potential project-related impacts to BAEA, as well as any other potential nesting birds within the project area. Jericho plans to conduct nesting bird surveys for the project area, immediately prior to construction work.

5.1.2 Special Status Plants

There is suitable habitat within the project site for four (4) of the State- and/or federally-listed plant species that were identified during the literature review, one (1) of which (California dandelion) has been documented in the immediate project vicinity. However, the presence (or absence) of any of the four State- and/or federally-listed plant species that may potentially occur within the project area is currently unknown. Therefore, **focused spring-time botanical surveys are recommended**, to determine whether any sensitive plant species are present within the proposed project footprint prior to the commencement of construction activities.

It should be noted that although there is a moderate to high potential for four listed plant species to occur within the project vicinity, the likelihood of any of them occurring within the proposed project footprint is relatively low, due to the small size of the proposed footprint. The approximately 18-foot-wide by 50-foot-long concrete foundation for the new Solis telescope will only impact approximately 900 sf. Additionally, the temporary access road that will be necessary to get equipment and materials to the project site will only be about 100 feet in length. ***Therefore, the likelihood of any sensitive plant species potentially being impacted by the project is low.***

Focused botanical surveys should be conducted during the appropriate time of year, when species are both evident and identifiable (CDFW 2009). Additionally, when special status plants are known to occur in the type(s) of habitat present in the project area, reference sites (nearby accessible occurrences of the plants) should be observed to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community (CDFW 2009).

Jericho plans to conduct focused botanical surveys for the project site beginning in spring or early summer, when target species are in bloom. Focused botanical surveys will determine whether special status species are present within the project site and what potential project-related impacts may occur. These surveys would be coordinated with the agencies to assure optimal timing of the process. If absence is determined no further action and no mitigation would be required. If listed species are determined to be present on site during focused survey, a mitigation plan could be provided, which would include measures to offset potential impacts to listed species. Possible mitigation measures would likely include, but not be limited to:

1. On-site salvage and relocation efforts;
2. On-site seed collection and propagation for enhancement (typically at a 3:1 ratio); and/or
3. Creation of a conservation area on occupied land to protect in perpetuity.

5.2 Jurisdictional Waters

There are no jurisdictional waters including USACE wetlands, subject to the CWA under the jurisdictions of the USACE and RWQCB, within the proposed project footprint. However, there is riparian vegetation associated with the adjacent Big Bear Lake present within the project site. The project proposes to construct an approximately 900 sf concrete foundation for the new Solis telescope, which would result in temporary and permanent impacts to the jurisdictional areas identified on site. Approximately 900 square feet of montane meadow habitat consisting of riparian vegetation associated with the adjacent Big Bear Lake will be impacted by the project. Figure 5 provides a summary of all potential jurisdictional areas on site. **Authorization from CDFW will be required.**

5.2.1 Lake or Streambed Alteration Agreement

A 1602 LSA Agreement is required for all activities that alter lakes or streams and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application.

6 Literature Cited

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**ADDITIONAL
TABLES**

Table 2. Sensitive Species and Habitats Documented within the *Fawnskin, Big Bear Lake, Big Bear City and Moonridge* USGS 7.5-minute Quadrangles

