

California Department of Forestry and Fire Protection

# Banner Mountain Communications Tower Project



## Draft Initial Study/Mitigated Negative Declaration

Prepared by

**DGS**  
GENERAL SERVICES

February 2019

Technical Assistance

**Aspen**  
environmental group

**DRAFT**

**Mitigated Negative Declaration  
and Supporting Initial Study  
for  
CAL FIRE Banner Mountain  
Communications Tower Project**

**Prepared for:**

California Department of General Services  
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February 2019

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## List of Acronyms

AB	Assembly Bill
ADT	Average daily traffic
AQMD	Air Quality Management District
ARB	Air Resources Board
ATCM	Airborne Toxic Control Measures
BLM	Bureau of Land Management
BMP	Best Management Practice
BP	Before present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
CIWMB	California Integrated Waste Management Board
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CWPP	Community Wildfire Protection Plan
DGS	Department of General Services
DOC	Department of Conservation
DPM	Diesel particulate matter
DPR	Department of Pesticide Regulation
DTSC	Department of Toxic Substance Control
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse gas

HFC	Hydrofluorocarbon
HSWA	Hazardous and Solid Waste Act
HWCL	Hazardous Waste Control Law
IS	Initial Study
IWMB	Integrated Waste Management Board
KOP	Key Observation Point
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MLD	Most likely descendant
MM	Mitigation Measure
MMP	Mitigation Monitoring Program
MND	Mitigated Negative Declaration
MPE	Maximum Permissible Exposure
MRZ	Mineral resource zone
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCP	National Contingency Plan
NEHRP	National Earthquake Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NID	Nevada Irrigation District
NIST	National Institute of Standards and Technology
NOA	Naturally occurring asbestos
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	National Resource Conservation Service
NSAQMD	Northern Sierra Air Quality Management District
NSF	National Science Foundation
NSH	National Seismic Hazard
NWIC	Northwest Information Center
OEHHA	Office of Environmental Health Hazard Assessment
OMR	Office of Mine Reclamation
PERP	Portable Equipment Registration Program
PFC	Perfluorocarbon
PGA	Peak ground acceleration
PM2.5	Fine particulate matter (less than 2.5 microns in diameter)
PM10	Particulate matter (less than 10 microns in diameter)
PRC	Public Resources Code
PSMN	Public Safety Microwave Network
RCRA	Recovery Act of 1976
RFS	Renewable Fuel Standard
RFS1	Original Renewable Fuel Standard (RFS) program
ROG	Reactive organic gases

RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SGMA	Sustainable Groundwater Management Act
SMARA	Surface Mining and Reclamation Act of 1975
SMGB	State Mining and Geology Board
SR	State Route
SRRE	Source Reduction Recycling Element
SSURGO	Soil Survey Geographic
SWGS	Solid Waste Generation Study
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminant
TCR	Tribal Cultural Resource
TIS	Traffic Impact Studies
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	Vehicle miles travelled
VOC	Volatile organic compounds
WEAP	Worker Environmental Awareness Program
WUI	Wildland-Urban Interface

**DGS**

Department of General Services

707 3RD STREET

WEST SACRAMENTO, CA 95605

# **DRAFT**

## **Mitigated Negative Declaration**

### **CAL FIRE Banner Mountain Communications Tower Project**

## **1. Mitigated Negative Declaration**

### **1.1 Project Information**

**Project:** CAL FIRE Banner Mountain Communications Tower Project  
Nevada County, California

**Project Sponsor:** Department of Forestry and Fire Protection, CAL FIRE  
1416 9th Street  
Sacramento, CA 95814

### **1.2 Introduction**

Pursuant to CEQA, the California Department of General Services (DGS), on behalf of the California Department of Forestry and Fire Protection (CAL FIRE), must prepare an Initial Study (IS) for the proposed project to determine if any significant adverse effects on the environment would result from project implementation. The IS utilizes the significance criteria outlined in Appendix G of the CEQA *Guidelines*. If the IS for the project indicates that a significant adverse impact could occur, DGS would be required to prepare an Environmental Impact Report.

According to Article 6 (Negative Declaration Process) and Section 15070 (Decision to Prepare a Negative Declaration or Mitigated Negative Declaration) of the CEQA *Guidelines*, a public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

- (a) *The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or*
- (b) *The initial study identifies potentially significant effects, but:*
  - (1) *Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and*

- (2) *There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.*

Based on the analysis in the Initial Study, it has been determined that all project-related environmental impacts could be reduced to a less than significant level with the incorporation of feasible mitigation measures. Therefore, adoption of a Mitigated Negative Declaration (MND) will satisfy the requirements of CEQA. The mitigation measures included in this MND are designed to reduce or eliminate the potentially significant environmental impacts described in the Initial Study. Mitigation measures are structured in accordance with the criteria in Section 15370 of the CEQA *Guidelines*.

## 1.3 Project Description

CAL FIRE proposes to construct and operate the Banner Mountain Communications Tower Project (proposed project or project), which would install a new telecommunications tower with microwave dishes at the existing CAL FIRE Banner Mountain communications facility to support current microwave technology and decrease dependency on and overloading of an existing communications tower at the site.

## 1.4 Environmental Determination

The Initial Study was prepared to identify the potential environmental effects resulting from proposed project implementation, and to evaluate the level of significance of these effects. The Initial Study relies on information provided by CAL FIRE, project site reconnaissance by the Aspen environmental team in August 2018, discussions with the Nevada County Planning Department, other environmental analyses, and supplemental research.

Based on the Initial Study analysis, mitigation measures are identified for adoption to ensure that impacts of the proposed project would be less than significant. CAL FIRE has agreed to implement all of the additional recommended mitigation measures as part of the proposed project.

Implementation of the following mitigation measures would avoid potentially significant impacts identified in the Initial Study or reduce them to less than significant levels.

### ***Mitigation Measure for Special-Status Animal Species***

**MM B-1 California Red-legged Frog Avoidance.** To avoid the risk of harm or take of dispersing California red-legged frog, construction will be halted at the onset of rain of any duration. In addition, construction should be halted for a minimum of 48 hours following a rain lasting 30 minutes or longer in any season. If work must occur during a storm or within 48 hours of measurable rainfall (>0.25 inches), a pre-construction survey shall be completed prior to construction work resuming to ensure that California red-legged frog and other special-status species are not present in the project area.

**MM B-2 Special-status Bird Avoidance.** To avoid or minimize impacts to California spotted owl, northern goshawk, olive-sided flycatcher, and other migratory birds, construction will take place outside the nesting season for migratory birds, as feasible. Such activities include construction, road grading, vegetation trimming or removal, and equipment staging. The nesting season is generally accepted as February 15 through August 15. No restrictions would be necessary for activities that take place outside the nesting season (i.e., between August 16 and February 14).



If avoidance during the nesting season is not practical, a qualified biologist will conduct a pre-construction survey of work areas and a 500-foot buffer around the work area, no more than 1 week prior to construction to identify the locations of avian nests. Should nests be found, an appropriate buffer will be established around each nest site based on the professional judgement of a qualified biologist. To the extent feasible, no construction will take place within this buffer until the nest is no longer active. If construction must occur within the buffer, a biological monitor will be assigned to the project and the biological monitor will take steps to ensure that construction activities are not disturbing or disrupting nesting activities. If the biological monitor determines that construction activities are disturbing or disrupting nesting activities, then the biologist will have the authority to halt construction to reduce the noise and/or disturbance to the nests, as appropriate.

- MM B-3**      **Update of Baseline Conditions.** If project construction does not start within 2 years of the date of project approval, an updated biological resources background search will be completed. An updated site assessment will also be completed to ensure that the conditions at the proposed project area have not changed. This re-evaluation and assessment will take place no more than 120 days prior to the onset of construction. A project memorandum will be prepared to summarize the results of this update.

***Mitigation Measures for Previously Unidentified Historical, Archaeological or Tribal Cultural Resources***

- MM CR-1**      **Train Construction Personnel.** Prior to the initiation of construction, all construction personnel shall be trained, by a qualified archaeologist, regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) and protection of all archaeological resources during construction. The State shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of cultural materials. All personnel shall be instructed that unauthorized removal or collection of artifacts is a violation of State law. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend the Workers' Environmental Training Program so they are aware of the potential for inadvertently exposing buried archaeological deposits. The State shall provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources and anticipated procedures to treat unexpected discoveries.

- MM CR-2**      **Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources.** If previously unidentified cultural resources are identified during construction activities, construction work within 50 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist assesses the significance of the resource. The archaeologist, in consultation with the State, the State Historic Preservation Officer, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under California Environmental Quality Act Section 21083.2, or are determined to be tribal cultural resource as defined in Section 21074. If previously unidentified cultural resources or tribal cultural resources are identified during construction

activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the State, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under CEQA Section 21083.2 or determined to be tribal cultural resource as defined in Section 21074.

### ***Mitigation for Unanticipated Discovery of Human Remains***

**MM CR-3      Treatment of Human Remains.** All human remains discovered are to be treated with respect and dignity. Upon discovery of human remains, all work within 50 feet of the discovery area must cease immediately, nothing is to be disturbed, and the area must be secured. The County Coroner's Office must be called. The Coroner has two working days to examine the remains after notification. The appropriate land manager/owner of the site is to be called and informed of the discovery. If the remains are located on federal lands, federal land managers, federal law enforcement, and the federal archaeologist must be informed as well, due to complementary jurisdiction issues. It is very important that the suspected remains, and the area around them, are undisturbed and the proper authorities called to the scene as soon as possible, as it could be a crime scene. The Coroner will determine if the remains are archaeological/historic or of modern origin and if there are any criminal or jurisdictional questions.

After the Coroner has determined the remains are archaeological/historic-era, the Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative. If the Coroner believes the remains to be those of a Native American, he/she shall contact the Native American Heritage Commission (NAHC) by telephone within 24 hours.

The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains. The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

According to the California Health and Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains is a felony (Section 7052).

### ***Mitigation Measure for Accidental Spill of Hazardous Materials***

**MM H-1      Prepare and Implement Worker Environmental Awareness Program (WEAP).** An existing CAL FIRE-approved worker training program, or if no such program is in place, a project specific WEAP shall be prepared and submitted to the State for approval prior to construction. The WEAP shall include, at a minimum, the following provisions related to hazards and hazardous materials:

- A presentation shall be prepared by the State and used to train all site personnel prior to the commencement of work. A record of all trained personnel shall be kept.
- Instruction on compliance with proposed project mitigation measures.
- A list of phone numbers of the State environmental specialist personnel associated with the proposed project (archaeologist, biologist, environmental coordinator, and regional spill response coordinator).
- Instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific BMPs, and the location of Material Safety Data Sheets for the project.
- Worker Training on Emergency Release Response Procedures to include hazardous materials handling procedures for reducing the potential for a spill during construction, and hazardous material clean up procedures and training to ensure quick and safe cleanup of accidental spills.
- Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil, groundwater, or surface water contamination. The foreman or regional spill response coordinator shall have authority to stop work at that location and to contact the Certified Unified Program Agency (CUPA) (Nevada County Environmental Health Division, Hazardous Materials Management; see Section 5.9.1, *Regulatory Background*, above) immediately if unanticipated visual evidence of potential contamination or chemical odors are detected. Work will be resumed at this location after any necessary consultation and approval by the CUPA or other entities as specified by the CUPA.
- Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project.

**MM H-2**

**Prepare and Implement a Hazardous Materials and Waste Management Plan.** Prior to approval of the final construction plans for the proposed project, an existing CAL FIRE-approved hazardous materials management plan, or if no such plan is in place, a project-specific Hazardous Materials and Waste Management Plan for the construction phase of the proposed project will be prepared and submitted to the State for approval prior to construction. The Plan will be prepared to ensure compliance with all applicable federal, state, and local regulations. The Hazardous Materials and Waste Management Plan will reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from soil, groundwater, and surface water contamination, and proper disposal of hazardous materials. The plan will include the following information related to hazardous materials and waste, as applicable:

- A list of the hazardous materials that will be present on site and in the local construction yard during construction, including information regarding their storage, use, and transportation;
- Any secondary containment and countermeasures that will be required for onsite and construction yard hazardous materials, as well as the required responses for different quantities of potential spills;

- A list of spill response materials and the locations of such materials at the proposed project site and in the local construction yard during construction. Additionally, the Plan shall designate that spill response materials be kept onsite for all activities performed near to or adjacent to a stream or the river;
- Procedure for Fueling and Maintenance of Construction Vehicles and Equipment: Written procedures for fueling and maintenance of construction equipment would be prepared prior to construction. The Plan shall include the following procedures:
  - Construction vehicles shall be fueled and maintained offsite at the construction yard or at local fuel stations. Construction vehicles operated near to or adjacent to the stream/river channel shall be inspected and maintained daily to prevent leaks.
  - Construction equipment such as drill rigs and excavators shall be fueled offsite when feasible. When refueling offsite is not feasible for drilling equipment and other construction equipment onsite refueling of the equipment by refueling vehicles or fuel trucks shall follow specified procedures to prevent leaks or spills. Procedures will require refueling be located a minimum of 150 feet from a stream channel and the use of spill mats, drop cloths made of plastic, drip pans, or trays to be placed under refueling areas to ensure that fuels do not come into contact with the ground. Spill cleanup materials shall be kept readily available on the refueling vehicles.
  - Drip pans or other collection devices would be placed under equipment, such as motors, pumps, generators, and welders, during operation and at night to capture drips or spills. Equipment would be inspected and maintained daily for potential leakage or failures.
- A list of the adequate safety and fire suppression devices for construction activities involving toxic, flammable, or exposure materials;
- A description of the waste-specific management and disposal procedures that will be conducted for any hazardous materials that will be used or are discovered during construction of the proposed project; and
- A description of the waste minimization procedures to be implemented during construction of the proposed project.

A Mitigation Monitoring Plan has been prepared to ensure that the mitigation measures presented above are properly implemented. The plan describes specific actions required to implement each measure, including information on timing of implementation and monitoring requirements.

Based on the analysis and conclusions of the Initial Study, the impacts of the project as proposed by CAL FIRE would be mitigated to less than significant levels with the implementation of the mitigation measures presented herein, which have been incorporated into the proposed project.

## 2. Environmental Determination

### 2.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” and requiring implementation of mitigation as indicated by the checklist on the following pages.

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Aesthetics                         | <input type="checkbox"/> Agriculture & Forestry Resources | <input type="checkbox"/> Air Quality                                   |
| <input checked="" type="checkbox"/> Biological Resources    | <input checked="" type="checkbox"/> Cultural Resources    | <input type="checkbox"/> Energy  |
| <input type="checkbox"/> Geology/Soils                      | <input type="checkbox"/> Greenhouse Gas Emissions         | <input checked="" type="checkbox"/> Hazards & Hazardous Materials      |
| <input checked="" type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning                | <input type="checkbox"/> Mineral Resources                             |
| <input type="checkbox"/> Noise                              | <input type="checkbox"/> Population/Housing               | <input type="checkbox"/> Public Services                               |
| <input type="checkbox"/> Recreation                         | <input type="checkbox"/> Transportation                   | <input checked="" type="checkbox"/> Tribal Cultural Resources          |
| <input type="checkbox"/> Utilities/Service Systems          | <input type="checkbox"/> Wildfire                         | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

### 2.2 Environmental Determination

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Terry Ash, Project Manager  
Department of General Services

Date



## 3. Introduction to the Initial Study

### 3.1 Proposed Project Overview

CAL FIRE proposes to construct and operate the Banner Mountain Communications Tower Project (proposed project or project), which would install a new telecommunications tower with microwave dishes at the existing CAL FIRE Banner Mountain communications facility to support current microwave technology and decrease dependency and overloading of an existing communications tower at the site.

### 3.2 Environmental Analysis

#### 3.2.1 CEQA Process

This Initial Study (IS) has been prepared pursuant to the California Environmental Quality Act (CEQA), the amended State CEQA Guidelines (14 CCR 15000 et seq.). The purpose of the IS is to inform the decision-makers, responsible agencies, and the public of the proposed project, the existing environment that would be affected by the project, the environmental effects that would occur if the project is approved, and proposed mitigation measures that would avoid or reduce environmental effects.

A Mitigated Negative Declaration (MND) has been prepared based on the assessment of potential environmental impacts identified in the IS. All potentially significant impacts associated with the project can be mitigated to a level below significance; therefore, an MND can be adopted by the City of Santa Clara in accordance with Section 21080 of the CEQA Public Resources Code.

#### 3.2.2 CEQA Lead Agency

The DGS is the lead agency for review of the project under CEQA because it must make a decision whether to adopt the MND and to approve or deny the PTC.

#### 3.2.3 Initial Study

The IS presents an analysis of potential effects of the proposed project on the environment. The IS is based on information provided by CAL FIRE, project site visits, and additional research.

Construction activities and project operation could have direct and indirect impacts on the environment. The following environmental parameters are addressed based on the potential effects of the proposed project and potential growth-inducing or cumulative effects of the project in combination with other projects:

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| ■ Aesthetics                          | ■ Mineral Resources                  |
| ■ Agricultural and Forestry Resources | ■ Noise                              |
| ■ Air Quality                         | ■ Population and Housing             |
| ■ Biological Resources                | ■ Public Services                    |
| ■ Cultural Resources                  | ■ Recreation                         |
| ■ Energy                              | ■ Transportation                     |
| ■ Geology and Soils                   | ■ Tribal Cultural Resources          |
| ■ Greenhouse Gases                    | ■ Utilities and Service Systems      |
| ■ Hazards and Hazardous Materials     | ■ Wildfire                           |
| ■ Hydrology and Water Quality         | ■ Mandatory Findings of Significance |
| ■ Land Use and Planning               |                                      |

The IS has been organized into the following sections:

- **Section 3:** Introduction. Provides an introduction and overview describing the proposed project and the CEQA process, and identifies key areas of environmental concern.
- **Section 4:** Project Description. Presents the project objectives and provides an in-depth description of the proposed project, including construction details and methods.
- **Section 5:** Environmental Analysis and Mitigation. Includes a description of the existing conditions and analysis of the proposed project's potential environmental impacts, and identifies mitigation measures to reduce potentially significant impacts to less than significant levels.
- **Section 6:** Mitigation Monitoring Plan. Includes mitigation measures that CAL FIRE must implement as part of the project, actions required to implement these measures, monitoring requirements, and timing of implementation for each measure.
- **Appendix A:** List of Preparers. Lists the preparers of the IS.
- **Appendix B:** References. Lists the sources of information used to prepare the IS.
- **Appendix C:** Special-status Wildlife Assessment
- **Appendix D:** Special-status Plant Assessment
- **Appendix E:** Cultural Resources Phase I Evaluation
- **Appendix F:** Measurement and Evaluation of MPE Levels at Banner Mountain
- **Appendix G:** Draft Geologic Hazards Investigation
- **Appendix H:** Draft Geotechnical Investigation
- **Appendix I:** Preliminary Site Plan

## **4. Project Description**

The California Department of Forestry and Fire Protection (CAL FIRE) proposes to construct and operate the Banner Mountain Communications Tower Project (proposed project or project), which would install a new telecommunications tower with microwave dishes at the existing CAL FIRE Banner Mountain communications facility to support current microwave technology and decrease dependency and overloading of an existing communications tower at the site.

### **4.1 Project Title**

CAL FIRE Banner Mountain Communications Tower Project

### **4.2 Lead Agency Name and Address**

Department of General Services  
707 3rd Street  
West Sacramento, CA 95605

### **4.3 Lead Agency Contact Person and Phone Number**

Terry Ash, Senior Environmental Planner  
Department of General Services/Real Estate Services Division  
Project Management & Development Branch  
707 3rd Street, 4th Floor MS 509  
West Sacramento, CA 95605  
(916) 376-3824

### **4.4 Project Location**

The project site is located on private lands within unincorporated Nevada County, approximately 2.1 miles east/southeast of Nevada City. Access to the Banner Mountain site is provided by Red Dog Road to the north and Idaho Maryland Road to the south. The general location of the project area and site are shown on Figure 4-1 at the end of this section.

### **4.5 Project Sponsor's Name and Address**

California Department of Forestry and Fire Protection, CAL FIRE  
1416 9th Street  
Sacramento, CA 95814

### **4.6 General Plan Designation**

Banner Mountain is located in Land Use Zone RUR-5 (Rural with a 5-acre minimum parcel size) according to the Nevada County General Plan.

### **4.7 Zoning**

Banner Mountain is located in zoning district RA-5 (Residential Agricultural with a 5-acre minimum parcel size).

## **4.8 Surrounding Land Uses and Setting**

Nevada City is located approximately 2.1 miles west/northwest of Banner Mountain and the unincorporated community of Deer Creek Park is less than two miles to the northeast of the summit. The area surrounding the Banner Mountain summit (3,902 feet elevation) is largely undeveloped forest with steep terrain; however, the summit itself where the proposed project would be located is cleared of vegetation with several existing buildings, a tank, a generator, concrete footings, a telecommunications tower and a CAL FIRE lookout tower. Banner Mountain is the headwater source of the following three creeks: Little Deer Creek, Little Clipper Creek, and Wolf Creek.

## **4.9 Project Overview**

### **4.9.1 Project History and Background**

CAL FIRE operates and manages communications equipment at 192 telecommunications sites throughout California, including on Banner Mountain. CAL FIRE mountaintop communications facilities are remote facilities that essentially consist of a telecommunications tower and a securable radio communications building (vault) that is environmentally controlled to house sensitive radio transmission equipment. These facilities also include back-up generators that enable the sites to remain operational during power outages. Depending on site limitations, these generators are housed either within the vault, in a separate room, or in a stand-alone securable building. Where electrical power is not available at the site, facilities are powered by diesel/propane generators or solar panels for primary power.

CAL FIRE'S Banner Mountain communication site provides an essential emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the State. In addition, Banner Mountain is an essential component of California's Public Safety Microwave Network (PSMN) that transmits 911 calls and emergency instructions during major public safety incidents, including floods, firestorms and other natural disasters. CAL FIRE responds to a number of traffic accidents, medical aides, and other emergency service calls in this area as well.

The existing 120-foot communications tower at Banner Mountain is fully loaded, precluding any further expansion of the paths out of that site for the State's PSMN. In addition, the Banner Mountain communication site is also utilized and relied upon by other public safety agencies for their telecommunications needs. Banner Mountain's prime location for public safety radio has overloaded the existing tower to the extent that if any more dishes or antennas are added, the tower could fail.

### **4.9.2 Project Objectives and Need**

The objective of the project is to upgrade/supplement CAL FIRE's telecommunications infrastructure with a new telecommunications tower to support the State's PSMN and continue to provide an essential emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the area.

## **4.10 Project Components**

Within the existing Banner Mountain communications site (see Figure 4-2), CAL FIRE is proposing to construct and operate one new communications tower located just east of the existing towers. The exact location of the new tower within the project site would be determined during final engineering. A preliminary site plan layout is included in Appendix I (Preliminary Site Plan).

The new tower would be built to meet essential services seismic standards, withstand 90 mile-per-hour winds, heavy snow, and have a 25-year serviceable life. The new 148-foot communications tower would be a self-supporting, 4-legged lattice structure (80 feet) with a 40-foot upper monopole, as well as a safety ladder, platform and an 18-foot mast and 10-foot lightning arrestor at the top (see Figure 4-3, Prototypical Microwave Communications Tower [at full buildout]).

Up to three levels of 10-foot diameter microwave dishes would be installed on the lattice structure at the minimum height required for a clear line of sight to distant mountain peaks (approximately 15 to 50 miles away). The number of dishes would be determined by the number of State public agencies in addition to CAL FIRE utilizing the tower.

Lighting would be installed at the top of the new tower to ensure there would not be a hazard to air navigation. Consistent with Federal Aviation Administration (FAA) guidelines (Advisory Circular 70/7460-1L), the new lighting could include steady or flashing lights, white or red in color. The selected lighting plan would be determined during final engineering.

While no structures are proposed for removal, existing unused structures may be identified during final engineering and would be removed during project construction or cleanup.

## **4.11 Project Construction**

### **4.11.1 Construction Schedule**

Following receipt of applicable permits, completion of final engineering, and material procurement activities, construction of the proposed project is estimated to start in 2021. Construction is expected to take approximately 150 days over 16 months, incorporating delays that may occur due to fabrication of the tower, installation, inspections, weather and the timeframe for OES to populate the tower. Construction would primarily occur Monday through Saturday (6 days a week) between 7:00 a.m. to 6:00 p.m., in accordance with all applicable local noise and traffic ordinances.

The estimated construction schedule does not reflect modifications that may be unknown at this time but are needed to: (1) accommodate requirements identified during final engineering and material procurement; (2) accommodate compliance with environmental restrictions during construction; (3) keep the existing telecommunications facilities operational during construction; or (4) are otherwise needed for safety or system reliability.

### **4.11.2 Pre-Construction Activities**

#### ***Access Road Maintenance and Repair***

Direct site access would occur via existing private roads where CAL FIRE has leased access and maintenance agreements in place. Existing paved access roads may require pothole repairs in accordance with the lease agreement. The type of rehabilitation activities required would be based on specific site conditions to be determined during final engineering.

#### ***Staging Areas***

Project construction would require establishing a temporary staging area within the project site, used as a reporting location for workers, vehicle and equipment parking, and material storage. The staging area may also have a construction trailer for supervisory and clerical personnel. The majority of materials



associated with the construction efforts would be delivered by truck to each site and stored within designated staging area.

Materials commonly stored at the construction staging area would include, but not be limited to construction vehicles and equipment; portable sanitation facilities; steel bundles; new communications tower structures; soil spoils, construction trailers; concrete batch plant; signage; consumables (such as fuel and filler compound); waste materials for salvaging, recycling, or disposal; and Best Management Practice (BMP) materials (straw wattles, gravel, silt fences, and potentially water tanks). Fuel and hydraulic fluids may also be located at the construction staging area. Normal construction equipment maintenance and refueling would be conducted at the site.

### ***Establish Work Areas***

Pre-construction activities at the work site would consist of survey and staking disturbance limits and locations of the new tower, as well as a staging area. There may be some vegetation clearing associated with the setup of the work area. A dozer or grader would likely be used to establish the work area and clear vegetation. The site may require minor grading to enable water to flow in the direction of the natural drainage and would be designed to prevent ponding and erosion that could cause damage to the new tower footings. The graded area would be compacted to be capable of supporting heavy vehicular traffic.

Any fill material or any existing improvements (foundations, utilities, etc.) found in areas where foundations are proposed would be removed and replaced with compacted engineered fill. Voids or depressions created by the removal of any buried objects would be cleaned of all loose soil and debris and backfilled and compacted with engineered fill. Engineered fill would consist of a homogenous mixture of soil and rock free of vegetation, organic material, rubbish, and/or rubble. It is anticipated that most of the soil generated from onsite excavations would be suitable for use as engineered fill. (DGS, 2018)

All construction disturbance areas would be within State land of the existing telecommunications facility and primarily localized around the work area only. The new tower would be located close to the existing tower due to space constraints on the mountain tops and to minimize new disturbance. Erection of the new tower is expected to require establishment of a crane pad. The crane pad would occupy an area of approximately 50 feet by 50 feet and would be located adjacent the new tower within the laydown/work area. The actual size of other work areas would depend on the construction activity, but would occur only within the project site.

### **4.11.3 Construction Activities**

The new tower foundations would be constructed with poured-in- place mat foundations. Depending on final geotechnical engineering, the tower may need to be rock anchored up to 20 feet deep or more for stability. Spoils from foundation excavations would be placed within the project site or spread on adjacent existing access roads.

After survey positioning is verified, the foundation footings would be excavated or drilled. Based on the results of the geotechnical evaluation, hard rock was encountered at a depth of 15 feet below ground surface. Therefore, excavation with non-conventional methods may be required (e.g. blasting, larger excavation equipment) (DGS, 2018).

Anchor bolts may be drilled into bedrock at depths below 20 feet, if necessary, to properly anchor the foundation. Then rebar would be set and concrete would be poured. Steel-reinforced rebar cages would

be assembled at staging yards on the project site. Concrete would be delivered to the site or produced at an on-site batch plant.

Once the foundations are complete, the new tower would be installed. A crane would be used to set the steel tower onto the new foundations. When the new tower is in place, the structure would be bolted to the foundation and together (if erected in pieces). Sections may also be spot welded together for additional stability. Depending on the terrain and available equipment, the tower may be assembled into a complete structure at the staging yard or erected in pieces.

#### 4.11.4 Surface Drainage and Erosion Control

Drainage around foundations, structures, and pavements would be constructed in a way such that soils near the structures or pavements do not become saturated. In general, all construction surfaces would be graded to drain to prevent water from ponding. Unpaved surfaces adjacent to foundations or pavements would be graded no flatter than 2 percent. Downspouts would be piped to deposit water at least 5 feet from foundations. (DGS, 2018; see IS/MND Appendices G and H)

Erosion control measures would be implemented for exposed surfaces potentially subject to soil erosion. Best Management Practices to reduce erosion and transport of soil particles or turbid water into the drainage course flowing from the construction site would be employed. All conditions of existing water quality regulatory agency permits would be adhered to as well. (DGS, 2018)

#### 4.11.5 Restoration Activities

Upon completion of construction activities and testing of project components, all disturbed work areas (including access roads) would be restored to prior conditions.

#### 4.11.6 Construction Workforce and Equipment

The estimated total number of personnel required for construction activities on any given day during construction would be approximately 20 workers. Table 4-1 presents the typical construction equipment that may be utilized during construction.

**Table 4-1. Typical Construction Equipment to be Utilized**

Equipment	Activity		
	Site Preparation	Tower Installation	Site Restoration
Water Truck	X	X	
Various Small Crew Vehicles	X	X	
Backhoe Loader	X	X	
Loader	X	X	
Bulldozer	X		
Dump Truck	X		
Motor Grader	X		
Rock Hammer	X		
Soil Vibratory Compactor	X	X	
Jackhammer		X	
Auger Truck		X	
Crane		X	
Excavator		X	
Concrete Trucks		X	

**Table 4-1. Typical Construction Equipment to be Utilized**

Equipment	Activity		
	Site Preparation	Tower Installation	Site Restoration
Compressor		X	
All Terrain Fork Lift		X	
Man Lifts		X	
Various restoration equipment, including hydroseeder			X

#### 4.11.7 Water Requirements

Water would be used as needed for dust control during construction. Water would be obtained from offsite water purveyors and trucked to the site. During construction, restroom facilities would be provided by portable units to be serviced by licensed providers. During operation, minimal water would be required.

### 4.12 Operations and Maintenance

Ongoing operations and maintenance (O&M) activities are necessary to ensure reliable service, as well as safety of the general public. The project would not introduce any new or additional maintenance requirements or personnel that do not already exist under maintenance of the existing Banner Mountain communications tower and facilities. O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to that occurring under existing conditions, which include access road maintenance, inspections, tower checks, and necessary equipment replacement.

### 4.13 Other Permits and Approvals

Table 4-2 lists the permits and approvals which may be required for project-related activities. All necessary permits/approvals would be obtained prior to construction to ensure compliance with all applicable regulations and requirements throughout project implementation.

**Table 4-2. Permits and Approvals Which May Be Required**

Agency/Department	Permit/Approval	Description
<b>Federal</b>		
U.S. Army Corps of Engineers (USACE)	Clean Water Act Section 404 Permit	Protects Waters of the US, including tributaries and riparian areas.
U.S. Fish and Wildlife Service (USFWS)	Federal Endangered Species Act	Required if a project would result in take of a federally-listed species.
<b>State of California</b>		
Regional Water Quality Control Board (RWQCB)	NPDES Permit for construction dewatering	RWQCB approval is needed for general construction runoff and/or construction dewatering discharges under the National Pollutant Discharge Elimination System (NPDES).
	General Construction Permit and Clean Water Act Section 401 Permit	Project proponents are required to submit a Notice of Intent to the RWQCB for coverage under the General Construction Permit if project disturbance would be over 1 acre. Section 401 permits are necessary when Section 404 permits are required.

**Table 4-2. Permits and Approvals Which May Be Required**

Agency/Department	Permit/Approval	Description
California Department of Fish and Wildlife (CDFW)	California Endangered Species Act Incidental Take Authorization	Required if a project would result in take of a State-listed species.
	Streambed Alteration Agreement	Requires CDFW to review project impacts to "waters of the state" (bed, banks, channel, or associated riparian areas of a river, stream, or lake), including impacts to wildlife and vegetation from sediments, diversions, and other disturbances.
<b>Regional</b>		
California Air Resources Board (CARB) or Air Quality Management District (AQMD)	Portable Equipment Registration or Air Quality Permit to Operate	Portable equipment subject to local air quality permitting requirements, such as generators or air compressors, must either be registered under the CARB Portable Equipment Registration Program (PERP) or obtain a local air quality permit to operate.
Northern Sierra Air Quality Management District (NSAQMD)	Dust Control Permit	Required if project site disturbance is over one acre.



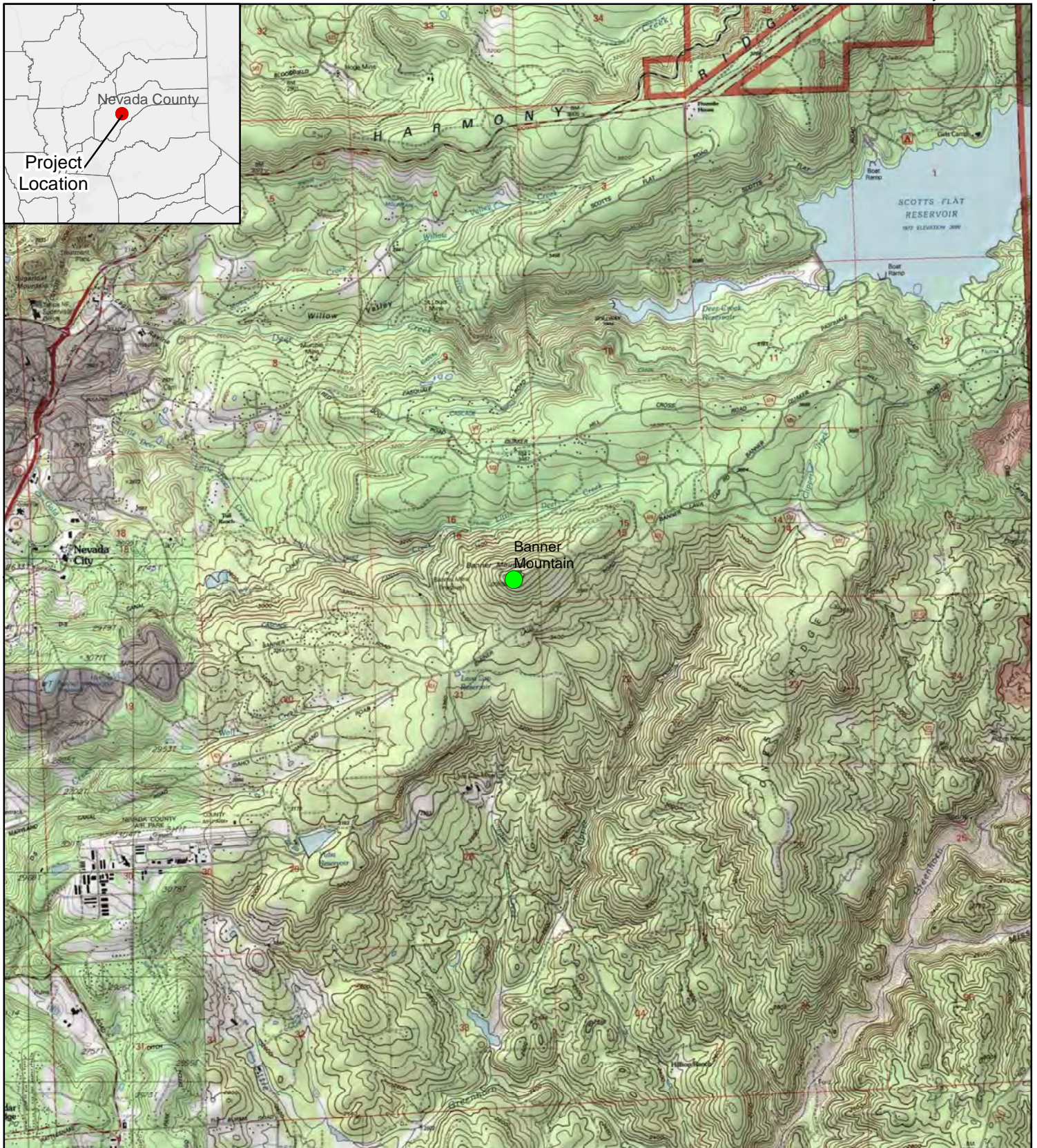



Figure 4-1.


Project Site Location





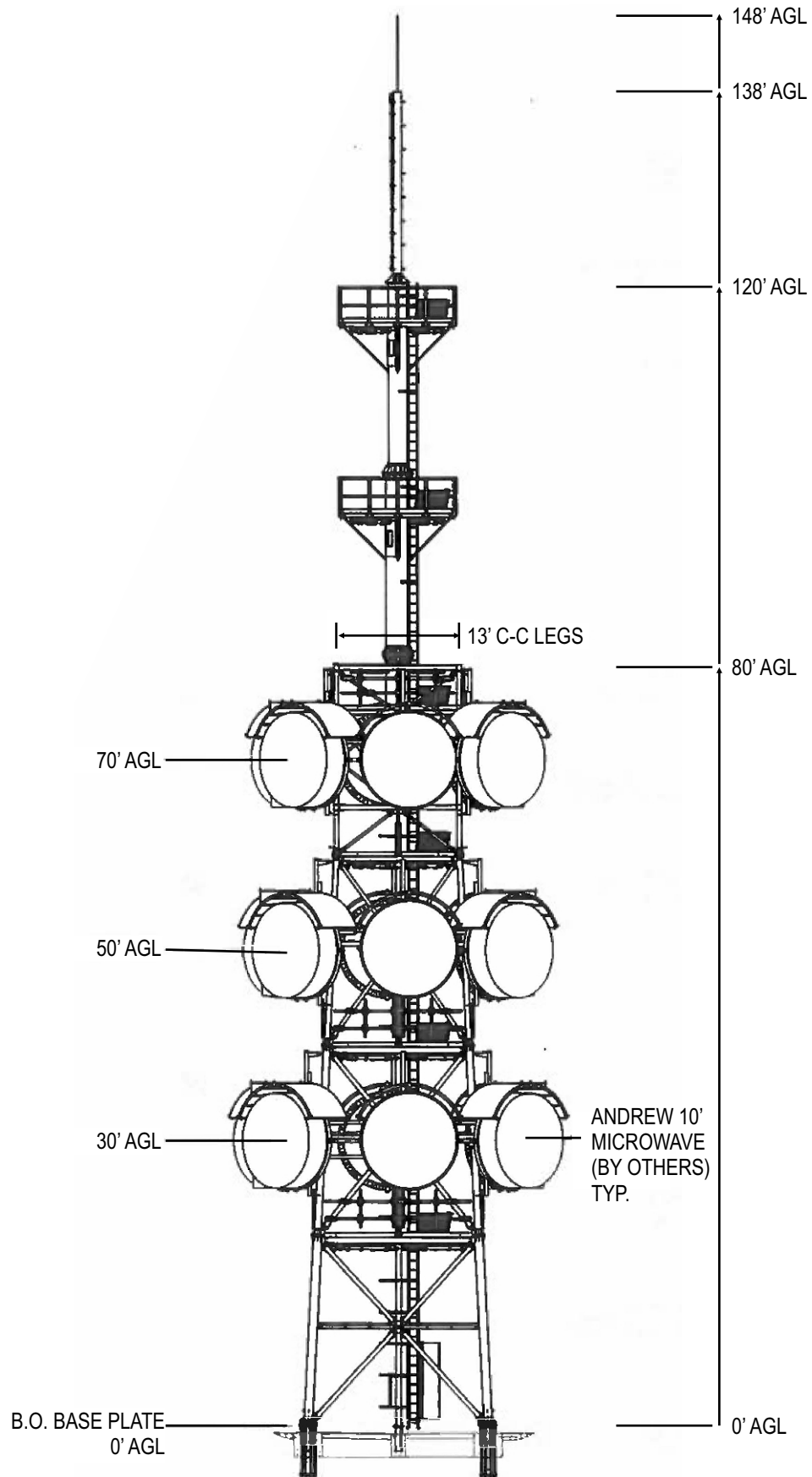
1:2,400

 Proposed Site Layout

0 150 300  
 Feet

**Figure 4-2.**

**Proposed Project: Site Plan**



**Figure 4-3.**  
**Prototypical Microwave Communications Tower**  
**(at full buildout)**

## 5. Environmental Setting and Environmental Impacts

### 5.1 Aesthetics

AESTHETICS				
Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

#### 5.1.1 Setting

##### Methodology

Aesthetics, as addressed in the California Environmental Quality Act (CEQA), refers to visual considerations in the physical environment. This Aesthetics section describes the existing landscape character of the study area, the visual characteristics of the proposed project, and the landscape changes that would be associated with the construction and operation of the proposed project.