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Acanthoscyphus parishii</i> var. <i>cienezensis</i>	Cienega Seca oxytheca	None/ None	G4?T2; S2; CNPS: 1B.3	Upper montane coniferous forest, pinyon and juniper woodland, Joshua tree woodland. Dry gravelly banks and granitic sand. 1920-2560 m.	The microhabitat this species is typically associated with (dry gravelly banks and granitic sand) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	Cushenbury oxytheca	Endangered/ None	G4?T1; S1; CNPS: 1B.1	Pinyon and juniper woodland. On limestone talus and rocky slopes. 1400-2380 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Accipiter cooperii</i>	Cooper's hawk	None/ None	G5; S4; CDFW: WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	There is some suitable foraging habitat, but no suitable nesting habitat for this species within the project area. Potential for this species to occur in the project area is moderate .
<i>Antennaria marginata</i>	white-margined everlasting	None/ None	G4G5; S1; CNPS: 2B.3	Lower montane coniferous forest, upper montane coniferous forest. Dry woods. 2070-3355 m.	The habitat this species is associated with does exist within the project area. However, the only documented occurrence in the region for this species is approx. 8.3 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .
<i>Aquila chrysaetos</i>	golden eagle	None/ None	G5; S3; CDFW: FP	Rolling foothills, mountain areas, sage-juniper flats, & desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	There is some suitable habitat for this species, but the nearest documented occurrences are approximately 6 miles north of the project site, on the desert slopes of the San Bernardino mountains. Potential for this species to occur in the project area is low .
<i>Arenaria lanuginosa</i> var. <i>saxosa</i>	rock sandwort	None/ None	G5T5; S2; CNPS: 2B.3	Subalpine coniferous forest, upper montane coniferous forest. Mesic, sandy sites. 1920-2935 m.	The habitat this species is associated with does exist within the project area. However, the nearest documented occurrence for this species is approx. 7.6 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Astragalus albens</i>	Cushenbury milk-vetch	Endangered/ None	G1; S1; CNPS: 1B.1	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Sandy or stony flats, rocky hillsides, canyon washes, & fans, on carbonate or mixed granitic-calcareous debris. 1185-1950 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Astragalus bernardinus</i>	San Bernardino milk-vetch	None/ None	G3; S3; CNPS: 1B.2	Joshua tree woodland, pinyon and juniper woodland. Granitic or carbonate substrates. 275-2286 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Astragalus lentiginosus</i> var. <i>sierrae</i>	Big Bear Valley milk-vetch	None/ None	G5T2; S2; CNPS: 1B.2	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, upper montane coniferous forest. Stony meadows and open pinewoods; sandy and gravelly soils in a variety of habitats. 1710-3230 m.	Habitat that this species is associated with does exist within the project area and this species has been documented in the immediate project vicinity. Potential for this species to occur in the project area is high .
<i>Astragalus leucolobus</i>	Big Bear Valley woollypod	None/ None	G2; S2; CNPS: 1B.2	Lower montane coniferous forest, pebble plain, pinyon and juniper woodland, upper montane coniferous forest. Dry pine woods, gravelly knolls among sagebrush, or stony lake shores in the pine belt. 1460-2895 m.	Habitat that this species is associated with does exist within the project area and this species has been documented in the immediate project vicinity. Potential for this species to occur in the project area is high .
<i>Astragalus tidestromii</i>	Tidestrom's milk-vetch	None/ None	G3; S2; CNPS: 2B.2	Mojavean desert scrub. Washes, in sandy or gravelly soil. On limestone. 765-1575 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Atriplex parishii</i>	Parish's brittlescale	None/ None	G1G2; S1; CNPS: 1B.1	Vernal pools, chenopod scrub, playas. Usually on drying alkali flats with fine soils. 5-1420 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Berberis fremontii</i>	Fremont barberry	None/ None	G5; S3; CNPS: 2B.3	Pinyon and juniper woodland, Joshua tree woodland. Rocky, sometimes granitic. 1140-1770 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Boechnera dispar</i>	pinyon rockcress	None/ None	G3; S3; CNPS: 2B.3	Joshua tree woodland, pinyon-juniper woodland, Mojavean desert scrub. Granitic, gravelly slopes & mesas. Often under desert shrubs which support it as it grows. 1200-2450 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Boechnera lincolnensis</i>	Lincoln rockcress	None/ None	G4G5; S3; CNPS: 2B.3	Chenopod scrub, Mojavean desert scrub. On limestone. 880-2410 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Boechnera parishii</i>	Parish's rockcress	None/ None	G2; S2; CNPS: 1B.2	Pebble plain, pinyon-juniper woodland, upper montane coniferous forest. Generally, found on pebble plains on clay soil with quartzite cobbles; sometimes on limestone. 1770-2990 m.	The microhabitat this species is typically associated with (pebble plains) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Boechnera shockleyi</i>	Shockley's rockcress	None/ None	G3; S2; CNPS: 2B.2	Pinyon and juniper woodland. On ridges, rocky outcrops and openings on limestone or quartzite; usually in pinyon or p-j series. 875-2310 m.	The microhabitat this species is typically associated with (limestone or quartzite rock outcrops and openings) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Bombus caliginosus</i>	obscure bumble bee	None/ None	G4?; S1S2	Coastal areas from Santa Barbara county north to Washington state. Food plant genera include <i>Baccharis</i> , <i>Cirsium</i> , <i>Lupinus</i> , <i>Lotus</i> , <i>Grindelia</i> and <i>Phacelia</i> .	The only documented occurrence for this species in the region is a museum collection (1933) from approximately 4 miles southwest of the project site. Potential for this species to occur in the project area is low .
<i>Bombus crotchii</i>	Crotch bumble bee	None/ None	G3G4; S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	Some suitable habitat for this species exists within the project area and this species has been documented (1999) approx. 4 miles north of the project site. Potential for this species to occur in the project area is moderate .
<i>Bombus morrisoni</i>	Morrison bumble bee	None/ None	G4G5; S1S2	From the Sierra-Cascades ranges eastward across the intermountain west. Food plant genera include <i>Cirsium</i> , <i>Cleome</i> , <i>Helianthus</i> , <i>Lupinus</i> , <i>Chrysothamnus</i> , and <i>Melilotus</i> .	Some suitable habitat for this species exists within the project area and this species has been documented (1999) approx. 2 miles north of the project site. Potential for this species to occur in the project area is moderate .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Botrychium crenulatum</i>	scalloped moonwort	None/ None	G4; S3; CNPS: 2B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest, lower montane coniferous forest, marshes and swamps. Moist meadows, freshwater marsh, and near creeks. 1185-3110 m.	The habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 2.8 miles south of the project site. Potential for this species to occur in the project area is moderate .
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa-lily	None/ None	G3T3?; S3?; CNPS: 1B.2	Meadows and seeps, chaparral, lower montane coniferous forest. Vernal moist places in yellow-pine forest, chaparral. 1000-2390 m.	The habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 2 miles west of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Calochortus plummerae</i>	Plummer's mariposa-lily	None/ None	G4; S4; CNPS: 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	Some habitat this species is associated with does exist within the project area. However, the nearest documented occurrence for this species is approx. 5 miles south of the project site. Potential for this species to occur in the project area is low .
<i>Calochortus striatus</i>	alkali mariposa-lily	None/ None	G3; S3; CNPS: 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps. Alkaline meadows and ephemeral washes. 70-2210 m.	Some habitat this species is associated with does exist within the project area. However, the nearest documented occurrences are approximately 7.2 miles north of the project site, on the desert slopes of the San Bernardino mountains. Potential for this species to occur in the project area is low .
<i>Calyptridium pygmaeum</i>	pygmy pussypaws	None/ None	G2; S2; CNPS: 1B.2	Upper montane coniferous forest, subalpine coniferous forest. Sandy or gravelly sites. 1980-3110 m.	Some habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 2 miles northeast of the project site. Potential for this species to occur in the project area is moderate .