Visual resources of the project area were investigated based on the following criteria: (1) existing visual quality and scenic attributes of the landscape; (2) location of sensitive receptors in the landscape; (3) assumptions about receptors' concern for scenery and sensitivity to changes in the landscape; (4) the magnitude of visual changes in the landscape that would be brought about by construction and operation of the proposed project; and (5) compliance with State, County, and local policies for visual resources.

The analysis of aesthetics and visual resources utilizes resource-specific qualitative and quantitative terminology. The following defines terms utilized within this analysis:

- **Key Observation Point (KOP):** One or a series of points on a transportation corridor or at a public/private use area, where the view of a proposed activity would be most revealing or considered sensitive.
- **Viewshed:** The landscape that can be directly seen under favorable atmospheric conditions, from a KOP or along a transportation corridor.
  - Foreground View: 0-1 mile.
  - Middleground View: 1-3 miles.
  - Background View: 3-5 miles.



- **Visual Contrast:** Opposition or unlikeness of different forms, lines, colors, or textures in a landscape. Generally, increased visual contrast within foreground distances would be more noticeable to viewers than increased visual contrast within middleground and background view distances.
- **Visual Quality:** The relative worth of the overall impression or appeal of an area created by the physical features of the landscape, such as natural features (landforms, vegetation, water, color, adjacent scenery and scarcity), and built features (roads, buildings, railroads, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as contrast.

## Existing Landscape Setting and Viewer Characteristics

The site is located on the top of Banner Mountain (summit elevation 3,902 feet) at an existing CAL FIRE telecommunications site. The existing landscape is considered to have moderate to high visual quality and consists of mature forested area along a scenic mountain. Rural residences surround the project area within the foreground area, with over ten residences being located within 1,000 feet of the project site in all directions. These residences are separated by the project site by thick forested area. Within foreground viewshed areas of the project site, the topography consists of rolling peaks and valleys of the mountaintop ridgeline. The dominant visual characteristic of the surrounding landscape is that of mature forest trees. From lower elevation middleground and background viewshed areas, the project site would be located along the mountain ridgeline horizon. Depending on the location, the project site could be visible from these locations, or could be blocked by mature trees. The mostly likely viewers would be residences within immediate foreground viewshed locations and those along middleground/background viewshed roadways and KOP locations with unobstructed views of the Banner Mountain peak ridgeline.

Existing views of the site are dominated by on-site infrastructure, which includes two existing communications towers (120 feet and 80 feet in height) and an existing 60 foot lookout tower. The site also includes several one-story structures. These existing facilities are shown in Figure 5.1-1. As shown in Figure 5.1-1, the existing 120-foot communications tower extends above the surrounding forest canopy, allowing views of the tower from viewsheds with limited or unobstructed views of the upper horizon line. The project area is not located in an area designated as a protected scenic resource and is therefore not subject to scenic protection standards. The proposed project site is located 12 miles southwest the nearest officially designated scenic highway (State Route 20), with the nearest section of State Route 20 that is eligible for designation as a State scenic highway being 2.5 miles north of the project site (CA DOT, 2019).

## Regulatory Background

### *State*

**California Department of Transportation: Scenic Highway Program.** The Scenic Highway Program in the State of California is aimed at the protection and long-term preservation of highway corridors of scenic value to ensure the aesthetic value of lands adjacent to highways. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. The status of a State scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation for scenic highway designation approval, and receives the designation. A city or county may propose adding routes with outstanding scenic elements to the list of eligible highways; however, state legislation is required for them to become designated.





Source: Kevin McElligott, 2017.

**Figure 5.1-1**  
**Banner Mountain Communications Facility**  
**Existing Setting**



### ***Local***

**Nevada County General Plan.** The Nevada County General Plan includes an Aesthetics Element, which addresses the aesthetic character of Nevada County with regard to managing urban design and scenic preservation (Nevada County, 1995). There are no policies in the Aesthetics Element that are relevant to the proposed project.

## **5.1.2 Environmental Impacts and Mitigation Measures**

### ***a. Would the project have a substantial adverse effect on a scenic vista?***

**LESS THAN SIGNIFICANT.** During construction of the new telecommunications tower, temporary visual changes due to human presence and on-site staging of equipment and materials would occur. Project activities would be short-term, with construction expected to take approximately 150 days over 16 months. The use of large cranes and other equipment would temporarily degrade views of the existing facility, but would be temporary. Nighttime construction is not expected, resulting in no changes to existing lighting of the site during construction.

The proposed project would be visible to a number of viewers from adjacent rural residences, as well as roadways and recreational trails scattered amongst the middleground and background viewsheds. No known designated scenic vistas (such as scenic lookouts) were identified in the area surrounding the project site with clear line-of-sight to the proposed communications tower. Therefore, while the proposed new communications tower would be visible from a number of KOPs, no significant impacts to a designated scenic vista would occur. The new communications tower would be installed at an existing communications site that already contains visible communications and fire watch towers, and would therefore, not result in a significantly noticeable change to baseline conditions at the project site. The proposed project activities would therefore not result in a substantial adverse effect on a scenic vista and impacts would be less than significant.

### ***b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?***

**NO IMPACT.** There are no important rock outcroppings or historic buildings in the project area. The entire proposed project is confined within the the State's existing telecommunications facility. The project area is not located in an area designated as a protected scenic resource and is therefore not subject to scenic protection standards. Based on the circumstances, there would be no impacts to scenic resources within a State scenic highway.

### ***c. In non-urbanized areas, would the project substantially degrade the existing visual character or quality of the public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?***

**LESS THAN SIGNIFICANT.** The proposed project in a non-urban area. The project site is confined within State land at the existing telecommunications facility at the summit of Banner Mountain. There may be some vegetation clearing associated with the setup of the work area. However, upon completion of construction activities and testing of project components, all disturbed work areas (including access roads) would be restored to prior conditions.

As discussed in Item (a), the presence of equipment and vehicles may be noticeable to the nearby residents and visitors on Banner Mountain during construction. However, construction activities would be temporary.

As shown in Figure 4-3, the main component of the proposed project with the most prominent visual impact would be the bottom 80 feet of the proposed telecommunications tower where the microwave dishes would be mounted onto the 4-legged lattice structure. While the entire structure would be 148 feet in height, the lower 80 feet would have the most bulk and greatest potential for visual contrast. The upper portion of the proposed tower would have a single pole (spire) appearance that would decrease visual contrast compared to the lower half. Each microwave dish would be approximately 10 feet in diameter and would wrap the lower 80 feet of the tower (refer to Figure 4-3). The number of microwave dishes would depend on how many other State agencies would utilize the structure for communications. The associated electrical equipment and infrastructure would not significantly contribute to visual changes in the surrounding landscape due to the low height and surrounding tree canopy blocking views beyond the immediate project site.

The proposed project would be visible to a number of viewers from adjacent rural residences, as well as roadways and recreational trails scattered amongst the middleground and background viewsheds. The height of the proposed tower would increase the overall visibility of the Banner Mountain telecommunications facility, which would incrementally increase the overall visibility of the existing facility. While the project would introduce an additional taller/larger tower within the site, it would only slightly increase the visual contrast of the existing facility as the new tower would be located within the footprint of the existing telecommunications facility and adjacent to two other existing communications towers, which would help reduce the amount of additional visual contrast at locations with views of the site and the adjacent landscapes.

The new tower is expected to contribute to the overall presence of the telecommunications facility. However, by being located within an existing facility and adjacent to existing adjacent towers, the increased presence and contrast is not considered to be prominent. Due to the surrounding height of the tree canopy and the design of the proposed new tower, which would minimize tower bulk at the upper portions of the tower (refer to Figure 4-3), visual contrast and overall conflict with form, line, color, texture, and pattern of the existing landscape and views of the site is considered less than significant. Overall, potential impacts to the visual character and quality of the public views of the site and its surroundings are considered to be less than significant and no mitigation is required.

***d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?***

**LESS THAN SIGNIFICANT.** The current 120-foot telecommunications tower at the project site has a light for air navigation safety. Based on guidelines from the Federal Aviation Administration (FAA) to reduce potential hazards to air navigation, lighting may be moved from the existing tower to the proposed tower (since the proposed tower is taller), or new lighting may be installed at the top of the new tower. Consistent with FAA guidelines (Advisory Circular 70/7460-1L), the new or replacement lighting could include steady or flashing lights, white or red in color. It is possible that the new or replacement lighting on the new tower may not be exactly comparable to the existing lighting source (the selected lighting plan would be determined during final engineering). However, since similar lighting source already exists within the site at the top of the existing 120-foot communications tower, either moving the light to the new proposed tower or having lighting on both towers is not considered to create a new source of substantial light compared to the baseline. Furthermore, the proposed tower would be painted in a non-reflective surface and would not create a new source of glare. Impacts would be less than significant and no mitigation is required.

## 5.2 Agriculture and Forestry Resources

### AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.2.1 Setting

Historically, with its mild climate and good soils, Nevada County attracted a large number of farmers who grew a variety of crops, including many varieties of fruit, small grains, hay, potatoes, and wine grapes. In addition, sheep and cattle were raised in large quantities (Nevada County, 1995). In addition, the timber was harvested extensively in the area. Currently, cattle ranching remains the main producer of agriculture lands in Nevada County; however, vineyards and wineries are steadily increasing on the landscape (Nevada County, 2016).

The project area is located in Land Use Zone RUR-5 (Rural with a 5-acre minimum parcel size) and in zoning district RA-5 (Residential Agricultural with a 5-acre minimum parcel size) and is designated as Other Land under the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), which identifies various categories of farmland throughout the State (DOC, 2017a). The California



Land Conservation Act of 1965 (referred to as the Williamson Act) allows counties to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in return for a reduction in assessed property taxes (DOC, 2017b). None of the lands affected by the project are under Williamson Act contracts.

## Regulatory Background

### *Federal*

There are no federal regulations associated with agriculture and forestry resources that are relevant to the proposed project.

### *State*

**Farmland Mapping and Monitoring Program (FMMP).** The FMMP is part of the California Department of Conservation (DOC); it was established in 1982 to identify various categories of farmland throughout California and to assess the location, quantity, and quality of agricultural lands and conversion of these lands to other uses. Every even-numbered year, the FMMP issues a Farmland Conversion Report. FMMP data are used in elements of some county and city general plans, in regional studies on agricultural land conversion, and in environmental documents as a way of assessing project-specific impacts on Prime Farmland.

The DOC classifies lands as follows (DOC, 2004):

- **Prime Farmland:** *Land that has the best combination of physical and chemical properties for the production of crops*
- **Farmland of Statewide Importance:** *Similar to Prime Farmland, but with minor shortcomings (e.g., steeper slopes, inability to hold water)*
- **Unique Farmland:** *Land of lesser quality soils, but recently used for the production of specific high economic value crops. Land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California*
- **Farmland of Local Importance:** *Land essential to the local agricultural economy*
- **Grazing Land:** *Land on which existing vegetation is suitable for livestock grazing.*
- **Urban and Built-Up Land:** *Land that is occupied by buildings or other structures at a minimum density of one unit to 1.5 acres (or approximately six structures to 10 acres). These lands are used for development purposes, including residential, commercial, industrial, construction, public administration, institutional, transportation yards, airports, cemeteries, golf courses, sewage treatment, sanitary landfills, and water control structures.*
- **Other Land:** *Land that is not in any other map category, such as waterbodies smaller than 40 acres; low density rural developments; confined livestock, poultry, or aquaculture facilities; and brush, timber, wetland, and riparian areas not suitable for livestock grazing.*
- **Water:** *Perennial waterbodies that are a minimum of 40 acres.*

**Williamson Act.** The Williamson Act is intended to help preserve farmland by allowing counties to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in return for a reduction in assessed property taxes. The contracted land is then restricted to agricultural and compatible uses through a rolling-term, 10-year contract between the

private land owner and the local government, which has the discretion to determine uses compatible with Williamson Act enrollment. As stated in Section 51222 of the California Government Code, the minimum acreage requirement for individual parcels to enter into Williamson Act contracts is 100 acres.

### **Local**

**Nevada County General Plan.** The Nevada County General Plan includes an Agriculture Element, which has the goal of encouraging the use of significant agricultural lands and operations in Rural Regions and promoting a strong and sustainable local agricultural economy in Nevada County. The following policy generally applies to the proposed project (Nevada County, 1995).

- **Policy 16.4.** In Rural Regions, maintain existing agricultural zoning on lands designated as Rural on the General Plan Land Use maps, including land in the RA, A1, AE, FR and TPZ districts, to allow for the continuation of existing agricultural operations, as well as the introduction of new agricultural operations consistent with the regulations of the respective districts.
- **Policy 16.13.** Continue participation in the Williamson Act program. Parcels eligible for Williamson Act contract shall be 5 or more acres in size.

## **5.2.2 Environmental Impacts and Mitigation Measures**

**a. *Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as Shown on the Maps Prepared Pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to Non-agricultural use?***

*NO IMPACT.* The proposed project area is designated as Other Land on FMMP maps and is not designated Farmland. Commercial agriculture is not practiced in the area. Project construction and operation and maintenance activities would be conducted within the project site. The proposed project would not result in conversion of Farmland to non-agricultural use. No impact would occur.

**b. *Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?***

*NO IMPACT.* The proposed project area is not under any Williamson Act contracts. While the project area is located in Land Use Zone RUR-5 and in zoning district RA-5, all construction disturbance areas would be within State land at the existing telecommunications facility at the Banner Mountain summit. The proposed project site is previously disturbed with cleared vegetation and several existing buildings, a telecommunications tower and a fire watch tower. In addition, no commercial agricultural activity occurs in the project area. Therefore, the proposed project would not conflict with zoning for agricultural use or a Williamson Act contract. No impact would occur.

**c. *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?***

*NO IMPACT.* The project area would not be located in an area zoned for forest land or timberland. Construction and operations and maintenance activities associated with the proposed project would not occur in any forested land since any activities would be conducted on previously disturbed land within the existing telecommunications site. Overall, the proposed project would not conflict with zoning for forest land, timberland, or timber production. No impact would occur.

***d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?***

*NO IMPACT.* As discussed above under Item (c), the proposed project would not affect any forest land since all proposed activities would be conducted within the project site, which supports an existing telecommunications facility. There would be no conversion of forest land to non-forest use. No impact would occur.

***e. Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?***

*NO IMPACT.* As discussed above under Item (a), the proposed project area is designated as Other Land on FMMP maps and is not designated Farmland. Commercial agriculture is not practiced in the area. Project construction and operation and maintenance activities would be conducted within State land. There would be no conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use due to the location or nature of the proposed project. No impact would occur.

## 5.3 Air Quality

### AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.3.1 Setting

**Air Basin.** The proposed project would be in the jurisdiction of the Northern Sierra Air Quality Management District (NSAQMD), which is the local air district responsible for regulating sources of air pollution and the programs to protect and improve air quality in Nevada, Plumas and Sierra Counties. The jurisdiction of the NSAQMD covers a portion of the Mountain Counties Air Basin that includes much of the Sierra Nevada, except the Lake Tahoe basin.

The jurisdiction of the NSAQMD is characterized by a low population density and natural areas. Most of the air pollution generated within the NSAQMD comes from motor vehicles (mobile sources), and the western portion of Nevada County is influenced by pollutants transported from the upwind Sacramento Valley. The pollutants of greatest concern are ozone, particulate matter, and toxic air contaminants (NSAQMD, 2019). Wood smoke and natural sources, including wildfires and emissions of biogenic organic compounds from terrestrial vegetation are also an important part of the emissions in the region.

**Criteria Air Pollutants.** Air quality is determined by measuring ambient concentrations of certain criteria air pollutants. The criteria pollutants are ozone, respirable particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and lead. Ozone is an example of a secondary pollutant that is not emitted directly from a source (e.g., an automobile tailpipe), but it is formed in the atmosphere by chemical and photochemical reactions. Reactive organic gases (ROG), including volatile organic compounds (VOC), are regulated as precursors to ozone formation.

The California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (U.S. EPA) have independent authority to develop and establish health-protective ambient air quality standards, although the different legislative and scientific contexts cause some diversity between State and Federal standards currently in effect in California. The monitored levels of the pollutants are compared to the current National and California Ambient Air Quality Standards (NAAQS and CAAQS) to determine degree of existing air quality degradation. The standards currently in effect in California are shown in Table 5.3-1.

**Table 5.3-1. National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.070 ppm
Respirable Particulate Matter (PM10)	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
	Annual Mean	20 µg/m <sup>3</sup>	—
Fine Particulate Matter (PM2.5)	24-hour	—	35 µg/m <sup>3</sup>
	Annual Mean	12 µg/m <sup>3</sup>	12.0 µg/m <sup>3</sup>
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1-hour	0.18 ppm	0.100 ppm
	Annual Mean	0.030 ppm	0.053 ppm
Sulfur Dioxide (SO <sub>2</sub> )	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual Mean	—	0.030 ppm

Notes: ppm=parts per million; µg/m<sup>3</sup>= micrograms per cubic meter; “—” =no standard

Source: CARB (<http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>), May, 2016.

**Attainment Status and Air Quality Plans.** The U.S. EPA, CARB, and the local air district classify an area as attainment, unclassified, or nonattainment. The classification depends on whether the monitored ambient air quality data show compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The western portion of Nevada County, including the proposed project site, is designated by the U.S. EPA as a moderate nonattainment area for the ozone NAAQS (U.S.EPA, 2019). All of Nevada County is designated by CARB as a nonattainment area for ozone and PM10, relative to the state standards.

**Toxic Air Contaminants.** Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another's. TACs do not have ambient air quality standards, but are regulated by the local air districts using a risk-based approach. The proposed project would not be considered a stationary source subject to risk assessment programs. Diesel particulate matter (DPM) is classified as a TAC, and statewide programs focus on managing this pollutant through motor vehicle fuels, engine, and tailpipe standards because many toxic compounds adhere to diesel exhaust particles. The local air districts support these programs by issuing permits and requiring controls for larger stationary sources of DPM, including diesel powered engines rated over 50 horsepower. Naturally occurring asbestos, serpentine, and ultramafic rock, if disturbed by construction, is another example of a TAC that occurs in Nevada County. However, the available literature (DOC-DMG, 2000) does not indicate a likelihood of encountering naturally occurring asbestos (NOA) within the proposed construction footprint.

## Regulatory Background

**Federal Clean Air Act (CAA).** The National Ambient Air Quality Standards (NAAQS) for criteria air pollutants were established in 1970 with a mandate for periodic updating. The CAA places responsibility on state and local air agencies to maintain these ambient air quality standards. In the project area, the CARB and NSAQMD share the responsibility to establish regulations, enforce air pollution control requirements, and develop the necessary air quality management strategies to achieve the NAAQS. The U.S. EPA

implements most aspects of the CAA, and reviews local and state air quality management plans and regulations to ensure attainment with the NAAQS.

The federal CAA provides the authority for programs to ensure that all areas of the country achieve the federal ambient air quality standards and to protect those areas that already meet the federal ambient air quality standards. Federal Class I areas are provided the greatest protection, and the CAA prevents air quality deterioration for these areas. The nearest Federal Class I area is Desolation Wilderness approximately 40 miles southeast of the project site.

**California Clean Air Act.** Implemented by the CARB, the California Clean Air Act establishes broad authority for California to regulate emissions from mobile sources and requires regions to develop and enforce strategies to attain California Ambient Air Quality Standards (CAAQS). In the project area, the NSAQMD is responsible for demonstrating how these standards are met.

**U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program.** The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006, and Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model year 2012 or newer. These standards and standards applicable to fleets that are already in-use address emissions of NOx and toxic particulate matter from diesel combustion.

**CARB In-Use Off-Road Diesel-Fueled Fleets Regulation.** The regulations for in-use off-road diesel equipment are designed to reduce NOx and toxic diesel particulate matter (DPM) from existing fleets of equipment. Depending on the size of the fleet, the owner would need to ensure that the average emissions performance of the fleet meets certain state-wide standards. In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a five-minute idling restriction in the rule (13 California Code of Regulations, Chapter 10, Section 2449).

**CARB Portable Equipment Registration Program (PERP).** This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain individual permits from local air districts. The NSAQMD would require the project to apply for and obtain a permit for any equipment with a portable engine having a brake horsepower rating of 50 or more, that does not provide motive power to a vehicle, unless the equipment is registered through the PERP.

**CARB Asbestos Airborne Toxic Control Measures (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations (17 CCR 93105).** Each local air pollution control district must implement control measures for naturally occurring asbestos (NOA) in areas known to include NOA, serpentine, or ultramafic rock. The project would be in a candidate area where the surface and subsurface is likely to be made of serpentine or ultramafic rock containing NOA (DOC-DMG, 2000; Caltrans, 2002). The NSAQMD may require a demonstration compliance with this ATCM during construction of the proposed project.

**NSAQMD Rule 226, Dust Control.** This rule applies to construction activities, and requires use of all reasonable precautions to prevent dust emissions. A dust control plan must be submitted to and approved by the NSAQMD for any project that disturbs more than one acre of natural surface area or where the natural ground cover is removed.

### 5.3.2 Environmental Impacts and Mitigation Measures

***a. Would the project conflict with or obstruct implementation of the applicable air quality plan?***

*NO IMPACT.* The NSAQMD is responsible for managing local air quality and administering the mandatory California and federal programs protecting air quality. Across the entire State of California, the CARB ensures implementation of California's air quality management plans, known collectively as the State Implementation Plan. Generally, a project could be inconsistent with an applicable air quality management plan or an attainment plan if it causes population and/or employment growth or growth in vehicle-miles traveled in excess of the growth forecasts included in attainment projections. The proposed project would not result in any population growth or new permanent full-time employment that could exceed planning projections. As such, the project would have no potential to conflict with or obstruct implementation of any applicable air quality plan, and no impact would occur.

***b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?***

*DURING CONSTRUCTION, LESS THAN SIGNIFICANT.* The proposed project construction activities include mobilizing construction equipment, crews, and materials, as necessary to rehabilitate the existing access roads, establish staging and work areas, install tower foundations, install the new tower, and restore the work areas. These construction activities would cause emissions of air pollutants due to ground disturbance and burning of fuels by the construction vehicles and off-road equipment. Approximately 20 workers would use a small fleet of diesel off-road and gasoline-powered construction vehicles including trucks for crews, equipment, materials, concrete, and water, and the fleet of equipment would include a backhoe, loader, dozer, rock hammer, auger, crane, and lifts.

Air pollutants that would be directly emitted in the exhaust from vehicles and equipment include ozone precursors (volatile organic compounds and NO<sub>x</sub>), CO, and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and fugitive dust as particulate matter would be caused by ground-disturbing activities. Outside of staging and work areas, exhaust emissions would be caused by vehicles transporting equipment and supplies to the sites, trucks removing debris, and workers commuting to and from the sites.

The construction-related emissions would occur during approximately 150 days of work over 16 months and would cease upon completing site restoration. Although construction could result in temporarily and variably increased local air quality impacts for the duration of construction activities, all activities must comply with local NSAQMD rules regarding dust control (NSAQMD Rule 226) and avoiding visible emissions (Rule 202) and nuisances (Rule 205). These one-time project-level construction emissions would not result in a cumulatively considerable net increase of any criteria pollutants, including ozone precursor emissions (NO<sub>x</sub> or VOC) or exhaust emissions of particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and the air quality impact of construction would be less than significant under this criterion. No mitigation is required.

*DURING OPERATION, LESS THAN SIGNIFICANT.* Operational emissions would be limited to the vehicles and equipment used for occasional maintenance and repair, and the proposed project would not result in any notable incremental increase in O&M activities or emissions beyond those that occur for maintenance of the existing Banner Mountain communications tower and facilities. Accordingly, operation of the project would not result in a cumulatively considerable net increase of any criteria pollutant, and this impact would be less than significant. No mitigation is required.



***c. Would the project expose sensitive receptors to substantial pollutant concentrations?***

*LESS THAN SIGNIFICANT.* Construction would generate toxic air contaminants routinely found in the exhaust from gasoline and diesel-powered motor vehicles and equipment, such as diesel particulate matter (DPM). The proposed project would not involve any permanent or stationary sources of air pollution, although existing facilities on Banner Mountain include back-up generators for use during power outages. Construction would temporarily bring construction equipment into the project area where the existing sensitive receptors include residences along roads used by vehicles and equipment to access the site.

Short-term emissions associated with construction would occur from mobile sources traveling on and working within the access road, staging and work areas. Construction activities would vary in sequence, duration, and timing within a duration of approximately 150 days over 16 months. Construction equipment would need to move between staging and work areas, and activities along the access road would be distributed to involve a limited amount of work at any one location over the construction period.

Construction contractors would control dust to avoid creating nuisance conditions and would take steps to control of diesel exhaust, pursuant to regulations to limit idling times and requiring proper registration of portable equipment. These steps would reduce the construction phase emissions of DPM and other toxic air contaminants and ensure that receptors would not be exposed to substantial concentrations. This impact would be less than significant and no mitigation is required.

***d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?***

*LESS THAN SIGNIFICANT.* The proposed project would not include any sources likely to create objectionable odors. Construction would involve the temporary use of vehicles and construction equipment and of materials, such as fuels and lubricants, that may generate intermittent, minor odors. Emissions of this nature would occur briefly during construction and would cease with upon completion of construction. There would be no notable impact of objectionable odors affecting a substantial number of people, and this impact would be less than significant. No mitigation is required.



## 5.4 Biological Resources

### BIOLOGICAL RESOURCES

**Would the project:**

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.4.1 Setting

This section describes the biological resources that occur in the proposed project area. It includes a description of the existing biotic environment, including common plants and wildlife, sensitive habitats, special-status species and their locations in relation to the proposed project. The following section (Section 5.4.2) presents an analysis of potential impacts to biological resources and, where necessary, specifies mitigation measures to reduce potential impacts to less-than-significant levels. Information used in preparing this section was derived from the following two proposed project memorandums which are included as appendices to this document (Appendices C and D):

- Special-status Wildlife Assessment for the CAL FIRE Banner Mountain Communications Tower Project (Appendix C); and
- Banner Mountain Special-status Plant Assessment Results (Appendix D).

### Vegetation Communities

The proposed project site is located within an existing telecommunications facility that is likely to be regularly disturbed by operations and maintenance activities. Vegetation on the proposed project site is

composed primarily of native and non-native ruderal species that persist in these areas that are frequently disturbed and regularly maintained by CAL FIRE. Vegetation on the undisturbed lands surrounding the project site are vegetated by a mixed coniferous and deciduous forest best described as white fir - Douglas fir forest (*Abies concolor* - *Pseudotsuga menziesii* Forest Alliance) in *A Manual of California Vegetation* (Sawyer et al., 2009). It is dominated by incense cedar (*Calocedrus decurrens*), Douglas fir (*Pseudotsuga menziesii*), black oak (*Quercus kelloggii*) and white fir (*Abies concolor*). Understory species such as California coffee berry (*Frangula californica*), mountain grape (*Berberis aquifolium*), buttercup (*Ranunculus* sp.), and mountain misery (*Chamaebatia foliolosa*) are also present throughout. No sensitive natural communities or sensitive vegetation is present within the proposed project area.

## Special-Status Plants and Animals

A background review was completed to identify special-status plants and animals known from the region. This include a review of records from the California Natural Diversity Database (CNDDB; CDFW, 2018a) within 5 miles of the proposed project area. It also includes a review of the California Native Plant Society (CNPS) On-line Electronic Inventory (CNPS, 2018) and Consortium of California Herbaria data (CCH, 2018) for special-status plant locations near the site. A IPaC informal species list from the U.S. Fish and Wildlife Service (USFWS) was also generated to identify federally protected species known from the region (USFWS, 2018). Additional details on the background review can be found in the proposed project memorandums (Appendix C and D).

A total of eleven special-status plants were identified in the background review. All of these species have either a low or minimal potential to be present based on habitat, elevation, or geographic range. No special-status plants have a real potential to be present or be impacted by the proposed project and are therefore not addressed further in this document (see Appendix C).

A total of ten special-status animals were identified in the background review. Several of these have no potential to be present or impacted by the proposed project and are therefore not addressed further in this document (see Appendix D). Four special-status animals have a potential to be present and are addressed below.

**Table 5.4-1. Special-Status Species that Could Occur in the Project Vicinity**

Species	Status	Habitat	Occurrence in Study Area
<b>Amphibians</b>			
<i>Rana draytonii</i> <b>California red-legged frog</b>	FT, SSC	Breeds in deep, still or slow-moving water with associated bulrush, willow, or cattail, including stock ponds and other sites; may also use ponds without veg. May be found in uplands some distance from aquatic sites outside the breeding season. Except when dispersing, generally not found more than 300 feet from aquatic habitats.	<b>Possible.</b> Potentially present when dispersing but unlikely. Could use any of a number of small ponds within 1.25 mi. Only known local occurrence is 4.6 mi N. Next closest record is 17 mi NW.

**Table 5.4-1. Special-Status Species that Could Occur in the Project Vicinity**

Species	Status	Habitat	Occurrence in Study Area
<b>Birds</b>			
<i>Accipiter gentilis</i> <b>Northern goshawk</b>	SSC	Yearlong resident in Sierra Nevada at middle- to higher-elevation mature, dense conifer and deciduous forest interspersed with meadows, other openings, and riparian. Near water.	<b>Possible.</b> Known to occur in the general vicinity of the project area and could nest in nearby forest; suitable foraging habitat present; recent record from within 2 miles of the proposed project area (ebird.org, 2018).
<i>Contopus cooperi</i> <b>Olive-sided flycatcher</b>	SSC	Late-successional conifer forests with open canopies (0–39% cover), especially fragmented forests with edges and openings, from sea level to timberline.	<b>Likely.</b> Known to occur in the general vicinity of the project area; suitable nesting and foraging habitat present; recent record from within 0.5 miles of the proposed project area (ebird.org, 2018).
<i>Strix occidentalis</i> <i>occidentalis</i> <b>California spotted owl</b>	SSC	Shaded mountain slopes and canyons in dense old-growth or mixed mature and old-growth forests with uneven and multi-layered canopy. Occasionally in older second-growth forests.	<b>Likely.</b> Known to nest near the proposed project area; suitable nesting and foraging habitat present; nearest known activity center is approx. 1 mi west of the proposed project area.

**Definitions Regarding Potential Occurrence:**

Present:	Species or sign of its presence observed on the site
Likely:	Species or sign not observed on the site, but reasonably certain to occur on the site
Possible:	Species or sign not observed on the site, but conditions suitable for occurrence
Unlikely:	Species or sign not observed on the site, conditions marginal for occurrence
Absent:	Species or sign not observed on the site, conditions unsuitable for occurrence

**STATUS CODES:**

FT	Federally Threatened
FC	Federal Candidate
SE	State Endangered
SC	State Candidate
SSC	California Species of Special Concern
FP	Fully Protected
WL	Watch List

**Listed Species**

California red-legged frog (*Rana draytonii*) typically breed along the margins of permanent and near-permanent sunlit ponds, lakes, and streams where water is still or slow, shoreline and emergent vegetation is dense and extensive, and water depth is at least 0.7 m (2.1 ft) close to the shoreline (Jennings and Hayes, 1994; Barry, 1999; Barry and Fellers, 2013). However, this frog can also be found in habitats quite unlike this description, including springs, backwaters of streams, shallow edges of large reservoirs, and ponds with no shoreline vegetation (USFWS, 2002 and 2005; Rathbun et al., 1997).

Since 1991, at least 10 occurrences have been discovered in the Sierra Nevada foothills (Barry and Fellers 2013), including an extant historical occurrence as well as new populations and new single frog occurrences in an area extending from Butte County south to Mariposa County, at elevations ranging from 1080 to 3350 ft. Based on 21 years of studying historical and recent occurrence records, including conducting hundreds of surveys at suitable habitats throughout the historic range of this frog in the Sierra, Barry and Fellers (2013) conclude that the California red-legged frog remains widespread in the Sierra Nevada but it may rarely have occurred in large or geographically extensive populations. Single-frog

occurrences at three locations show that this frog can disperse from breeding sites and may persist in marginal habitats.

California red-legged frog may complete its entire life cycle in a particular habitat or it may seek multiple habitat types (USFWS, 2002). It often forages in uplands within 100 feet of aquatic sites (J Alvarez pers. comm.), especially at night, and may take shelter in small-mammal burrows and other refugia up to 300 ft from water at any time of the year (USFWS, 2005). It has been observed making long-distance movements that are straight-line point-to-point migrations of up to several miles without apparent regard to topography, vegetation type, or riparian corridors (Bulgur, 1999; J Alvarez pers. comm.). Long-distance movements typically occur during or within 24 hours of a rain. The US Fish and Wildlife Service considers any upland habitat within 1.25 miles of suitable breeding sites to be potentially occupied. Because it can breed in small numbers in a variety of aquatic sites, it will move through any type of habitat if it migrates or disperses, and the forests surrounding

Banner Mountain contains many small to medium ponds, California red-legged frog occurrence at the proposed project area cannot be dismissed. It is also, however, quite unlikely at this time. First, there is only one known occurrence within 17 miles in any direction, and it is 4.6 miles north of Banner Mountain. While this is not evidence of absence, it suggests at least scarcity. Second, while there are many ponds west of Banner Mountain, only three can be detected on aerial photography within 1.25 miles. Two of those are nearly 0.5 mile away and the third is nearly 0.9 mile away. Banner Mountain is not in a direct travel line between any two detectable ponds, making it an unlikely place for a dispersing frog to be found. Third, given that there are no aquatic habitats within roughly 0.5 mile, a frog occurring at the Banner Mountain site would be a dispersing frog and likely to only be passing through. This would most likely occur during or the day after a rain, a condition that would probably preclude construction. The likelihood of a dispersing California red-legged frog passing through the Banner Mountain project site during construction is considered extremely low but not impossible.

### ***Other special-status animals***

Three special-status bird species could nest near the project site: California spotted owl (*Strix occidentalis occidentalis*), olive-sided flycatcher (*Contopus cooperi*), and northern goshawk (*Accipiter gentilis*). All these species have a potential to forage within the proposed project area. Suitable nesting habitat is also present in the immediate vicinity, but nesting habitat is not expected to be impacted by the proposed project.

### **Nesting birds**

The federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Sections 3503, 3503.5, and 3513 prohibit take of migratory birds, including eggs or active nests, except as permitted by regulation (e.g., licensed hunting). No nesting birds were observed during the survey but nesting birds are likely to be present in the vegetation and structures, during the nesting season.

### **Jurisdictional Waters**

A delineation of Waters of U.S. and Waters of State was not completed for the proposed project area; however, a baseline biological survey of the proposed project area was completed and no potential non-wetland Waters of U.S./Waters of State, federally-regulated wetlands, or CDFW-regulated streambed, were identified. These features may be present outside of the proposed project area, along existing access roads.

## 5.4.2 Environmental Impacts and Mitigation Measures

- a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* Four special-status animals, including one listed species, have a potential to be present in the proposed project area or be impacted by the proposed project. California red-legged frog have a potential to be present during the rainy season only. With the implementation of Mitigation Measure (MM) B-1, impacts to dispersing California red-legged frogs within the proposed project area would be avoided and would not result in take of this species.

Northern goshawk, spotted owl, and olive-sided flycatcher all have potential to forage in the proposed project area and may also nest in the habitat immediately adjacent to the proposed project area. Measures listed below would avoid potential take or other adverse impacts to these species and nesting birds by: (1) avoiding habitat disturbance during nesting season if possible, (2) requiring a pre-construction clearance survey of the project area during bird nesting season; and (3) identifying buffer areas around any bird nest within or near the project area. With implementation of MM B-1 through MM B-3, impacts would be less than significant.

### Mitigation Measures for Special-Status Animal Species

**MM B-1 California Red-legged Frog Avoidance.** To avoid the risk of harm or take of dispersing California red-legged frog, construction will be halted at the onset of rain of any duration. In addition, construction should be halted for a minimum of 48 hours following a rain lasting 30 minutes or longer in any season. If work must occur during a storm or within 48 hours of measurable rainfall (>0.25 inches), a pre-construction survey shall be completed prior to construction work resuming to ensure that California red-legged frog and other special-status species are not present in the project area.

**MM B-2 Special-status Bird Avoidance.** To avoid or minimize impacts to California spotted owl, northern goshawk, olive-sided flycatcher, and other migratory birds, construction will take place outside the nesting season for migratory birds, as feasible. Such activities include construction, road grading, vegetation trimming or removal, and equipment staging. The nesting season is generally accepted as February 15 through August 15. No restrictions would be necessary for activities that take place outside the nesting season (i.e., between August 16 and February 14).

If avoidance during the nesting season is not practical, a qualified biologist will conduct a pre-construction survey of work areas and a 500-foot buffer around the work area, no more than 1 week prior to construction to identify the locations of avian nests. Should nests be found, an appropriate buffer will be established around each nest site based on the professional judgement of a qualified biologist. To the extent feasible, no construction will take place within this buffer until the nest is no longer active. If construction must occur within the buffer, a biological monitor will be assigned to the project and the biological monitor will take steps to ensure that construction activities are not disturbing or disrupting nesting activities. If the biological monitor determines that construction activities are disturbing or disrupting nesting activities, then the biologist will have the

authority to halt construction to reduce the noise and/or disturbance to the nests, as appropriate.