<i>Carex occidentalis</i>	western sedge	None/ None	G4; S3; CNPS: 2B.3	Lower montane coniferous forest, meadows and seeps. 1645-3135 m.	The habitat this species is associated with does exist within the project area. However, the nearest documented occurrence for this species is approx. 5.2 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Castilleja cinerea</i>	ash-gray paintbrush	Threatened/ None	G1G2; S1S2; CNPS: 1B.2	Pebble plains, upper montane coniferous forest, Mojavean desert scrub, meadows, pinyon and juniper woodland. Endemic to the San Bernardino Mountains, in clay openings; often in meadow edges. 725-2745 m.	This species primarily occurs in pebble plain habitat, which does not exist within the project site. Potential for this species to occur in the project area is low .
<i>Castilleja lasiorhyncha</i>	San Bernardino Mountains owl's-clover	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plain, upper montane coniferous forest, chaparral, riparian woodland. Mesic to drying soils in open areas of stream and meadow margins or of vernal wet areas. 1300-2390 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1 mile west of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Chaetodipus fallax pallidus</i>	pallid San Diego pocket mouse	None/ None	G5T34; S3S4; CDFW: SSC	Desert border areas in eastern San Diego county in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc. Sandy herbaceous areas, usually in association with rocks or coarse gravel.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Charina umbratica</i>	southern rubber boa	None/ Threatened	G2G3; S2S3	Known from the San Bernardino and San Jacinto mountains; found in a variety of montane forest habitats. Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs, rock outcrops, and under surface litter.	The project area is very open and does not have sufficient cover for this species (i.e. rotting logs and rock outcrops). Potential for this species to occur in the project area is low .
<i>Claytonia lanceolata</i> var. <i>peirsonii</i>	Peirson's spring beauty	None/ None	G5T2Q; S2; CNPS: 3.1	Upper montane coniferous forest, subalpine coniferous forest. Granitic scree slopes, often with a sandy or fine soil component and granitic cobbles; N aspect. 2135-2745 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None/ Candidate Threatened	G3G4; S2; CDFW: SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls & ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	The nearest documented occurrences are approximately 6.3 miles north of the project site, on the desert slopes of the San Bernardino mountains. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Cymopterus multinervatus</i>	purple-nerve cymopterus	None/ None	G4G5; S2; CNPS: 2B.2	Mojavean desert scrub, pinyon and juniper woodland. Sandy or gravelly places. 765-2195 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Dryocallis cuneifolia</i> var. <i>cuneifolia</i>	wedgeleaf woodbeauty	None/ None	G2T1; S1; CNPS: 1B.1	Upper montane coniferous forest, riparian scrub. Sometimes on carbonate. 1520-2220 m.	Some habitat this species is typically associated with exists within the project area. However, the nearest documented occurrence for this species is approximately 3.3 miles west of the project site. Potential for this species to occur in the project area is low .
<i>Dryopteris filix-mas</i>	male fern	None/ None	G5; S2; CNPS: 2B.3	Upper montane coniferous forest. In granite crevices. 1855-3075 m.	The microhabitat this species is typically associated with (granite crevices) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Dudleya abramsii</i> ssp. <i>affinis</i>	San Bernardino Mountains dudleya	None/ None	G4T2; S2; CNPS: 1B.2	Pebble (pavement) plain, upper montane coniferous forest, pinyon and juniper woodland. Outcrops, granite or quartzite, rarely limestone. 1250-2600 m.	The microhabitat this species is typically associated with (rock outcrops) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	Endangered/ Endangered	G5T2; S1	Riparian woodlands in Southern California.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Ensatina klauberi</i>	large-blotched salamander	None/ None	G2G3; S3; CDFW: WL	Found in conifer and woodland associations. Found in leaf litter, decaying logs and shrubs in heavily forested areas.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Eremogone ursina</i>	Big Bear Valley sandwort	Threatened/ None	G1; S1; CNPS: 1B.2	Pebble plain, pinyon and juniper woodland, meadows and seeps. Mesic, rocky sites. 1795-2895 m.	This species is restricted to pebble plain habitat, which does not exist within the project site. Potential for this species to occur in the project area is low .
<i>Erigeron parishii</i>	Parish's daisy	Threatened/ None	G2; S2; CNPS: 1B.1	Mojavean desert scrub, pinyon and juniper woodland. Often on carbonate; limestone mountain slopes; often associated with drainages. Sometimes on granite. 1050-1950 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Eriogonum evanidum</i>	vanishing wild buckwheat	None/ None	G2; S1; CNPS: 1B.1	Chaparral, cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland. Sandy sites. 975-2240 m.	There is some marginally-suitable habitat this species is associated with does exist within the project area. However, the nearest documented occurrence for this species is approx. 2.9 miles northeast of the project site. Potential for this species to occur in the project area is moderate .
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	southern alpine buckwheat	None/ None	G4T3; S3; CNPS: 1B.3	Alpine boulder and rock fields, subalpine coniferous forest. Dry granitic gravel. 2600-3500 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	southern mountain buckwheat	Threatened/ None	G4T2; S2; CNPS: 1B.2	Pebble (pavement) plain, lower montane coniferous forest. Usually found in pebble plain habitats. 1765-3020 m.	This species is restricted to pebble plain habitat, which does not exist within the project site. Potential for this species to occur in the project area is low .
<i>Eriogonum microthecum</i> var. <i>johnstonii</i>	Johnston's buckwheat	None/ None	G5T2; S2; CNPS: 1B.3	Subalpine coniferous forest, upper montane coniferous forest. Slopes and ridges on granite or limestone. 1829-2926 sq. km	The microhabitat this species is typically associated with (granite or limestone slopes and ridges) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i>	Bear Lake buckwheat	None/ None	G5T1; S1; CNPS: 1B.1	Lower montane coniferous forest, Great Basin scrub. Clay outcrops. 2000-2100 m.	The only documented occurrence for this species is located approximately 1.2 miles south of the project area, on the south side of Big Bear Lake. Potential for this species to occur in the project area is low .
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat	Endangered/ None	G5T1; S1; CNPS: 1B.1	Mojavean desert scrub, pinyon and juniper woodland, Joshua tree woodland. Limestone mountain slopes. Dry, usually rocky places. 1430-2440 m.	The soil type within the project area is not suitable for this species, which requires soils derived from carbonate substrate. Potential for this species to occur in the project area is low .
<i>Erythranthe exigua</i>	San Bernardino Mountains monkeyflower	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest. Seeps and sandy sometimes disturbed soil in moist drainages of annual streams; clay soils. 2060-2630 m.	The microhabitat this species is typically associated with (moist drainages of annual streams) does not exist within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Erythranthe purpurea</i>	little purple monkeyflower	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plain, upper montane coniferous forest. Dry clay or gravelly soils under Jeffrey pines, along annual streams or vernal springs & seeps. 2045-2290 m.	The microhabitat this species is typically associated with (annual stream and vernal springs and seeps) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Euchloe hyantis andrewsi</i>	Andrew's marble butterfly	None/ None	G3G4T1; S1	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino mountains, San Bernardino county, 5000-6000 ft. Hostplants are <i>Streptanthus bernardinus</i> & <i>Arabis holboellii</i> var. <i>pinetorum</i> ; larval foodplant is <i>Descurainia richardsonii</i> .	The nearest documented occurrence for this species is approx. 3.6 miles west of the project site. Potential for this species to occur in the project area is low .