**MM B-3      Update of Baseline Conditions.** If project construction does not start within 2 years of the date of project approval, an updated biological resources background search will be completed. An updated site assessment will also be completed to ensure that the conditions at the proposed project area have not changed. This re-evaluation and assessment will take place no more than 120 days prior to the onset of construction. A project memorandum will be prepared to summarize the results of this update.

**b. *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?***

*NO IMPACT.* The vegetation present within the proposed project area includes white fir - Douglas fir forest (*Abies concolor* - *Pseudotsuga menziesii* Forest Alliance) as described in *A Manual of California Vegetation* (Sawyer et al., 2009) and previously developed areas. These are not sensitive natural communities or riparian vegetation types identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

**c. *Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means?***

*NO IMPACT.* A delineation of Waters of U.S. and Waters of State was not completed for the proposed project; however, a baseline biological survey of the proposed project area was completed and no potential non-wetland Waters of U.S./Waters of State, federally-regulated wetlands, or CDFW-regulated streambed, were identified. These features may be present outside of the proposed project area, along existing access roads, but no proposed project impacts are expected in these areas. No impact to state or federally protected wetlands would occur.

**d. *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* The proposed project includes installation of an open lattice structure that poses no threat of bird strike or electrocution to migratory birds. The Migratory Bird Treaty Act (MBTA) affords protection to all native and some naturalized birds, including active nests of such birds. The vegetation in and around the proposed project area may provide suitable habitat for nesting birds. The structures within the proposed project area may also provide suitable habitat for nesting birds. With implementation of Mitigation Measure B-2, impacts to nesting birds would be reduced to a level of less-than-significant.

## **Mitigation Measure for Wildlife Movement**

**MM B-2      Special-status bird avoidance.** *See full text under Item (a) above.*

***e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?***

*NO IMPACT.* Chapter 13 (Vegetation and Wildlife) of the Nevada County General Plan (Plan) identifies several objectives that relate to sensitive habitats, wildlife corridors, oak trees, and other biological resources within the Nevada County. The proposed project does not conflict with any of the objectives identified in the Plan and no additional mitigation is needed. No impact would occur.

***f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan?***

*NO IMPACT.* The proposed project area is not within any adopted or proposed Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan. In addition, the proposed project area is not within any proposed or designated critical habitat. No impact would occur.



## 5.5 Cultural Resources

### CULTURAL RESOURCES

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.5.1 Setting

Cultural resources reflect the history, diversity, and culture of the region and people who created them. They are unique in that they are often the only remaining evidence of activity that occurred in the past. Cultural resources can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built environmental resources, including buildings, structures, objects, districts, and sites.

### Approach to Analysis of Cultural Resources and Previous Cultural Resources Studies

#### Cultural Records Search Results

Information presented in this section was gathered from a Cultural Resources Phase I Evaluation by Aspen Environmental Group (Aspen). Aspen performed an in-person records search at the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC), Sonoma State University, Sonoma, California, on April 20, 2018. The NWIC is the official repository for all cultural resources site records and reports for Humboldt County. The NWIC records search results are presented below (Table 5.5-1).

The records search at the CHRIS NWIC identified three previously completed survey reports located within or adjacent to the project and area within a 1/8-mile of the project area (see Table 5.5-1, below). One sensitive historical resource was identified within the project area (29-002534); however, no unique archaeological resources were identified in the project area or within the 1/8-mile surrounding radius.

**Table 5.5-1. CHRIS Cultural Resources Reports**

Report Number	Year	Title	Author	Location
000507	1991	Archaeological Inventory Survey of the Proposed Brackett Subdivision of 15 Acres, Banner Mountain, Nevada County, California.	Peter Jensen	Banner Mountain
017181	1993	An Inventory and Historical Significance Evaluation of CDF Fire Lookout Stations.	Mark v. Thornton	Banner Mountain
002187	1994	Archaeological Inventory Survey, Banner Mountain Radio Tower Project Area, 5 acre Development Site, Near Banner Mountain Lookout, Banner Mountain, Nevada County, California.	Jensen and Associates	Banner Mountain
005750	2001	Nextel Mobile Radio Facilities	Lorna Billat	Banner Mountain



On May 21, 2018, Aspen requested a search of the Native American Heritage Commission's (NAHC) Sacred Lands File database. On May 29, 2018, the NAHC responded with a negative result for known sacred sites or tribal cultural resources as defined by the CEQA are documented within the Pierce project area or surrounding ¼-mile radius.

### ***Pedestrian Survey Results***

To evaluate the potential for cultural remains, a systematic intensive archaeological pedestrian survey of the project area and 30-meters adjacent to the project area was completed. The survey consisted of an opportunistic survey, depending on topography and proximity to existing developed structures. Evidence of past human occupation and use of the area was searched for carefully by observing the ground surface for any changes in soil discoloration or cultural materials. Objects that typically would suggest human use of the area include stone tools, beads, ground stone, historic cans, and other historic debris. Archaeological subsurface testing was not conducted. Attention was given to observing the ground surface for indication of buried human remains present in the project area. Joshua Noyer, MA, a qualified archaeologist per the Secretary of the Interior's Qualification Standards for Professional Archaeology, performed the pedestrian survey on June 26, 2018.

**Banner Mountain Fire Lookout Station (P-29-2534).** This historic site is located directly within the existing telecommunications site and project area (see Figure 5.1-1 in Section 5.1, Aesthetics). The fire lookout station was originally constructed in 1920 and consists of a fire tower and multiple support structures. While the fire tower, several buildings and a water tank remain intact, in the case of two of the support structures only concrete slab foundations remain. The historic resource was originally recorded in 1991 by *Mark v. Thornton* as part of a larger study to determine the NHPA eligibility of fire lookout stations across California (Thornton, 1993). In the original 1991 determination of historic eligibility, the Banner Mountain Fire Lookout Station was found to meet both criteria A and D for eligibility and protection under the NHPA. While the tower and its components are afforded protection under the NHPA, the current project is not expected to impact any of the components associated with the Banner Mountain Fire Lookout Station. No other historic resources were noted in the project area.

### **Prehistory**

Archaeological data gathered over the past century have shown that humans have inhabited California since the terminal Pleistocene, approximately 12,000 years before present (BP). Due to the varied topography and climate over time, technological adaptations have varied greatly from region to region. However, Native American technology, subsistence systems, and land use patterns appear to have had similar general elements during various periods of prehistory. Anthropologists working for Sacramento City Junior College and the University of California, Berkeley, have developed a Central California Taxonomic System and a tripartite classification scheme of Early Period (12,000–8,000 BP), Middle Period (8,000–1,500 BP), and Late Period (1,500–150 BP) to aid in the description of past human activity in the region. Bennyhoff and Hughes (1987) have subdivided the Middle period further, which is presented below in summary form.

The following overview of these temporal periods is based upon a more detailed discussion of the broad cultural patterns proposed for Central California found in Bennyhoff and Fredrickson (1969) and is supplemented with information outlined by Moratto (1984). It should be noted that many of the prehistoric cultural groups that inhabited the Sierra Nevada range also occupied winter territories in the Central Valley.

The **Early Period** is characterized by archaeological evidence of the entry and spread of humans into present-day California. Many of the earliest sites that date to this period are situated along shores of pluvial lakes and artifacts characteristic of this period include distinctive fluted projectile points and flaked crescent-shaped implements. Traditionally, researchers typically have attributed these tools to implements likely used in hunting of Pleistocene mega-fauna. However, there is little archaeological evidence supporting the notion that Paleo-Indian lifeways were consistently tied to the pursuit of mega-fauna. A developed milling tool technology may also have existed during this period and has been noted at some sites. The social units are thought to have been small, highly mobile, and not heavily dependent upon exchange of resources, with only infrequent evidence of any type of exchange activities.

The **Middle Period** extends over a large temporal span, and is generally divided into three distinct cultural subperiods based on broad patterns of settlement, subsistence, and land use:

- The **Lower Archaic Period** (8,000–5,000 BP) coincides with a middle Holocene climatic change. Generally drier conditions prevailed, bringing about a reduction in the size and number of pluvial lakes that appear to have been so important in earlier land use patterns. Subsistence appears to have been focused on the consumption of plant foods over faunal resources and settlement appears to have been semisedentary. Distinctive artifact types include large projectile points of varying morphology, and milling slabs and grinding stones are frequently encountered on sites.
- The **Middle Archaic Period** (5,000–3,000 BP) begins at the end of the mid-Holocene when climatic conditions were similar to those of the present day. During this period, there is a diversification of the economic base and the emergence of millingshale tools associated with acorn-processing. Hunting remained an important source of food, although there was clearly a shift in emphasis toward plant, seed and nut resources. Characteristic artifacts for this period include the mortar and pestle, continued use of the milling stone and hand-stone, and the continued use of large projectile points. Overall, sites of this period display a higher degree of sedentism with larger and harder to transport tool types emerging. However, little evidence is present for development of regularized trade between groups.
- The **Upper Archaic Period** (3,000–1,500 BP) is marked by the growth of sociopolitical complexity and the development of status distinctions based upon material wealth. There is increased evidence of inter-group trade and regular exchange systems. Religious activity begins to emerge and may represent the origins of the Kuksu religion at the end of the period. Prestige and trade goods, such as shell beads, also gained significance. Lithic artifacts are still typically large projectile points; however, new and more distinct styles begin to emerge. In addition, portable bowl mortar and pestle technology replaced the milling stone and hand-stone.

The **Late Period** is distinguished by several technological and social changes. The bow and arrow were introduced, ultimately replacing the dart and atlatl. Territorial boundaries between groups became well established and settlement patterns were highly sedentary. The ability to distinguish an individual's social status based on acquired wealth became more common. Exchange of goods between groups became more regularized with more raw materials and other resources entering the exchange networks. During the latter portion of this period (500–150 BP), exchange relations became highly regularized and sophisticated. The clamshell disk bead developed into a monetary unit for exchange and increasing quantities of goods moved greater distances. Specialists within groups retained an ability to govern various aspects of the production and exchange of these shell beads. Near the conclusion of this period, large-scale European settlement began to greatly affect traditional Native lifeways.

Some of the earliest archaeological surveys in the Sierra Nevada were part of the Smithsonian Institution River Basin Surveys between 1947 and the early 1950s. The first effective synthesis of Sierra Nevada archeology was produced by Heizer and Elsasser (1953), and further refined by Elsasser (1960). Since that

time, major archeological projects in the Sierra have proliferated, largely due to work on water projects and other cultural resources management research efforts. These early field surveys were performed in the lower foothills and edges of the lower plains, along with areas in the central and southern Sierras (Moratto 1984). For the northern Sierra alone, archeological sequences, based on excavation of stratified sites and other data, are available for the Lake Tahoe vicinity (Elston 1979, 1972; Elston and Davis 1972; Elston et al. 1977), the Lake Oroville locality (Jewell 1964; Olsen and Riddell 1963; Ritter 1970), and for the proposed Auburn Reservoir area.

## **Ethnography**

The project lies within the ethnographic territory of the Hill Nisenan, an ethnographic branch of the Southern Maidu. The Nisenan linguistically are grouped with the Northern Maidu and Konkow within the Penutian family (Riddell 1978:387). Kroeber distinguished three dialects within the larger territory occupied by the Nisenan, but Riddell indicated more distinctions are possible. Wilson and Towne (1978) distinguished several "centers," presumably linguistic and social groupings.

The Nisenan occupied a region encompassing the American, Bear, southern Feather and Yuba River drainages. Hydrologic and geologic boundaries generally included the Sacramento River on the west, the Feather River on the northwest, probably the Yuba on the north, the north side of the Cosumnes on the south and the crest of the Sierras on the east. Nisenan political organization was based on territorial ownership. "Nisenan" means 'from among us', or 'of our side' (Wilson & Towne 1978). They resided in several different settlements while still referring to themselves as one distinct political unit, a "tribelet" according to Kroeber (1925). Each triblet usually had one principal village and several allied subsidiary villages. In the foothills, villages were located on ridges and on flats, especially those with southern exposure, near major streams. Village areas for the Hill Nisenan were located at lower elevations where habitation was easier in the winter. The upper elevations were the scene of warm weather hunting and gathering, the people moving about and utilizing small campsites; thus, the general clustering of large village sites in the foothill Nevada City/Grass Valley area, with its milder winters, and no valley fog. The foothill area also had more water in the warmer summer months than did the adjacent lower foothills bordering the valley.

Nisenan subsistence was patterned around the seasonal gathering of a multitude of plant and animal resources. Plant food sources consisted of acorns (especially those of the Black oak), roots, grasses, herbs, berries, fruits and seeds. Game animals taken by snare, net or arrow included deer, antelope, rabbit, elk, birds, salmon and other fish. Although they were not domesticators, a certain amount of 'plant enhancement' occurred, primarily by using the practice of careful burning to enhance new plant growth and to allow more visibility for hunting. Some plants, especially those used for basketry, were 'encouraged' by removal of weeds and probably by water implementation. Deer and rabbits were hunted in drives, often by members of several villages. Smaller animals such as woodrats, field mice and squirrels were also an important food source (Gardner 1977). Some birds were netted and eaten while others, such as hawks, eagles and flickers, were used only for their feathers. Fish were taken by use of soaproot poison or with bi-pointed hooks. Rabbits and medium-sized birds were covered with mud and steam-roasted, small animals and birds were cooked in their skins or skinned, dried and pounded into powder. Grasshoppers were trapped in pits, then smoked and steamed in grape leaves (Wilson 1972).

## **Regional History**

The Spanish entered the Sacramento valley by navigating up the Sacramento River as early as 1808 (Moraga) and may have subsequently explored the Yuba and Bear Rivers in 1822. Russian, American, and Hudson's Bay trappers were also in the general area in search of beaver in the 1820s. In 1822-1823, the

Russians reportedly built cabins on the Bear River 25 miles east of Nevada City. The earliest documentation of Euro-American presence in the Grass Valley area was in 1846, when Claude Chana and some other French immigrants passed through this area on their way down from the Truckee Pass (Hoover, Rensch and Rensch, 1990). The spring-fed meadow was discovered by their hungry cattle who had broken away from their camp during the night.

After Marshall's discovery of gold at Coloma in January 1848, exploration of other creek areas began to determine if the existence of gold was widespread. In the summer of 1848 John Marshall camped overnight on Deer Creek at the site of present-day Nevada City and recovered a small amount of gold by panning. At approximately the same time Jonas Spect worked lower Deer Creek as far as what is now Penn Valley. By 1851, over 10,000 miners were working in the Nevada City and Grass Valley areas. The first mining was almost entirely from surface placering. Drift mining began in the 1850s and continued until about 1900. In October 1850 the most noteworthy discovery of gold-bearing quartz was made on Gold Hill in Grass Valley by George Knight, which led to the development of quartz-mining in the area.

The area around Banner Mountain, on which the project area is located, was exploited by lode mining operations registered as the Banner Mine from the 1860s through the 1930s. Most of the mining activity near Banner Mountain was located on the lower, western slope well outside the current project area. Superstructures and other surface indicators of these mines have been largely removed, although exposed and frequently collapsed shafts and widely scattered debris related to these operations are widespread throughout this area, including the area around Banner Mountain.

Activity around Banner Mountain after the 1930s largely consisted of logging, water storage, and water diversion projects. In 1920, the Banner Mountain Fire Lookout Station (P-29-2534) was constructed on the peak of the mountain. In the 1990s, a communications tower and two support structures were constructed adjacent to the fire lookout station.

## **Regulatory Background**

Numerous laws, ordinances, regulations, and standards on federal, state, and local levels seek to protect and manage cultural resources. The project is not located on federally owned or managed lands, which precludes the evaluation of the project under Section 106 of the National Historic Preservation Act. Applicable State of California regulations include the CEQA PRC Sections 21000 et seq., Section 5024, Section 5024.5; California Code of Regulations (CCR) Title 14, Chapter 3, Sections 15000 et seq.); and Assembly Bill (AB) 52. These are discussed in detail below.

### ***State***

**California Environmental Quality Act (CEQA) 1970 (PRC Sections 21000 et seq., Section 5024, Section 5024.5; CCR Title 14, Chapter 3, Sections 15000 et seq.)** establishes that historical, archaeological, and paleontological resources must be afforded consideration and protection by the CEQA (14 CCR Section 21083.2, 14 CCR Section 15064). CEQA Guidelines define significant cultural resources under three regulatory designations: historical resources, unique archaeological resources, and tribal cultural resources.

Pursuant to Guideline 15064.5(a), the term "historical resource" includes: a resource listed in or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (CRHR). A resource included in a local register of historical resources...or identified as significant in a historical resource survey...shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the

architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

As defined in PRC Section 21083.2(g), a "unique archaeological resource" is not eligible for the CRHR but is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- It has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- It is directly associated with a scientifically recognized important prehistoric or historical event or person.

PRC Section 21074 defines a Tribal Cultural Resource as "a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe." TCRs also include "non-unique archaeological resources" that may not be scientifically significant, but still hold sacred or cultural value to a consulting tribe. A resource shall be considered significant if it is: (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PCR § 5020.1(k) (discussed in detail above); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in of PCR § 5024.1(c). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

**Native American Historic Resource Protection Act (PRC Section 5097 et seq.; Section 5097.9; Section 5097.98)** establishes that both public agencies and private entities using, occupying, or operating on public property under a public license, permit, grant, lease, or contract on state property under public permit, shall not interfere with the free expression or exercise of Native American religion, and shall not cause severe or irreparable damage to Native American sacred sites.

**California Health and Safety Code 7050.5** establishes that any person who knowingly mutilates, disinters, wantonly disturbs, or willfully removes any human remains in or from any location without authority of law is guilty of a misdemeanor. It further defines procedures for the discovery and treatment of Native American human remains. All work at the site of discovery must cease immediately, and notification made to the County Coroner. Within 48 hours of discovery, the Coroner must determine if the remains are Native American in origin. If this is determined, then the Coroner must notify the NAHC within 24 hours.

**Public Resources Code 5097.98 (b) and (e)** require a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reenter the remains elsewhere on the property in a location not subject to further disturbance.

### ***Local***

**Nevada County General Plan.** The Nevada County General Plan contains a Cultural Resources Element that addresses the preservation of cultural resources in the County for progeny. The following policy in the Cultural Resources Element is relevant to the proposed project (Nevada County, 1995):

- **Policy 19.7.** Cooperate with local historical societies and the Native American Indian community to protect significant historical, cultural and archaeological artifacts, improve access to and interpretation of unrestricted resources and archaeological history by involving them in the development review process.

## 5.5.2 Environmental Impacts and Mitigation Measures

### **a. *Would the project cause a substantial adverse change in the significance of an historical resource pursuant to §15064.5 [§15064.5 generally defines historical resource under CEQA]?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* One sensitive historical resource was identified within the project area (29-002534), Banner Mountain Fire Lookout Station. This historic site is located directly within the project area. While the fire tower, several buildings and a water tank remain intact, in the case of two of the support structures only concrete slab foundations remain. The tower and its components are afforded protection under the NHPA; however, the proposed project is not expected to impact any of the components associated with the Banner Mountain Fire Lookout Station.

Previously unknown buried historical resources could be discovered and damaged, or destroyed, during ground disturbing work, which would constitute a potentially significant impact. Implementation of Mitigation Measures CR-1 and CR-2 would ensure that construction personnel understand of the procedures to be followed upon the discovery of cultural materials and would evaluate and protect unanticipated discoveries of historical resources or tribal cultural resources, thereby reducing this impact to less than significant.

### ***Mitigation Measures for Previously Unidentified Historical Resources***

**MM CR-1      Train Construction Personnel.** Prior to the initiation of construction, all construction personnel shall be trained, by a qualified archaeologist, regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) and protection of all archaeological resources during construction. The State shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of cultural materials. All personnel shall be instructed that unauthorized removal or collection of artifacts is a violation of State law. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend the Workers' Environmental Training Program so they are aware of the potential for inadvertently exposing buried archaeological deposits. The State shall provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources and anticipated procedures to treat unexpected discoveries.

**MM CR-2      Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources.** If previously unidentified cultural resources are identified during construction activities, construction work within 50 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist assesses the significance of the resource. The archaeologist, in consultation with the State, the State Historic Preservation Officer, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under California Environmental Quality Act Section 21083.2, or are determined to be tribal



cultural resource as defined in Section 21074. If previously unidentified cultural resources or tribal cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the State, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under CEQA Section 21083.2 or determined to be tribal cultural resource as defined in Section 21074.

**b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* No unique archaeological resources have been identified in the proposed project area; however, previously unknown buried archaeological resources could be discovered and damaged, or destroyed, during ground disturbing work. Implementation of Mitigation Measures CR-1 and CR-2 would ensure that construction personnel understand of the procedures to be followed upon the discovery of cultural materials and would evaluate and protect unanticipated discoveries of archaeological resources, thereby reducing this potential impact to a less than significant level.

**c. Would the project disturb any human remains, including those interred outside of formal cemeteries?**

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* There is no indication that human remains are present within the project area. The limited nature of the proposed ground disturbance in an already disturbed area makes it unlikely that human remains would be unearthed during construction. However, it is possible that previously unknown human remains could be discovered and damaged or destroyed during ground disturbance, which would constitute a significant impact absent mitigation. Implementation of Mitigation Measure CR-3, which requires evaluation, protection, and appropriate disposition of human remains, would reduce this potential impact to a less than significant level.

**Mitigation Measure for Disturbance of Human Remains**

**MM CR-3 Treatment of Human Remains.** All human remains discovered are to be treated with respect and dignity. Upon discovery of human remains, all work within 50 feet of the discovery area must cease immediately, nothing is to be disturbed, and the area must be secured. The County Coroner's Office must be called. The Coroner has two working days to examine the remains after notification. The appropriate land manager/owner of the site is to be called and informed of the discovery. If the remains are located on federal lands, federal land managers, federal law enforcement, and the federal archaeologist must be informed as well, due to complementary jurisdiction issues. It is very important that the suspected remains, and the area around them, are undisturbed and the proper authorities called to the scene as soon as possible, as it could be a crime scene. The Coroner will determine if the remains are archaeological/historic or of modern origin and if there are any criminal or jurisdictional questions.

After the Coroner has determined the remains are archaeological/historic-era, the Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative. If

the Coroner believes the remains to be those of a Native American, he/she shall contact the Native American Heritage Commission (NAHC) by telephone within 24 hours.

The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains. The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

According to the California Health and Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains is a felony (Section 7052).

## 5.6 Energy

### ENERGY

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.6.1 Setting

#### Energy in California

Energy usage is typically quantified using the British Thermal Unit (Btu) in the United States. Btu is the amount of energy that is required to raise the temperature of one pound of water by one degree Fahrenheit and is the most commonly used unit for comparing energy sources or fuels (U.S. EIA). Natural gas usage is expressed in therms. A therm is equal to 100,000 Btu.

Total energy production in California in 2016 was 2,431 trillion Btu. Total energy usage in California in 2016 was 199 million Btu per capita. California's total energy consumption is second-highest in the U.S., but, in 2016, the state's per capita energy consumption ranked 48<sup>th</sup>, due in part to its mild climate and its energy efficiency programs. Of California's total energy usage, the breakdown by sector is (U.S. EIA, 2019b):

- **Transportation:** 39.8%
- **Residential:** 17.7%
- **Commercial:** 18.9%
- **Industrial:** 23.7%

The top five primary sources of California's energy consumption, ranked, are (U.S. EIA, 2019b):

1. Natural gas (28.%)
2. Motor gasoline (21.9%)
3. Interstate electricity (10.9%)
4. Jet fuel (8.6%)
5. Distillate fuel oil (7.2%)

#### Project Energy Use

Pacific Gas and Electric (PG&E) provides electric services in Nevada County. Given the nature of the proposed project, the sources of energy that are most relevant to the project are electricity and natural gas for the operation of the new telecommunications tower and transportation fuel for vehicle trips associated with project construction and operation.

The project site at the summit of Banner Mountain is the site of one of CAL FIRE's existing mountaintop telecommunications facilities. The site consists of several existing buildings, a tank, a generator, concrete footings, a telecommunications tower, and a CAL FIRE lookout tower. Existing infrastructure at the project site consume energy for current operation.

## Regulatory Background

### *Federal*

**Energy Policy and Conservation Act (1975) and Amendments.** The U.S. Congress established minimum standards of energy efficiency for many major appliances in the federal Energy Policy and Conservation Act of 1975, and have been amended by subsequent energy legislation, including the federal Energy Policy Act of 2005. The intent of the National Energy Act of 1978 was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency.

**Energy Independence and Security Act (2007).** The Energy Independence and Security Act of 2007 included an increase in auto mileage standards and addressed conservation measures and building efficiency. The Act also included a new energy grant program for use by local governments in implementing energy efficiency initiatives, as well as a variety of green building incentives and programs.

**Energy Policy Act (2005).** The Energy Policy Act of 2005 gave more responsibility to the Federal Energy Regulatory Commission (FERC), including regulating market manipulation and mergers as well as overseeing the nation's electrical infrastructure. The Renewable Fuel Standard (RFS) program also was created under the Energy Policy Act and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The U.S. Environmental Protection Agency (EPA) is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel.

### *State*

**California Long-Term Energy Efficiency Strategic Plan.** The Long Term Energy Efficiency Strategic Plan is California's roadmap to achieving maximum energy savings in the state between 2009 and 2020, and beyond. Energy efficiency was made the highest priority resource in meeting California's energy needs. It serves as the framework for making energy efficiency a way of life for all sectors in California, including in industry, agricultural, large and small businesses, and average households. The Plan also addresses how California will use energy efficiency to grow its economy and meet its global warming goals.

**Title 20 and Title 24, California Code of Regulations.** New buildings constructed in California must comply with the standards contained in Title 20, Public Utilities and Energy, and Title 24, Building Standards Code, of the California Code of Regulations. These efficiency standards apply to new construction of both residential and nonresidential buildings, and they regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit process. Local government agencies may adopt and enforce energy standards for new buildings, provided these standards meet or exceed those provided in Title 24 guidelines.

**California Green Building Standards Code (CALGreen) (2009).** This code is the first statewide green building standards code in the U.S. Originally a voluntary standard, aspects of CALGreen became mandatory in the 2010 code. The 2010 version of CALGreen took effect in 2011, and instituted mandatory minimum environmental performance standards for all ground-up new construction of commercial and low-rise residential buildings, state-owned buildings, schools, and hospitals. It also includes voluntary tiers (I and II) with stricter environmental performance standards for these same categories of residential and nonresidential buildings. Local jurisdictions must enforce the minimum mandatory requirements and may also adopt the Green Building Standards with amendments for stricter requirement. Updates were added to CALGreen in 2012, and involve clarification of the difference between mandatory and voluntary provisions.

## Local

**Nevada County General Plan.** The Nevada County General Plan Housing Element includes goals and policies that address residential and developmental energy conservation in Nevada County (Nevada County, 2014). The following is a goal and policy from the Housing Element are relevant to the proposed project:

- **Goal EC-8.2.** To the extent feasible, encourage the reduction of greenhouse gas emissions during the design phase of construction projects.
- **Policy EC-8.6.8.** Encourage residents and developers to increase energy conservation and improve energy efficiency. Support education programs that promote energy conservation and energy efficiency. Support project applicants in incorporating cost-effective energy efficiency that exceeds State standards.

## 5.6.2 Environmental Impacts and Mitigation Measures

### ***a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?***

*LESS THAN SIGNIFICANT.* During construction, the project would consume energy through fuel energy used consumed by construction vehicles and equipment and through energy bound in construction materials, such as steel and manufactured or processed materials. Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site grading, foundation excavation, and construction, and tower installation and would be temporary in nature. Construction of the proposed project would require construction materials such as concrete and steel, which require energy to acquire, manufacture, process, and transport.

Given high fuel prices, CAL FIRE has a strong financial incentive to use recycled materials or products sourced from nearby areas in order to reduce the costs of transporting the construction materials. In addition, it is reasonable to assume that the production of the construction materials would employ energy conservation practices in the interest of minimizing the costs of creating the construction materials. Moreover, the project site is developed with existing electrical service, and therefore, would not involve unnecessary energy usage from the development of less accessible areas of the Nevada County where public services and utilities may not currently exist.

After construction, the new telecommunications tower would use energy for operation and lighting. This would be the only source of increase in energy consumption at the project site as the proposed project would not introduce any new or additional maintenance requirements or personnel that do not already exist under maintenance of the existing Banner Mountain communications tower and facilities. As back-up, the new tower would be powered by diesel/propane generators or solar panels.

Overall, any impacts would be less than significant since construction would be temporary and construction and operation activities would not use energy in an inefficient, wasteful, or unnecessary manner. No mitigation is required.

### ***b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?***

*NO IMPACT.* Although the proposed project would introduce a new source of energy consumption at the project site, energy consumption during operation would be minimal and the proposed project is needed to upgrade/supplement CAL FIRE's telecommunications infrastructure to support California's PSMN. The construction and operation of the new telecommunications tower on Banner Mountain would be located within an existing telecommunications facility and would not include any activities or components that would conflict with or obstruct the state or local renewable energy or energy efficiency plans; there would be no impact.

## 5.7 Geology and Soils

### GEOLOGY AND SOILS

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic groundshaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

\*Geology and Soils question (d) reflects the current 2016 California Building Code (CBC), which is based on the International Building Code (2015), effective January 1, 2017. The CBC is updated every three years. Significance criteria established by CEQA Guidelines, Appendix G.

### 5.7.1 Setting

This section describes geologic, seismic, and soil conditions and analyzes environmental impacts related to geologic and seismic hazards as they pertain to the implementation of the proposed project. The discussion addresses existing environmental conditions in the affected area, identifies and analyzes environmental impacts, and recommends measures to reduce or avoid adverse impacts anticipated from project construction and operation. In addition, existing laws and regulations relevant to geologic and seismic hazards are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the proposed project.

Baseline geologic, seismic, and soils information were collected from geotechnical and geologic hazards reports for the proposed project (see Appendices G and H), published and unpublished literature, GIS data, and online sources for the proposed project site and surrounding area. Data sources included the following:



geologic literature from the U.S. Geological Survey (USGS) and California Geological Survey (CGS), geologic and soils GIS data, and online reference materials. The study area was defined as Banner Mountain and its vicinity for most geologic and soils issue areas. The study area related to seismically induced ground shaking includes potentially active faults within 80 miles of the proposed project.

### **Regional Geologic Setting**

Nevada County is part of the Sierra Nevada Range, a geologic block approximately 400 miles long and 80 miles wide. The Sierra Nevada Range extends in a north-south band along the eastern portion of California. The terrain of Nevada County is distinctly characterized by two features of the Sierra Nevada Range: the western third of the County is comprised of rolling foothills, which form a transition between the low-lying Sacramento Valley and the mountains to the east, and the eastern two-thirds of the County is comprised of the steep terrain and exposed granite of the Sierra Nevada Range itself. The geologic substructure of the county can be divided into three very broad groups: the Western Foothills, Central Portion, and Eastern Portion. (Nevada County, 1995b)

The project area is located in the western foothills of the Sierra Nevada Range. The geology of the area is comprised of metavolcanic (Mesozoic Metavolcanic) and granitic (Mesozoic Granitic) formations, that comprise the lava dome of an extinct volcano. The project area is in the Jurassic Marine Rocks geologic unit. The geologic age of this unit is Triassic to Late Jurassic and the unit primarily consists of metamorphic and metasedimentary rocks, including slate and metamorphosed graywacke, minor siltstone, conglomerate, chert, and volcanic rocks (USGS, 2018b).

### **Local Geology**

The proposed project is located in the western foothills geologic substructure of Nevada County. This area, extending from the Yuba County border to northeast of the Grass Valley/Nevada City area, is generally comprised of metavolcanic and granitic formations (Nevada County, 1995b). Mineral resources in the area are discussed in Section 5.12, Mineral Resources.

### **Soils**

Soil surveys for Nevada County conducted by the United States Department of Agriculture Soil Conservation Service and the Tahoe National Forest have identified general soil types found in the County. The characteristics of different soil types result in varying potential capabilities and constraints in terms of permeability, suitability for intensive development, erosion hazards, or agricultural and timber capabilities. Within these general soil types, however, there is a great deal of variation in soil capability from location to location. (Nevada County, 1995b)

The properties of soil that influence erosion by rainfall and runoff are ones that affect the infiltration capacity of a soil, and those that affect the resistance of a soil to detachment and being carried away by falling or flowing water. Sheet erosion occurs when water runs over a large uniform area picking up and distributing soil particles. Rill erosion occurs as concentrated surface runoff begins to remove soil along concentrated zones which numerous small, but conspicuous, water channels or tiny rivulets. Soils containing high percentages of fine sands and silt and that are low in density, are generally the most wind erodible. As the clay and organic matter content of these soils increases, the potential for erosion decreases. Soils with shrink-swell potential are typically very fine grained with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils. Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater.

Soils within the proposed project area reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. The National Resource Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database for Nevada County was reviewed to identify the soil unit and characteristics underlying the proposed project (NRCS, 2018). One soil association/family is mapped as underlying most of the proposed project site on Banner Mountain, sites very stony loam. Select physical characteristics of the soil, including limitations for shallow excavations, hazards of erosion, and shrink/swell potential for these soils were reviewed to evaluate potential hazards to the proposed project related to unsuitable soil conditions and is presented below (Nevada County, 1975):

- **Soil Association/Family:** SmE—Sites very stony loam, 15 to 50 percent slopes
- **Runoff:** Medium
- **Erosion:** Moderate
- **Wind Erodibility:** Low
- **Shrink-Swell Potential:** Low to Moderate

The surface layer is about 12 inches of brown and yellowish-red heavy loam. Reaction is slightly or medium acid. The subsoil is clay and light clay and reaction in the subsoil is medium and strongly acid. The substratum is yellowish-red clay loam and reaction in the substratum is strongly acid. Weathered meta-sedimentary and basic rock is at a depth of approximately 78 inches. Permeability is moderately slow in the subsoil and effective rooting depth is 40 to 60 inches or more. Available water holding capacity is 6 to 10 inches. The sites soils are used for timber production, grazing, pasture, and deciduous orchards. (Nevada County, 1975)

### **Slope Stability**

Important factors that affect the slope stability of an area include the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium and alluvium. The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris flows.

The proposed project is located at the summit of Banner Mountain and the surrounding area is largely undeveloped forest with steep terrain. The area with Level V and VI, or moderate, landslide susceptibility (CGS, 2018).

### **Seismicity**

Seismic faults can be classified as historically active, active, potentially active, or inactive, based on the following criteria (CGS, 1999):

- Faults that have generated earthquakes accompanied by surface rupture during historic time (approximately the last 200 years) and faults that exhibit aseismic fault creep are defined as Historically Active.
- Faults that show geologic evidence of movement within Holocene time (approximately the last 11,000 years) are defined as Active.
- Faults that show geologic evidence of movement during the Quaternary (approximately the last 1.6 million years) are defined as Potentially Active.
- Faults that show direct geologic evidence of inactivity during all of Quaternary time or longer are classified as Inactive.

Although it is difficult to quantify the probability that an earthquake will occur on a specific fault, this classification is based on the assumption that if a fault has moved during the Holocene epoch, it is likely to produce earthquakes in the future.

Western Nevada County, where the proposed project is located, has prequaternary faults. These faults run generally in a north-south direction and are relatively inactive (Nevada County, 1991). Active and potentially active faults within 50 miles of the project site at Banner Mountain that are significant potential seismic sources relative to the proposed project are presented in Table 5.7-1.

A Quaternary fault search of the USGS 2008 National Seismic Hazard Maps Fault Parameters website (USGS, 2018a) for the proposed project indicated that seven potentially active faults are within 80 miles of the proposed project site, as presented in Table 5.7-1; there are no active faults within 80 miles of the proposed project site. No active or potentially active faults cross or are in close vicinity to the proposed project.

**Table 5.7-1. Potentially Active Faults in the Project Vicinity**

<b>Name</b>	<b>Closest Distance to Project (miles)<sup>1</sup></b>	<b>Estimated Max. Earthquake Magnitude<sup>2</sup></b>	<b>Fault Type and Dip Direction<sup>3</sup></b>
West Tahoe	45.5	7.1	Normal, 50°E
North Tahoe	49.8	6.7	Normal, 50°E
Mount Rose fault zone	60.2	6.9	Normal, 50/40/60°E
Kings Canyon fault zone	60.5	6.5	Normal, 60/50/40°SE
Indian Hill fault	62.8	6.1	Normal, 50/40/60°E
Carson City fault	63.1	6.5	Normal, 50/40/60°E
Antelope Valley	77.7	7.0	Normal, 50/40/60°E

1 - Fault distances obtained from USGS 2008 National Seismic Hazard Maps – Fault Parameters website (USGS, 2018a).

2 - Maximum Earthquake Magnitude – the maximum earthquake that appears capable of occurring under the presently known tectonic framework, magnitude listed is “Ellsworth-B” magnitude from USGS OF08 1128 (Documentation for the 2008 Update of the U.S. National Seismic Hazard Maps) (USGS, 2008) unless otherwise noted. Magnitude varies by rupture strategy, one or several segments of the fault rupturing in the same event.

3 - Fault parameters from the 2008 National Seismic Hazard Maps – Fault Parameters website (USGS, 2018a).

### ***Seismic Ground Shaking***

An earthquake is classified by the amount of energy released, which historically was quantified using the Richter scale. Seismologists now use the Moment Magnitude (M) scale because it provides a more accurate measurement of the size of major and great earthquakes. For earthquakes of less than M 7.0, the Moment and Richter Magnitude scales are nearly identical. For earthquake magnitudes greater than M 7.0, readings on the Moment Magnitude scale are slightly greater than a corresponding Richter Magnitude. The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between the project area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the project area. Earthquakes occurring on faults closest to the project area would most likely generate the largest ground motion.

The common occurrence of relatively shallow, weathered material underlain by dense bedrock in the Sierra Nevada Range means that seismic risk is lessened, including in the project area. The dense bedrock is composed of igneous and metamorphic rock, which provides the least amount of seismic hazard due to ground shaking (Nevada County, 1991).

The USGS National Seismic Hazard (NSH) Maps were used to estimate approximate peak ground accelerations (PGAs) in the proposed project area. The NSH Maps depict peak ground accelerations with a 2 percent probability of exceedance in 50 years which corresponds to a return interval of 2,475 years and for a maximum considered earthquake. The estimated approximate peak ground acceleration from large earthquakes for the project area is 0.20g to 0.30g, which corresponds to low ground shaking (USGS, 2014).

### ***Seismic Slope Instability***

Other forms of seismically induced ground failures include ground cracking, and seismically induced landslides. Landslides are particularly possible due to the steep slopes found through Nevada County, including in the project area (Nevada County, 1991). However, since most of the soils within the County are on top of dense bedrock and since there is an absence of depth and cohesionless structure related to ground failure, the risk of hazards caused by seismic slope instability is generally low throughout the County (Nevada County, 1991).