<i>Gasterosteus aculeatus williamsoni</i>	unarmored threespine stickleback	Endangered/ Endangered	G5T1; S1; CDFW: FP	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small Southern California streams. Cool (<24 C), clear water with abundant vegetation.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Gentiana fremontii</i>	Fremont's gentian	None/ None	G4; S2; CNPS: 2B.3	Meadows and seeps, upper montane coniferous forest. Wet mountain meadows. 2400-2700 m.	The project area is outside of the elevational range for this species. Potential for this species to occur in the project area is low .
<i>Gilia leptantha</i> ssp. <i>leptantha</i>	San Bernardino gilia	None/ None	G4T2; S2; CNPS: 1B.3	Lower montane coniferous forest. Sandy or gravelly sites. 1500-2560 m.	The habitat this species is associated with does exist within the project area. However, the nearest documented occurrence for this species is approx. 4 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .
<i>Glaucmys sabrinus californicus</i>	San Bernardino flying squirrel	None/ None	G5T1T2; S1S2; CDFW: SSC	Known from black oak or white fir dominated woodlands between 5200 - 8500 ft. in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range. Needs cavities in trees/snags for nests & cover. Needs nearby water.	The habitat onsite is not what this species is typically associated with (i.e. black oak or white fir dominated woodlands) and the nearest documented occurrence is approx. 2.3 miles south of the project site, south of Big Bear Lake. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted/ Endangered	G5; S3; CDFW: FP	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water. Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine. Roosts communally in winter.	There is suitable habitat for this species within the project area and the nearest documented occurrence for this species is approx. 1.5 miles west of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is moderate .
<i>Helianthus nuttallii</i> ssp. <i>parishii</i>	Los Angeles sunflower	None/ None	G5TH; SH; CNPS: 1A	Marshes and swamps (coastal salt and freshwater). 10-1675 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Heuchera parishii</i>	Parish's alumroot	None/ None	G3; S3; CNPS: 1B.3	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest, alpine boulder & rock field. Rocky places. Sometimes on carbonate. 1500-3800 m.	The microhabitat this species is typically associated with (rocky areas) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Horkelia wilderae</i>	Barton Flats horkelia	None/ None	G2; S2; CNPS: 1B.1	Lower montane coniferous forest, upper montane coniferous forest, and chaparral. On rocky, north aspects in openings that hold persistent snowdrifts. 1675-2925 m.	The microhabitat this species is typically associated with (rocky, north aspects) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Hulsea vestita</i> ssp. <i>pygmaea</i>	pygmy hulsea	None/ None	G5T1; S1; CNPS: 1B.3	Alpine boulder and rock field, subalpine coniferous forest. Gravelly sites; on granite. 2835-3900 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Hydroporus simplex</i>	simple hydroporus diving beetle	None/ None	G1?; S1?	Known from aquatic habitats in Tuolumne and San Bernardino counties.	There is no aquatic habitat within the proposed project footprint. Potential for this species to occur in the project area is low .
<i>Icteria virens</i>	yellow-breasted chat	None/ None	G5; S3; CDFW: SSC	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft. off ground.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	None/ None	G2T2; S2; CNPS: 1B.2	Meadows, pebble plains, upper montane coniferous forest. In pebble plains and meadows with other rare plants. 1460-2960 m.	This species is typically associated with pebble plain habitat which does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Lampropeltis zonata</i> (<i>parvirubra</i>)	California mountain kingsnake (San Bernardino population)	None/ None	G4G5; S2?; CDFW: WL	Bigcone spruce & chaparral at lower elev. Black oak, incense cedar, Jeffrey pine & ponderosa pine at higher elevations. Well-lit canyons with rocky outcrops or rocky talus.	The project area is very open and does not have sufficient cover for this species (i.e. rotting logs and rock outcrops). Potential for this species to occur in the project area is low .
<i>Lewisia brachycalyx</i>	short-sepaled lewisia	None/ None	G4; S2; CNPS: 2B.2	Lower montane coniferous forest, meadows and seeps. Dry to moist meadows in rich loam. 1370-2450 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.7 miles south of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Lilium parryi</i>	lemon lily	None/ None	G3; S3; CNPS: 1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest. Wet, mountainous terrain; generally, in forested areas; on shady edges of streams, in open boggy meadows & seeps. 1220-2745 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1 mile west of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Linanthus killipii</i>	Baldwin Lake linanthus	None/ None	G1; S1; CNPS: 1B.2	Alkaline meadows, pebble plain, pinyon-juniper woodland, Joshua tree woodland. Usually on pebble plains with other rare species. 1700-2400 m.	The microhabitat this species is typically associated with (pebble plains) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	white bog adder's-mouth	None/ None	G4?T4; S1; CNPS: 2B.1	Meadows and seeps, bogs and fens, upper montane coniferous forest. Hillside bogs and mesic meadows. 2375-2560 m.	The project area is outside of the elevational range for this species. Potential for this species to occur in the project area is low .
<i>Myotis evotis</i>	long-eared myotis	None/ None	G5; S3	Found in all brush, woodland & forest habitats from sea level to about 9000 ft. prefers coniferous woodlands & forests. Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.	Some suitable foraging habitat for this species does exist within the project area. However, there is very little nursery habitat and no suitable roosting habitat within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Myotis thysanodes</i>	fringed myotis	None/ None	G4; S3	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.	Some suitable foraging habitat for this species does exist within the project area. However, there is no suitable roosting or nursery habitat within the project area. Potential for this species to occur in the project area is low .
<i>Myotis volans</i>	long-legged myotis	None/ None	G5; S3	Most common in woodland & forest habitats above 4,000 ft. Trees are important day roosts; caves & mines are night roosts. Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.	Some suitable foraging habitat for this species does exist within the project area. However, there is very little nursery habitat and no suitable roosting habitat within the project area. Potential for this species to occur in the project area is low .
<i>Myotis yumanensis</i>	Yuma myotis	None/ None	G5; S4	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Some suitable foraging habitat for this species does exist within the project area. However, there is no suitable roosting or nursery habitat within the project area. Potential for this species to occur in the project area is low .
<i>Navarretia peninsularis</i>	Baja navarretia	None/ None	G3; S2; CNPS: 1B.2	Lower montane coniferous forest, chaparral, meadows and seeps, pinyon and juniper woodland. Wet areas in open forest. 1150-2365 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.2 miles south of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Neotamias speciosus speciosus</i>	lodgpole chipmunk	None/ None	G4T2T3; S2S3	Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests. Habitat is usually lodgepole pine forests in the San Bernardino mountains & chinquapin slopes in the San Jacinto mountains.	There is suitable habitat for this species within the project area and this species has been documented in the immediate project vicinity. Potential for this species to occur in the project area is high .
<i>Oreonana vestita</i>	woolly mountain-parsley	None/ None	G3; S3; CNPS: 1B.3	Subalpine coniferous forest, upper montane coniferous forest, lower montane coniferous forest. High ridges; on scree, talus, or gravel. 1615-3500 m.	The microhabitat this species is typically associated with (scree, talus, and gravel) does not exist within the project area. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Oxytropis oreophila</i> var. <i>oreophila</i>	rock-loving oxytrope	None/ None	G5T4T5; S2; CNPS: 2B.3	Alpine boulder and rock field, subalpine coniferous forest. Gravelly or rocky sites. 2615-3505 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Packera bernardina</i>	San Bernardino ragwort	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest. Mesic, sometimes alkaline meadows, and dry rocky slopes. 1615-2470 m.	The habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 0.7 miles east of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
Pebble Plains	Pebble Plains	None/ None	G1; S1.1		This habitat does not exist within the project area.
<i>Perideridia parishii</i> ssp. <i>parishii</i>	Parish's yampah	None/ None	G4T3T4; S2; CNPS: 2B.2	Lower montane coniferous forest, meadows, upper montane coniferous forest. Damp meadows or along streambeds-prefers an open pine canopy. 1465-3000 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.4 miles southwest of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Phlox dolichantha</i>	Big Bear Valley phlox	None/ None	G2; S2; CNPS: 1B.2	Pebble plains, upper montane coniferous forest. Sloping hillsides, in shade under pines and <i>Quercus</i> <i>kelloggii</i> , with heavy pine litter; also in openings. 1980-2805 m.	The microhabitat this species is typically associated with (sloping hillsides) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Phrynosoma blainvillii</i>	coast horned lizard	None/ None	G3G4; S3S4; CDFW: SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.	There is little to no suitable habitat for this species within the project area and the nearest documented occurrence for this species (1961) is approx. 5.2 miles south of the project site. Potential for this species to occur in the project area is low .
<i>Physaria kingii</i> ssp. <i>bernardina</i>	San Bernardino Mountains bladderpod	Endangered/ None	G5T1; S1; CNPS: 1B.1	Pinyon and juniper woodland, lower montane coniferous forest, subalpine coniferous forest. Dry sandy to rocky carbonate soils. 1850-2700 m.	The soil type within the project area is not suitable for this species, which requires soils derived from carbonate substrate. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Piranga rubra</i>	summer tanager	None/ None	G5; S1; CDFW: SSC	Summer resident of desert riparian along lower Colorado River, & locally elsewhere in California deserts. Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Poa atropurpurea</i>	San Bernardino blue grass	Endangered/ None	G2; S2; CNPS: 1B.2	Meadows and seeps. Mesic meadows of open pine forests and grassy slopes, loamy alluvial to sandy loam soil. 1255-2655 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.4 miles southeast of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Poliomintha incana</i>	frosted mint	None/ None	G5; SH; CNPS: 2A	Lower montane coniferous forest. In boggy soil. 1600-1700 m.	The project area is outside of the elevational range for this species and suitable habitat for this species does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Psychomastax deserticola</i>	desert monkey grasshopper	None/ None	G1G2; S1S2	Occurs in very arid environments near the San Bernardino mountains. Known to occur on chamise (<i>Adenostoma fasciculatum</i>).	There is no suitable habitat for this species within the project area. Potential for this species to occur in the project area is low .
<i>Pyrrocoma uniflora</i> var. <i>gossypina</i>	Bear Valley pyrrocoma	None/ None	G5T1; S1; CNPS: 1B.2	Pebble plain, meadows and seeps. Meadows, meadow edges, and along streams in or near pebble plain habitat. 2040-2280 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.3 miles west of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Rana muscosa</i>	southern mountain yellow-legged frog	Endangered/ Endangered	G1; S1; CDFW: WL	Federal listing refers to populations in the San Gabriel, San Jacinto & San Bernardino Mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014. Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs. to complete their aquatic development.	There is no suitable habitat for this species within the project area and this species is extirpated from the vicinity. Potential for this species to occur in the project area is low .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Rosa woodsii</i> var. <i>glabrata</i>	Cushenbury rose	None/ None	G5T1; S1; CNPS: 1B.1	Mojavean desert scrub. Springs. 910-1435 m.	The habitat this species is associated with does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Saltugilia latimeri</i>	Latimer's woodland-gilia	None/ None	G3; S3; CNPS: 1B.2	Chaparral, Mojavean desert scrub, pinyon and juniper woodland. Rocky or sandy substrate; sometimes in washes, sometimes limestone. 120-2200 m.	The habitats this species is associated with do not exist within the project area. Potential for this species to occur in the project area is low .
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	None/ Rare	G3T1; S1; CNPS: 1B.2	Chaparral, cismontane woodland, lower montane coniferous forest. Disturbed burned or cleared areas on dry, rocky slopes, in fuel breaks & fire roads along the mountain summits. 1095-2135 m.	The microhabitat this species is typically associated with (dry, rocky slopes) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Sidalcea malviflora</i> ssp. <i>dolosa</i>	Bear Valley checkerbloom	None/ None	G5T2; S2; CNPS: 1B.2	Meadows and seeps, riparian woodland, lower montane coniferous forest, upper montane coniferous forest. Known from wet areas within forested habitats. Affected by hydrological changes. 1575-2590 m.	The habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 2.7 miles south of the project site. Potential for this species to occur in the project area is moderate .
<i>Sidalcea pedata</i>	bird-foot checkerbloom	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Meadows and seeps, pebble plains. Vernal mesic sites in meadows or pebble plains. 1840-2305 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 0.6 miles east of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .
<i>Sisyrinchium longipes</i>	timberland blue-eyed grass	None/ None	G3G4; S1; CNPS: 2B.2	Meadows and seeps. Mesic areas in meadows; seeps. 2060 m.	The habitat this species is associated with does exist within the project area. However, the only documented occurrence in the region for this species is approx. 7.7 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .
Southern California Threespine Stickleback Stream	Southern California Threespine Stickleback Stream	None/ None	GNR; SNR		This habitat does not exist within the project area.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Sphenopholis obtusata</i>	prairie wedge grass	None/ None	G5; S2; CNPS: 2B.2	Cismontane woodland, meadows and seeps. Open moist sites, along rivers and springs, alkaline desert seeps. 300-2000 m.	The habitat this species is associated with does exist within the project area. However, the only documented occurrence in the region for this species is approx. 8.2 miles south of the project site and this species has not been documented within the Big Bear Valley. Potential for this species to occur in the project area is low .
<i>Streptanthus bernardinus</i>	Laguna Mountains jewelflower	None/ None	G3G4; S3S4; CNPS: 4.3	Chaparral, lower montane coniferous forest. Clay or decomposed granite soils; sometimes in disturbed areas such as streambanks or roadcuts. 1440-2500 m.	The habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 3 miles west of the project site. Potential for this species to occur in the project area is moderate .
<i>Streptanthus campestris</i>	southern jewelflower	None/ None	G3; S3; CNPS: 1B.3	Chaparral, lower montane coniferous forest, pinyon-juniper woodland. Open, rocky areas. 900-2300 m.	The microhabitat this species is typically associated with (open, rocky areas) does not exist within the project area. Potential for this species to occur in the project area is low .
<i>Symphytotrichum defoliatum</i>	San Bernardino aster	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland. Vernal mesic grassland or near ditches, streams and springs; disturbed areas. 2-2040 m.	Some habitat this species is typically associated with exists within the project area. However, the nearest documented occurrence for this species is approximately 5.5 miles east of the project site. Potential for this species to occur in the project area is low .
<i>Taraxacum californicum</i>	California dandelion	Endangered/ None	G1G2; S1S2; CNPS: 1B.1	Meadows and seeps. Mesic meadows, usually free of taller vegetation. 1620-2590 m.	Habitat that this species is associated with does exist within the project area and this species has been documented in the immediate project vicinity. Potential for this species to occur in the project area is high .
<i>Thamnophis hammondi</i>	two-striped gartersnake	None/ None	G4; S3S4; CDFW: SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft. elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	There is some suitable habitat for this species in the near vicinity. Potential for this species to occur in the project area is high .