### ***Liquefaction***

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects (Youd and Perkins, 1978). In addition, densification of the soil resulting in vertical settlement of the ground can also occur. Based on the lack of groundwater in the upper 50 feet, shallow bedrock encountered in the geotechnical borings and low seismicity risk, the risk of liquefaction is considered to be low at the project site (DGS, 2018b).

### **Paleontology**

Paleontological resources are fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. Rock formations that yield significant vertebrate or invertebrate fossil remains are considered to have paleontological sensitivity. The project is underlain by igneous and metamorphic bedrock, which have low potential to contain fossils. A desktop review of paleontological resources was conducted online. No identified fossil sites were noted.

### **Regulatory Background**

#### ***Federal***

**Federal Earthquake Hazards Reduction Act.** In 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes through the establishment and maintenance of an effective earthquake hazards and reduction program. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). The agencies responsible for coordinating NEHRP are the Federal Emergency Management Agency (FEMA), the National Institute of Standards and Technology (NIST), the National Science Foundation (NSF); and the United States Geological Survey (USGS). In 1990, NEHRP was amended by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of the agency responsibilities, program goals, and objectives. The four goals of the NEHRP are: (1) develop effective practices and policies for earthquake loss-reduction and accelerate their implementation; (2) improve techniques to reduce seismic vulnerability of facilities and

systems; (3) improve seismic hazards identification and risk-assessment methods and their use; and (4) improve the understanding of earthquakes and their effects.

**Clean Water Act.** The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States. The Act authorized the Public Health Service to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters with the goal of improvements to and conservation of waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. The proposed project construction would disturb a surface area greater than one acre; therefore, SCE would be required to obtain under Clean Water Act regulations a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity. Compliance with the NPDES would require that the applicant submit a Storm Water Pollution Prevention Plan (SWPPP).

## **State**

**Alquist-Priolo Earthquake Fault Zoning Act.** The Alquist-Priolo Earthquake Fault Zoning Act of 1972, Public Resources Code (PRC) Sections 2621–2630 (formerly the Special Studies Zoning Act) regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While this Act does not specifically regulate oil field components not intended for human occupancy; it does help define areas where fault rupture, and thus related damage, is most likely to occur. This Act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be “sufficiently active” and “well defined” by detailed site-specific geologic explorations in order to determine whether building setbacks should be established. Cities and counties affected by the zones must regulate certain development “projects” within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. Although this act does not apply to the project as it does not include any habitable structures, it serves as a gauge to determine if there are active faults of concern crossing or in immediate vicinity to the proposed project.

**The California Building Code, Title 24, Part 2.** The California Building Code, Title 24, Part 2 provides building codes and standards for design and construction of structures in California. The 2013 CBC is based on the 2012 International Building Code with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC, contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

**The Seismic Hazards Mapping Act (the Act) of 1990 (Public Resources Code, Chapter 7.8, Division 2, sections 2690–2699).** The Act directs the California Department of Conservation, Division of Mines and Geology [now called California Geological Survey (CGS)] to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

### **Local**

**Nevada County General Plan.** The Nevada County Soils Element addresses soil and geologic conditions in Nevada County. The following policy in the Soils Element is relevant to the proposed project (Nevada County, 1995b):

- **Policy 12.1.** Enforce Grading Ordinance provisions for erosion control on all new development projects by adopting provisions for ongoing monitoring of project grading. project site inspection shall be required prior to initial site disturbance and grading to ensure all necessary control measures, including proper staking and tree protection measures, are in place. The installation, maintenance, and performance of erosion and sedimentation control measures shall be monitored by County or District staff (or their designee) and completely funded by a project applicant. All County projects shall comply with this policy.
- **Policy GH-10.2.1.** Ensure that new construction meets current structural and safety standards.

The Nevada County Safety Element addresses geologic and seismic safety in Nevada County. The following policy in the Safety Element is relevant to the proposed project (Nevada County, 2014):

- **Policy GH-10.2.2.** Continue to cooperate with the State Department of Conservation – California Geological Survey, the State Office of Emergency Services and other appropriate federal, state and local agencies and incorporate the most current data concerning the following as the basis for the County's Site Development Standards, and project site plan review:
  - a. geologic hazards; and
  - b. seismic hazard data for sensitive land uses such as schools, medical facilities, high-density residential uses, and intensive commercial uses.

The project review shall consider the need to mitigate development in such areas in accordance with federal, state and local standards.

As part of the project site review process, require sufficient soils and geologic investigations to identify and evaluate the various geologic and seismic hazards that may exist for all proposed development, including subdivisions. Such investigations shall be required within an area determined to be seismically active by the State Department of Conservation – California Geological Survey, or within an area having potential geologic hazards, including slope instability and excessive erosion.

- **Policy GH-10.2.1.3.** Carry out the requirements of the California Building Code, particularly with regard to seismic design.
- **Policy GH-10.2.1.4.** Require that underground utility lines, particularly water and natural gas mains, be designed to withstand seismic forces.

**Nevada County Land Use and Development Code: Chapter V, Article 19 – Grading.** The Nevada County Land Use and Development Code, Chapter V, Article 19, sets forth rules and regulations to control excavation, grading, and earthwork construction, including fills and embankments; establishes standards of required performance in preventing or minimizing water quality impacts from stormwater runoff; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction, drainage, and erosion and sediment controls at construction sites.

**Nevada County Land Use and Development Code: Chapter II, Article 4 – Steep Slopes/High Erosion Potential.** The Nevada County Land Use and Development Code, Chapter II, Article 4.0, Section L-II 4.3.13 includes standards to preserve the natural, topographic, and aesthetic characteristics of steep slopes. Standards are also included to minimize soil erosion, water quality impacts, earth movement and disturbance, and the adverse impact of grading activities, while providing for reasonable use of private property. The standards include requirements for grading permits, limited development on steep slopes, and an erosion and sediment control plan.



## 5.7.2 Environmental Impacts and Mitigation Measures

**a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

*NO IMPACT.* The proposed project is located in a relatively seismically inactive area of northern California. No active or potentially active faults cross or are in close vicinity to the proposed project. The closest fault to Banner Mountain is a potentially active fault located approximately 46 miles east of the proposed project site. Therefore, there is no potential impact from surface fault rupture.

- ii) Strong seismic ground shaking?**

*LESS THAN SIGNIFICANT.* The project is located in a relatively seismically inactive area of northern California. No significant active faults are located in the proposed project area. Estimated peak ground accelerations at the proposed project site is 0.24g for the maximum credible earthquake, which correspond to minor ground shaking (DGS, 2018a). This level of ground shaking is not likely to result in damage to the telecommunications tower as the new tower would be built to meet essential services seismic standards. In addition, due to the common occurrence of relatively shallow, weathered material underlain by dense bedrock in the Sierra Nevada Range, seismic risk is lessened, including in the project area. Overall, the risk of loss, injury, or death related to strong seismic ground shaking is less than significant. No mitigation is required.

- iii) Seismic-related ground failure, including liquefaction?**

*LESS THAN SIGNIFICANT.* The proposed project is located at the summit of Banner Mountain and the surrounding area is largely undeveloped forest with steep terrain. Although it is unlikely that strong seismic ground shaking would occur in the area, minor to moderate earthquake induced ground shaking could potentially accelerate already unstable slopes or existing slope failures. However, since most of the soils within the County are on top of dense bedrock and since there is an absence of depth and cohesionless structure related to ground failure, the project area is not susceptible to seismic-related ground failure, such as landslides or liquefaction. The risk of loss, injury, or death related to liquefaction is therefore less than significant. No mitigation is required.

- iv) Landslides?**

*LESS THAN SIGNIFICANT.* The proposed project is located at the summit of Banner Mountain and the surrounding area is largely undeveloped forest with steep terrain. The surrounding area is classified as Level V and VI, or moderate, landslide susceptibility. However, the local geology of the project site consists of volcanic rock, but does not note any evidence of landslide movement. In addition, the topography of the site is relatively flat. Dense clayey sand overlying bedrock was encountered in the subsurface exploration (DGS, 2018b).

Although the potential would be low, ground disturbance in the proposed project work area from excavation of the tower foundation could destabilize adjacent slopes and trigger slope failures. Excavation within or near existing slope failures could also trigger movement. The proposed tower would be located just east of the existing towers within the existing telecommunications facility, which has a relatively flat topography. The State has conducted geotechnical/geologic surveys that would identify specific areas with

the potential for unstable slopes, landslides, rock fall, and debris flows where earthquakes or project excavation could trigger slope failure (DGS, 2018a and 2018b). Final engineering would incorporate the results of the geotechnical evaluations into the tower design and location, and adherence to building standards would ensure any impacts related to seismically induced slope failures and landslides would be less than significant. No mitigation is required.

***b. Would the project result in substantial soil erosion or the loss of topsoil?***

*LESS THAN SIGNIFICANT.* Excavation for construction of the tower foundation would loosen soil and sediment, potentially triggering soil erosion by wind or water. However, wind erodibility in the area is low due to the shallow bedrock. Erosion control measures would be implemented for exposed surfaces potentially subject to soil erosion. Best Management Practices to reduce erosion and transport of soil particles or turbid water into the drainage course flowing from the construction site would be employed. All conditions of existing water quality regulatory agency permits would be adhered to as well. Overall, the proposed project would result in a less than significant impact related to soil erosion or the loss of topsoil. No mitigation is required.

***c. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?***

*LESS THAN SIGNIFICANT.* Potential issues related to liquefaction and liquefaction related phenomena and seismically induced landslides are discussed above under Item (a)(iii), and impacts related to construction triggered landslides are discussed under Item (a)(iv). Based on the geotechnical and geologic hazards evaluations for the project site, impacts related to liquefaction and liquefaction related phenomena, seismically induced landslides and construction triggered landslides would be less than significant (DGS, 2018a and 2018b).

***d. Would the project located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?***

*LESS THAN SIGNIFICANT.* Soils underlying the proposed project primarily have a low to moderate shrink-swell potential. Depending on final geotechnical engineering, the tower may need to be rock anchored up to 20 feet deep or more for stability. The low to moderate shrink-swell of the soils underlying the project and the anticipated construction techniques reduces the potential impact from expansive soils to less than significant. No mitigation is required.

***e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?***

*NO IMPACT.* The proposed project would not include any wastewater disposal, therefore there would be no impacts related to wastewater disposal.

***f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?***

*LESS THAN SIGNIFICANT IMPACT.* A desktop review of paleontological resources was conducted online, and no identified fossil sites were noted in the project area. The project site is underlain by igneous and metamorphic bedrock, which have low potential to contain fossils. Therefore, the potential to encounter an unidentified paleontological resource during tower excavation would be low. Impacts would be less than significant and no mitigation is required.

## 5.8 Greenhouse Gas Emissions

### GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.8.1 Setting

**Physical Setting.** The global climate depends on the presence of naturally occurring greenhouse gases (GHG) to provide what is commonly known as the “greenhouse effect” that allows heat radiated from the Earth’s surface to warm the atmosphere. The greenhouse effect is driven mainly by water vapor, aerosols, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and other constituents. Globally, the presence of GHG affects temperatures, precipitation, sea levels, ocean currents, wind patterns, and storm activity.

Human activity directly contributes to emissions of six primary anthropogenic GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). The standard definition of anthropogenic GHG includes these six substances under the 1997 Kyoto Protocol (UNFCCC, 1998). The most important and widely occurring anthropogenic GHG is CO<sub>2</sub>, primarily from the use of fossil fuels as a source of energy.

**Effects of GHG Emissions.** Changing temperatures, precipitation, sea levels, ocean currents, wind patterns and storm activity provide indicators and evidence of the effects of climate change. For 1950 onward, relatively comprehensive data sets of observations are available. Research by California’s Office of Environmental Health Hazard Assessment (OEHHA) documents climate change indicators by categorizing the effects as: changes in California’s climate; impacts to physical systems including oceans, lakes, rivers, and snowpack; and impacts to biological systems including humans, vegetation and wildlife. The primary observed changes in California’s climate include increased annual average air temperatures, more-frequent extremely hot days and nights, and increasingly severity of drought. Impacts to physical systems affected by warming temperatures and changing precipitation patterns show decreasing snowmelt runoff, shrinking glaciers, and rising sea levels. Impacts to terrestrial, marine, and freshwater biological systems, with resulting changes in habitat, agriculture, and food supply are occurring in conjunction with the potential to impact human well-being (OEHHA, 2018).

### Regulatory Background

**California Global Warming Solutions Act of 2006 [Assembly Bill 32 (AB 32)].** The California Global Warming Solutions Act of 2006 (AB 32) required that California’s GHG emissions be reduced to 1990 levels by 2020. The reduction is being accomplished through an enforceable statewide cap on global warming emissions beginning in 2012. AB 32 directs the CARB to develop regulations and a mandatory reporting system to track and monitor global warming emissions levels (AB 32, Chapter 488, Statutes of 2006). The CARB Climate Change Scoping Plan, initially approved December 2008 and most recently updated by CARB in December 2017, provides the framework for achieving California’s goals (CARB, 2017).

In passing AB 32, the California Legislature found that:

*Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problem.*

Other major Executive Orders, legislation, and regulations have also been adopted to continue and build upon the implementation of AB 32 to reduce GHG emissions and achieve California's climate goals.

**California Governor's Executive Orders on GHG Emissions.** In September 2018, Executive Order B-55-18 established a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. The CARB was directed to develop the framework for implementing the goal of carbon neutrality. Executive Order B-30-15 (April 2015) established a California GHG reduction target of 40 percent below 1990 levels by 2030. One purpose of this interim target is to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. This executive order also specifically addresses the need for climate adaptation and directs state agencies to update the California Climate Adaptation Strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change. Senate Bill 32 (SB 32) of 2016 codified this GHG emissions target to 40 percent below the 1990 level by 2030.

**Cap-and-Trade Program (17 CCR 95801 to 96022).** The California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation (Cap-and-Trade Program) was initially approved by CARB in 2011. The Cap-and-Trade Program applies to covered entities that fall within certain source categories, including petroleum refiners and suppliers of transportation fuels, and is triggered when facility emissions exceed 25,000 metric tons of CO<sub>2</sub> equivalent (MTCO<sub>2</sub>e) in a year. The covered entities must hold compliance instruments sufficient to cover the actual GHG emissions, as evidenced through the CARB's Mandatory Reporting Regulation requirements. This means that transportation fuel suppliers bear the GHG compliance obligation in the Cap-and-Trade Program for the GHG emissions from motor vehicle and off-road equipment fuels used by construction workforces and crews.

## 5.8.2 Environmental Impacts and Mitigation Measures

### ***a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

**LESS THAN SIGNIFICANT.** The proposed project construction activities include mobilizing construction equipment, crews, and materials, as necessary to rehabilitate the existing access roads, establish staging and work areas, install tower foundations, install the new tower, and restore the work areas. The construction activities would cause GHG emissions due to fuels used by diesel and gasoline-powered construction vehicles and off-road equipment. Approximately 20 workers would use a small fleet of diesel off-road and gasoline-powered construction vehicles including trucks for crews, equipment, materials, concrete, and water, and the fleet of equipment would include a backhoe, loader, dozer, rock hammer, auger, crane, and lifts.

Equipment and motor vehicles would directly emit CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O due to fuel use and combustion. Motor vehicle fuel combustion emissions in terms of CO<sub>2</sub>e are approximately 95 percent CO<sub>2</sub>, and CH<sub>4</sub>

and N<sub>2</sub>O emissions occur at rates of less than 1 percent of the mass of combustion CO<sub>2</sub> emissions. The construction-related GHG emissions would occur during approximately 150 days of work over 16 months and would cease upon completing site restoration. These one-time project-level GHG emissions would not occur in quantities that could have a significant impact on the environment.

Upon completion of construction, operations and maintenance activities to support the new facilities would not result in a notable incremental increase in GHG emissions. No new crews or would be added by the proposed project, and operation of the proposed project would cause no increase in GHG emissions beyond those that occur for maintenance of the existing Banner Mountain communications tower and facilities. Accordingly, the proposed project GHG emissions would not have a significant impact on the environment, and this impact would be less than significant. No mitigation is required.

***b Would the project conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?***

*LESS THAN SIGNIFICANT.* California's regulatory setting for GHG emissions (Section 5.8.1) ensures that most or all of the existing and foreseeable GHG sources associated with the proposed project would be subject to one or more programs aimed at reducing GHG. The Climate Change Scoping Plan provides an outline of actions to reduce California's GHG emissions. The scoping plan requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs.

The proposed project would generate the limited quantities of direct GHG emissions from the construction activities. California's Cap-and-Trade regulation is the major climate program covering project related GHG emissions. Construction and O&M activities would cause GHG emissions due to the transportation fuels used by the vehicles and equipment. The end-users of motor vehicle fuels like gasoline and diesel may include construction contractors that are not otherwise designated as covered entities in the Cap-and-Trade program, and these end-users do not directly bear the Cap-and-Trade compliance obligation. However, all fuel suppliers and petroleum refiners must cover the end-user's GHG emissions. Because the project-related GHG emissions, including construction-phase emissions, would be "covered" by the fuel suppliers subject to Cap-and-Trade requirements, these emissions would not conflict with California's progress towards achieving GHG reductions. The proposed project would not conflict with any applicable GHG management plan, policy, or regulation. This impact would be less than significant, and no mitigation is required.



## 5.9 Hazards and Hazardous Materials

### HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.9.1 Setting

This section addresses issues related to environmental hazards and hazardous materials in the existing conditions. Environmental hazards include accidental spills of hazardous materials, the presence of existing subsurface contamination, and aircraft safety. Hazardous materials include fuel, oil, and lubricants. If encountered, contaminated soil can pose a health and safety threat to workers or the public.

#### Land Use

Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Other hazardous materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes. Current and former agricultural properties commonly have herbicide, pesticide, and/or fumigant soil contamination.

The proposed project is located on State land at the summit of Banner Mountain within unincorporated Nevada County. Banner Mountain is the headwater source of the following three creeks: Little Deer Creek,

Little Clipper Creek, and Wolf Creek. The area surrounding the Banner Mountain summit is largely undeveloped forest with steep terrain. A few private residences are located in the vicinity of Banner Mountain. No schools or airports are located within a mile of the proposed project. The closest school, Deer Creek Elementary School, is located approximately 5.8 miles by car to the west of Banner Mountain. The closest airport, Nevada County Airport, is located approximately 2.5 miles southwest from Banner Mountain. There is currently no commercial air service from the Nevada County airport, but charter flights are available.

## **Hazards and Hazardous Materials**

During construction, fuel and hydraulic fluids may be located at the construction staging area and normal construction equipment maintenance and refueling would be conducted at the project site. Spills and leaks of hazardous materials during construction activities could result in soil or groundwater contamination.

Naturally occurring hazardous materials in Nevada County include naturally occurring asbestos (USGS and CGS, 2011). Asbestos is a term for several minerals that form very thin mineral fibers and fiber bundles, such as chrysotile, tremolite, and actinolite (USGS and CGS, 2011). Asbestos is considered a hazardous material because when inhaled, the fibrous mineral strands embed in the lungs and have been known to cause development of lung cancer or mesothelioma.

The most common host rocks for asbestos mineralization in the United States are ultramafic rocks that were altered by processes of contact or regional metamorphism. Ultramafic rocks are those igneous rocks composed mainly of iron-magnesium silicate minerals, such as olivine and pyroxene. There are ultramafic rocks located within 10 miles of the project site at Banner Mountain units (USGS and CGS, 2011), however, ultramafic rocks and asbestos minerals are not at the project site itself.