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Thelypodium stenopetalum</i>	slender-petaled thelypodium	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Meadows and seeps. Seasonally moist alkaline clay soils; associated with seeps and springs in the pebble plains. 2045-2240 m.	Habitat this species is associated with does exist within the project area and the nearest documented occurrence for this species is approx. 1.3 miles southeast of the project site, near the Big Bear Lake shore. Potential for this species to occur in the project area is high .

Coding and Terms

E = Endangered T = Threatened C = Candidate FP = Fully Protected SSC = Species of Special Concern R = Rare

State Species of Special Concern: An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: "It is unlawful to take, possess or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird."

State Fully Protected: The classification of Fully Protected was the State's initial effort in the 1960's 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. 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.

Global Rankings (Species or Natural Community Level):

G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure – Common; widespread and abundant.

Subspecies Level: Taxa which are subspecies or varieties receive a taxon rank (T-rank) attached to their G-rank. Where the G-rank reflects the condition of the entire species, the T-rank reflects the global situation of just the subspecies. For example: the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea* is ranked G5T2. The G-rank refers to the whole species range i.e., *Aplodontia rufa*. The T-rank refers only to the global condition of ssp. *phaea*.

State Ranking:

S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.

S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.

S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.

S5 = Secure – Common, widespread, and abundant in the State.

California Rare Plant Rankings (CNPS List):

1A = Plants presumed extirpated in California and either rare or extinct elsewhere.

1B = Plants rare, threatened, or endangered in California and elsewhere.

2A = Plants presumed extirpated in California, but common elsewhere.

2B = Plants rare, threatened, or endangered in California, but more common elsewhere.

3 = Plants about which more information is needed; a review list.

4 = Plants of limited distribution; a watch list.

Threat Ranks:

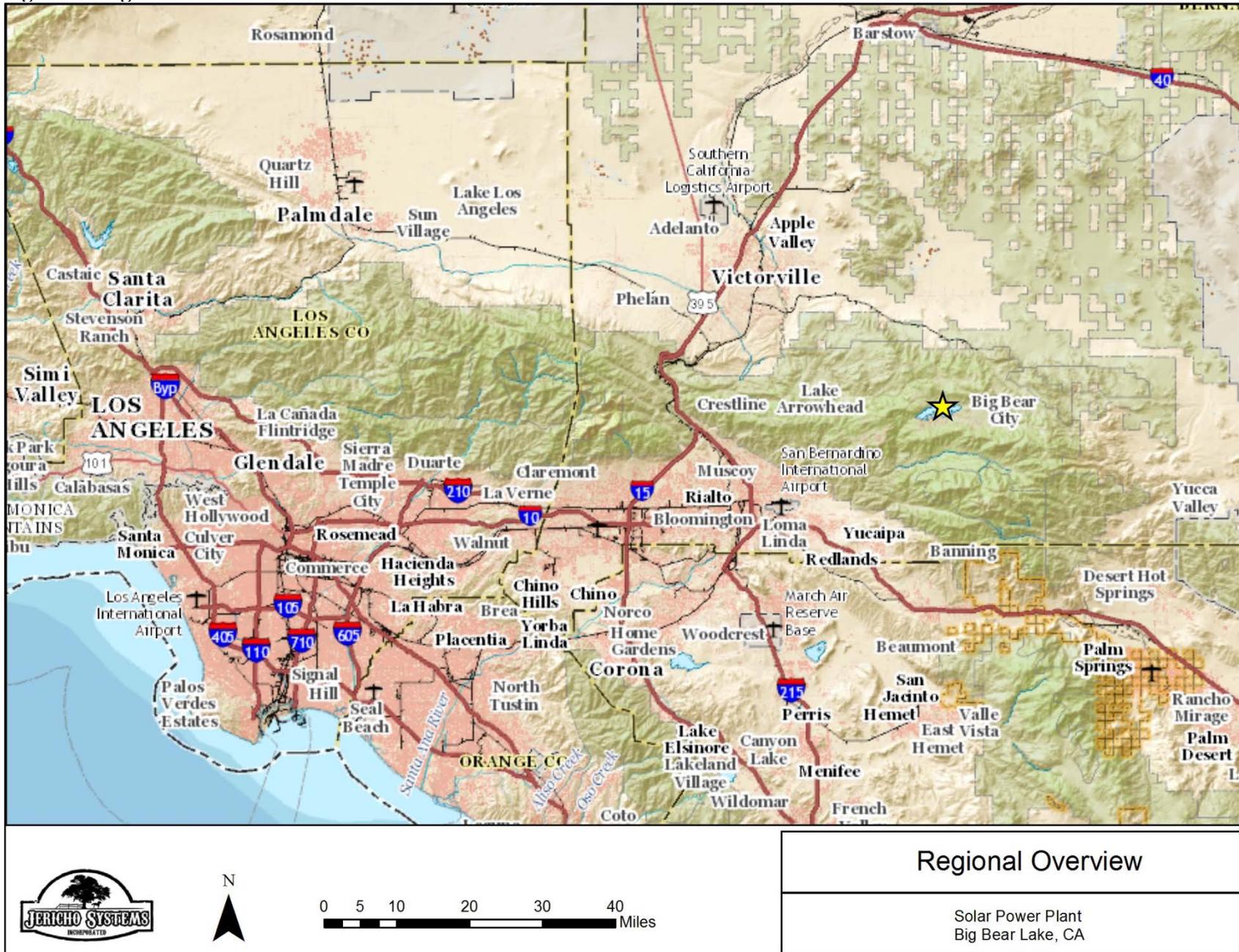
.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

FIGURES

Figure 1. Regional Overview





**Figure 2 -
Site Location (Topo Base)**

Big Bear Solar Observatory

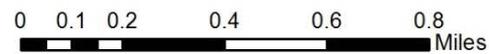


Figure 3. Aerial Depiction of Project



Figure 4. Project Site Location – Relative to Big Bear Lake

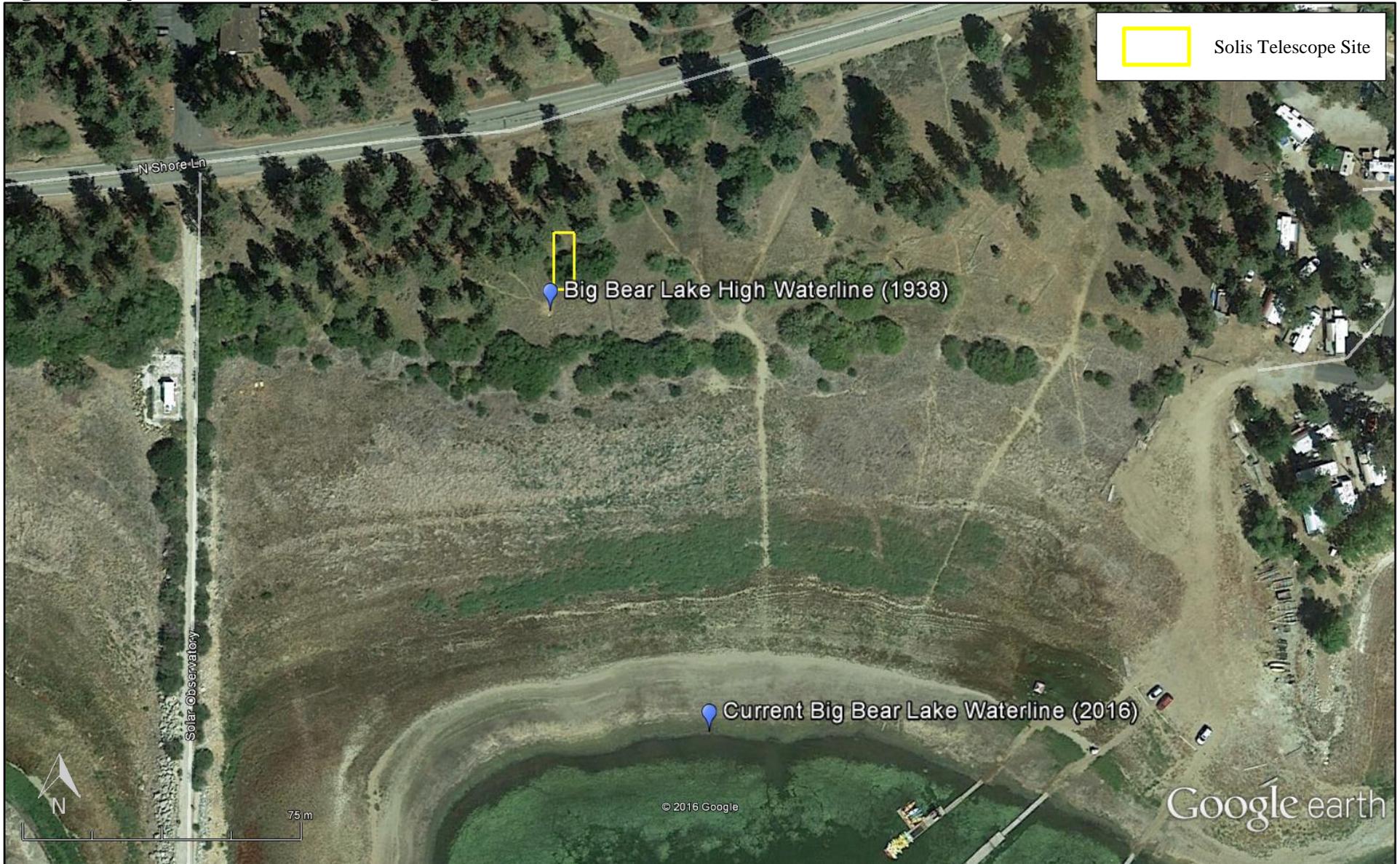
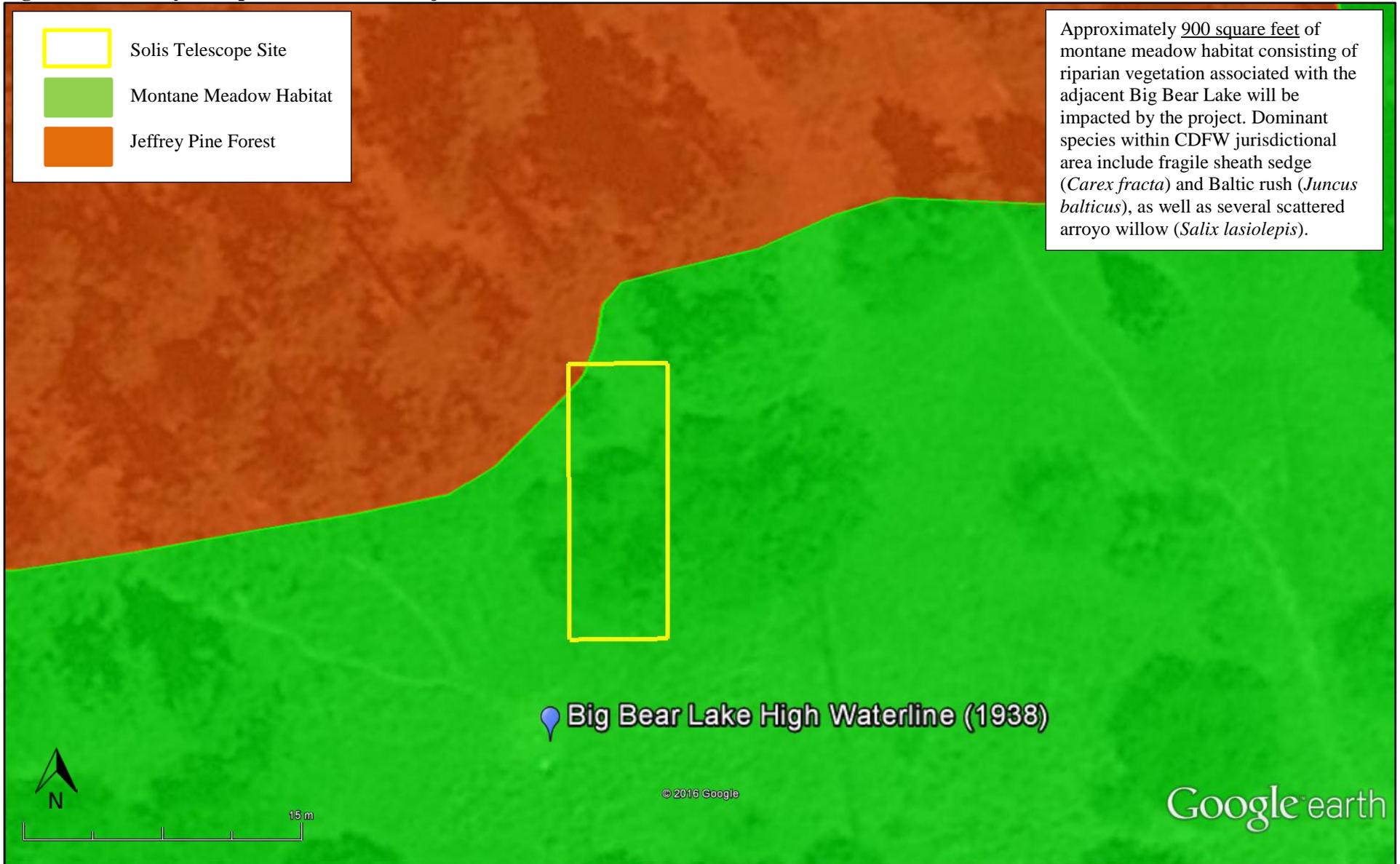


Figure 5. Summary of Impacts to Habitats Subject to CDFW Jurisdiction



**SITE
PHOTOGRAPHS**



Photo 1. North side of project site, where temporary construction access will be. Looking south toward proposed project footprint.



Photo 2. South side of project site, looking north toward proposed project footprint.



Big Bear Lake high waterline,
established in 1938

Photo 3. Montane meadow habitat south of project site, looking west from approx. southern boundary of site. Big Bear Lake on the left.



Photo 4. Montane meadow habitat south of project site, looking east from approx. southern boundary of site. Big Bear Lake on the right.