## **Environmental Contamination**

Components of the proposed project where ground disturbance would occur would be susceptible to encountering environmental contamination, if located in the vicinity of commercial or industrial sites with known contamination or adjacent to sites that store and use large quantities of hazardous materials, or in agricultural areas that may have used herbicides, pesticides, or fumigants. Ground disturbing activities for the proposed project is primarily limited to excavation of the new telecommunications tower footings.

The summit of Banner Mountain where the proposed project would be located is generally cleared of vegetation with several existing buildings, a tank, a generator, concrete footings, a telecommunications tower, and a CAL FIRE lookout tower. There are no commercial, agricultural, or industrial uses nearby. A review of the State Water Resources Control Board's (SWRCB's) GeoTracker website indicates no hazardous material or environmental contaminated sites within two miles of the proposed project (SWRCB, 2018). The closest listed sites are numerous LUST cleanup sites in the Nevada City, approximately 2.1 miles west/northwest of Banner Mountain (SWRCB, 2018).

## **Radiofrequency Radiation**

Radio waves and microwaves emitted by transmitting antennas are one form of electromagnetic energy. They are collectively referred to as "radiofrequency" or "RF" energy or radiation. (The term "radiation" here does not mean "radioactive") The RF waves emanating from an antenna are generated by the movement of electrical charges in the antenna, and they dissipate with distance.

In December 2018, the California Governor's Office of Emergency Services (CAL OES) performed RF field strength measurements at the Banner Mountain radio site and lookout tower to determine the level of

RF exposure to personnel within the site perimeter and also to the public who may be in areas surrounding the radio facility at this site (see IS/MND Appendix F). The Banner Mountain site, including two dedicated radio facilities and a CAL FIRE lookout tower, is surrounded by a fenced and locked gate; therefore, only Occupational/Controlled personnel have access to the site. As a result, the site must comply with the Federal Communication Commission's (FCC's) guidelines for Occupational/Controlled exposure. Furthermore, all measurements taken by CAL OES were well under the FCC's Maximum Permissible Exposure (MPE) levels for Occupational/Controlled exposure, as well as for General Population/Uncontrolled exposure (see IS/MND Appendix F).

Studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature. However, there may be situations, particularly in workplace environments near high-powered RF sources, where the recommended MPE limits for safe exposure of human beings to RF energy could be exceeded (FCC, 2018). These MPE thresholds would not be exceeded at or around the Banner Mountain telecommunications facility site with the proposed project. RF waves are not addressed here as an environmental impact under CEQA.

## Regulatory Background

Hazardous substances are defined by federal and State regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous substances are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14), and also in the California Code of Regulations (CCR), Title 22, Chapter 11, Article 2, Section 66261, which provides the following definition:

*A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.*

For this analysis, soil that is excavated from a site containing hazardous materials would be considered to be a hazardous waste if it exceeded specific CCR Title 22 criteria or criteria defined in CERCLA or other relevant federal regulations. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site is required if excavation of these materials occurs; it may also be required if certain other activities occur. Even if soils or groundwater at a contaminated site do not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking lead jurisdiction.

### **Federal**

**Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA).** The federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the U.S. Environmental Protection Agency (EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by HSWA.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (1980).** CERCLA, including the Superfund program, was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List (NPL). CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

## **State**

**California Environmental Protection Agency (Cal/EPA).** The California Environmental Protection Agency (Cal/EPA) was created in 1991, which unified California's environmental authority in a single cabinet-level agency and brought the Air Resources Board (ARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board (IWMB), DTSC, Office of Environmental Health Hazard Assessment (OEHHA), and Department of Pesticide Regulation (DPR) under one agency. These agencies were placed within the Cal/EPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of State resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

**California Hazardous Waste Control Law (HWCL).** The California Hazardous Waste Control Law (HWCL) is administered by Cal/EPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the EPA approves the California program, both the State and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

**Department of Toxic Substance Control (DTSC).** Department of Toxic Substance Control (DTSC) is a department of Cal/EPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

**California Occupational Safety and Health Administration (Cal/OSHA).** The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

### ***Local***

**Nevada County General Plan.** The Safety Element of the Nevada County General Plan addresses natural and manmade potential safety hazards. The following policies in the Safety Element are relevant to the proposed project:

- **Policy HM-10.5.1.** *Provide means for the identification, safe use, storage, transport, and disposal of hazardous materials.*
- **Policy HM-10.5.3.** *The County will encourage the cleanup of sites contaminated by mine wastes or other hazardous materials.*

## **5.9.2 Environmental Impacts and Mitigation Measures**

### ***a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?***

**LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED – CONSTRUCTION.** Only small amounts of hazardous materials, such as vehicle fuels, hydraulic fluid, and other vehicle and equipment maintenance fluids may be stored at the construction staging area and in construction vehicles during project construction. No acutely hazardous materials would be used. Spills or releases of hazardous materials could occur due to improper handling and/or storage practices during construction activities potentially causing soil or groundwater contamination, or contamination of the Little Deer Creek, Little Clipper Creek, and Wolf Creek. Implementation of Mitigation Measures MM H-1 (Prepare and Implement Worker Environmental Awareness Program) and H-2 (Prepare and Implement a Hazardous Materials and Waste Management Plan) would reduce the potential impacts to the public or environment due the routine transport, use, or disposal of hazardous materials to less than significant.

**LESS THAN SIGNIFICANT – OPERATION AND MAINTENANCE.** No hazardous materials would be used during operation or maintenance beyond what already exists under maintenance of the existing Banner Mountain communications tower and facilities.

### ***Mitigation Measure for Accidental Spill of Hazardous Materials***

**MM H-1 Prepare and Implement Worker Environmental Awareness Program (WEAP).** An existing CAL FIRE-approved worker training program, or if no such program is in place, a project specific WEAP shall be prepared and submitted to the State for approval prior to construction. The WEAP shall include, at a minimum, the following provisions related to hazards and hazardous materials:

- A presentation shall be prepared by the State and used to train all site personnel prior to the commencement of work. A record of all trained personnel shall be kept.
- Instruction on compliance with proposed project mitigation measures.
- A list of phone numbers of the State environmental specialist personnel associated with the proposed project (archaeologist, biologist, environmental coordinator, and regional spill response coordinator).
- Instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific BMPs, and the location of Material Safety Data Sheets for the project.
- Worker Training on Emergency Release Response Procedures to include hazardous materials handling procedures for reducing the potential for a spill during construction, and



hazardous material clean up procedures and training to ensure quick and safe cleanup of accidental spills.

- Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil, groundwater, or surface water contamination. The foreman or regional spill response coordinator shall have authority to stop work at that location and to contact the Certified Unified Program Agency (CUPA) (Nevada County Environmental Health Division, Hazardous Materials Management; see Section 5.9.1, Regulatory Background, above) immediately if unanticipated visual evidence of potential contamination or chemical odors are detected. Work will be resumed at this location after any necessary consultation and approval by the CUPA or other entities as specified by the CUPA.
- Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project.

## MM H-2

**Prepare and Implement a Hazardous Materials and Waste Management Plan.** Prior to approval of the final construction plans for the proposed project, an existing CAL FIRE-approved hazardous materials management plan, or if no such plan is in place, a project-specific Hazardous Materials and Waste Management Plan for the construction phase of the proposed project will be prepared and submitted to the State for approval prior to construction. The Plan will be prepared to ensure compliance with all applicable federal, state, and local regulations. The Hazardous Materials and Waste Management Plan will reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from soil, groundwater, and surface water contamination, and proper disposal of hazardous materials. The plan will include the following information related to hazardous materials and waste, as applicable:

- A list of the hazardous materials that will be present on site and in the local construction yard during construction, including information regarding their storage, use, and transportation;
- Any secondary containment and countermeasures that will be required for onsite and construction yard hazardous materials, as well as the required responses for different quantities of potential spills;
- A list of spill response materials and the locations of such materials at the proposed project site and in the local construction yard during construction. Additionally, the Plan shall designate that spill response materials be kept onsite for all activities performed near to or adjacent to a stream or the river;
- Procedure for Fueling and Maintenance of Construction Vehicles and Equipment: Written procedures for fueling and maintenance of construction equipment would be prepared prior to construction. The Plan shall include the following procedures:
  - Construction vehicles shall be fueled and maintained offsite at the construction yard or at local fuel stations. Construction vehicles operated near to or adjacent to the stream/river channel shall be inspected and maintained daily to prevent leaks.
  - Construction equipment such as a drill rigs and excavators shall be fueled offsite when feasible. When refueling offsite is not feasible for drilling equipment and other construction equipment onsite refueling of the equipment by refueling vehicles or fuel

trucks shall follow specified procedures to prevent leaks or spills. Procedures will require refueling be located a minimum of 150 feet from a stream channel and the use of spill mats, drop cloths made of plastic, drip pans, or trays to be placed under refueling areas to ensure that fuels do not come into contact with the ground. Spill cleanup materials shall be kept readily available on the refueling vehicles.

- Drip pans or other collection devices would be placed under equipment, such as motors, pumps, generators, and welders, during operation and at night to capture drips or spills. Equipment would be inspected and maintained daily for potential leakage or failures.
- A list of the adequate safety and fire suppression devices for construction activities involving toxic, flammable, or exposure materials;
- A description of the waste-specific management and disposal procedures that will be conducted for any hazardous materials that will be used or are discovered during construction of the proposed project; and
- A description of the waste minimization procedures to be implemented during construction of the proposed project.

***b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* Accidental spills of hazardous materials could occur due to improper handling and/or storage practices during construction activities potentially causing soil or groundwater contamination, or contamination of the Little Deer Creek, Little Clipper Creek, and/or Wolf Creek. However, as discussed above, planned implementation of Mitigation Measures MM H-1 (Prepare and Implement Worker Environmental Awareness Program) and MM H-2 (Prepare and Implement a Hazardous Materials and Waste Management Plan) would be required to reduce the potential impact from the accidental release of hazardous materials to soil and groundwater and to the three creeks to less than significant.

***c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?***

*NO IMPACT.* The proposed project would not use or handle acutely hazardous materials. The closest school to the project site is Deer Creek Elementary School, which is located approximately 5.8 miles by car to the west of Banner Mountain. Therefore, there would be no impact to an existing or proposed school.

***d. Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?***

*NO IMPACT.* A review of the SWRCB GeoTracker website indicates that there are no known hazardous material or environmentally contaminated sites within two miles of the proposed project. Therefore, there would be no impact from hazardous material sites.

- e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?***

*NO IMPACT.* There are no airport land use plans within 2 miles of the proposed project. The closest airport, Nevada County Airport, is located approximately 2.7 miles southwest from Banner Mountain. Therefore, there would be no potential safety impacts related to an airport within two miles of the project site during construction or operations and maintenance.

- f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?***

*LESS THAN SIGNIFICANT.* Portions of the existing access road system may require maintenance or repair prior to construction. Additionally, oversize truck trips are expected to deliver large pieces of construction equipment and communications tower materials to the site. These activities may require brief temporary roadway or lane disruptions on local roads providing access to the site. However, in the event of any road repairs on public roadways would include flagmen to ensure traffic flow, including emergency vehicle flow through the area and access to any nearby residences or areas, would not be impacted. Once operational, the proposed project is intended to facilitate emergency communications and it would have no impact on access or movement to emergency service providers. Overall, impacts would be less than significant. No mitigation is required.

- g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?***

*LESS THAN SIGNIFICANT.* The proposed project area falls within a very high fire hazard severity zone within the State Responsibility Area (CAL FIRE, 2007). CAL FIRE, the project proponent, has responsibility for providing fire protection services to the project area on Banner Mountain. Construction activities could increase the risk of wildland fires, especially since the area surrounding the Banner Mountain summit is largely undeveloped forest with high wind potential. During construction, project-related activities at these locations have the potential to be an ignition source for a wildland fire. Examples of ignition sources include sparks from welding or from metal striking metal or stone igniting surrounding vegetation, parking vehicles over dry vegetation where hot undercarriages could ignite grass or shrubs, and improperly discarded smoking materials. As discussed in Section 5.20 (Wildfire), to reduce the wildfire risk, the State would implement standard fire prevention protocols and follow a fire prevention plan. Therefore, the proposed project would have a less than significant potential impact of exposing people or structures to a risk of loss, injury or death involving wildland fires. No mitigation is required.

Operation and maintenance activities would be incorporated into the existing O&M schedule for the existing telecommunications facilities. As with current operations and maintenance, CAL FIRE would comply with all current federal and State laws related to vegetation clearance, if needed, and fire prevention. The proposed project is intended to upgrade/supplement emergency communication linkage for CAL FIRE'S fire protection and emergency response command and control throughout the area. Therefore, upon completion of the project, CAL FIRE's emergency response, including wildland fire response, would be improved in the area.

## 5.10 Hydrology and Water Quality

### HYDROLOGY AND WATER QUALITY

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.10.1 Setting

#### Surface Water

Surface water drainage in Nevada County is made up of three watersheds: the Truckee River basin in the eastern Nevada County and the Yuba River basin and Bear River basin in western Nevada County. Snowpack from the Sierra Nevada Range is the primary source of water for all three watersheds (Nevada County, 1995). These watersheds supply water to serve portions of both northern California and western Nevada. Many creeks and rivers connected to the watersheds produce hydroelectricity as well (Nevada County, 1995). Banner Mountain, the location of the proposed project site in western Nevada County, is the headwater source of the following three creeks: Little Deer Creek, Little Clipper Creek, and Wolf Creek.

#### Groundwater

There are two distinct groundwater resources in Nevada County. Groundwater resources in western Nevada County are characterized as poorly defined and variable. The subsurface geology has highly fractured characteristics. Combined with other factors, such as soil depth and percolation, groundwater

characteristics in western Nevada County, where the proposed project is located, is highly variable and inconsistent. In eastern Nevada County, the Martis Valley aquifer is the primary subsurface hydrologic resource. (Nevada County, 1995)

### **Water Quality**

The quality of surface waters in Nevada County varies. Very good water quality can typically be found in the more mountainous, less-developed areas. More frequent water quality impacts can be found as elevation decreases and development increases (Nevada County, 1995). At higher elevation, water quality in Nevada County is most affected by recreational and logging uses. Water quality at lower elevations are affected by land development, mining, grazing, and urban runoff. Soil erosion and sedimentation also impact the surface water quality in Nevada County. Naturally occurring elements, such as heavy metals, have contributed to water quality degradation in a number of areas within western Nevada County (Nevada County, 1995).

### **Flooding**

Areas susceptible to flood hazard are relatively limited in Nevada County. In general, there are no significant wide flood plains as would be found in areas with less general slope (Nevada County, 1995). The major flooding problems in Nevada County normally occur during the winter months from November through April. Localized flooding can be severe when the ground is already saturated or existing snow is melted by warmer rains (Nevada County, 1995). The project site is on the summit of Banner Mountain and is outside of a 100-year floodplain (FEMA, 2011).

## **Regulatory Background**

### ***Federal***

**Clean Water Act (CWA; 33 U.S.C. Section 1251 et seq.).** The Clean Water Act (CWA; 33 U.S.C. Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is delegated to, and administered by, California's nine Regional Water Quality Control Boards (RWQCB). In addition, the State Water Resources Control Board (SWRCB) regulates the NPDES stormwater program. The proposed project is under the jurisdiction of the Central Valley Regional Water Quality Control Board and the SWRCB.

Projects that disturb one or more acres are required to obtain NPDES coverage under the California General Permit for Discharges of Storm Water Associated with Construction Activity. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP describes Best Management Practices (BMPs) the discharger will use to protect stormwater runoff. The SWPPP must contain a visual monitoring program and a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs.

### ***State***

**Central Valley Regional Water Quality Control Plan.** The Central Valley Regional Water Quality Control Plan, also known as the Basin Plan, covers all the drainage basin areas for the Sacramento and San Joaquin rivers, extending approximately 400 miles from the California-Oregon border to the headwaters of the

San Joaquin River. This plan describes the beneficial uses to be protected in these waterways, water quality objectives to protect those uses, and implementation measures to make sure those objectives are achieved.

**California Streambed Alteration Agreement.** Sections 1600–1616 of the California Fish and Game Code require that any entity that proposes an activity that will substantially divert or obstruct the natural flow of any river, stream or lake, substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit material where it may pass into any river, stream, or lake, must notify the California Department of Fish and Wildlife (CDFW). If the CDFW determines the alteration may adversely affect fish and wildlife resources, a Lake and Streambed Alteration Agreement (LSAA) will be prepared. The LSAA includes conditions necessary to protect those resources. The Agreement applies to any stream including ephemeral streams.

**California Porter Cologne Water Quality Control Act.** The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the SWRCB to adopt water quality criteria to protect State waters. Each RWQCB has developed a Water Quality Control Plan (Basin Plan) specifying water quality objectives, beneficial uses, numerical standards of pollution concentrations, and implementation procedures for Waters of the State. Waters of the State is defined by the Porter Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the State.” General objectives of the Basin Plans state that all waters (of the State) shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. The water quality control plans are intended to protect designated beneficial uses of waters, avoid altering the sediment discharge rate of surface waters, and avoid introducing toxic pollutants to the water resource. The Porter Cologne Water Quality Control Act requires anyone proposing to discharge waste that could affect the quality of the waters of the State to report the waste discharge to the appropriate RWQCB.

### ***Local***

**Nevada County General Plan.** The Nevada County General Plan includes a Water Element, which addresses water quality and hydrologic features in Nevada County. The following policies in the Water Element generally apply to the proposed project (Nevada County, 1995).

- **Policy 11.6A.** New development shall minimize the discharge of pollutants into surface water drainages by providing the following improvements or similar methods which provide equal or greater runoff control: (a) include curbs and gutters on arterials, collectors, and local roads consistent with adopted urban street designs; and (b) oil, grease, and silt traps for subdivisions creating 5 or more parcels and commercial and industrial development of 1 acre or greater size. Maintenance of such facilities shall be assured through a legally-enforceable mechanism.
- **Policy 11.9A.** Approve only those grading applications and development proposals that are adequately protected from flood hazards and which do not add flood damage potential. This may include the requirement for foundation design which minimizes displacement of flood waters, as well as other mitigation measures.
- **Policy 11.9B.** Require new utilities, critical facilities and non-essential public structures to be located outside the 100-year flood plain unless such facilities are necessary to serve existing uses, there is no other feasible location, and construction of these structures will not increase hazards to life or property within or adjacent to the floodplains.



## 5.10.2 Environmental Impacts and Mitigation Measures

### ***a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* Required permits and approvals applicable to the proposed project are identified in the Table 4-2 (Permits and Approvals Which May Be Required) in Section 4, Project Description. The proposed project is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB) and is subject to the management direction of the Water Quality Control Plan for the Central Valley region. Compliance with NPDES and other applicable regulations would be required. It is expected that the proposed project would follow all applicable permits and regulations.

During construction of the proposed project there would be a potential for spills of oil, grease, or other water contaminants associated with the use of vehicles, equipment, and materials used in construction, as well as the potential for increased erosion and sedimentation associated with soil disturbance. Any spill of a hazardous or potentially hazardous material, including oil or grease, would be immediately addressed in accordance with standard construction best management practices (see Section 4.11.4). Potential water quality impacts would likely only pose an immediate issue if a precipitation event were to occur during soil disturbing activities or a spill. Implementation of Mitigation Measures H-1 (Prepare and Implement Worker Environmental Awareness Program) and H-2 (Prepare and Implement a Hazardous Materials and Waste Management Plan) would reduce potential water contamination impacts to a less than significant level.

#### ***Mitigation Measure for Potential Water Contamination***

**MM H-1**      **Prepare and Implement Worker Environmental Awareness Program (WEAP).** [see full text in Section 5.9, Hazards and Hazardous Materials]

**MM H-2**      **Prepare and Implement a Hazardous Materials and Waste Management Plan.** [see full text in Section 5.9, Hazards and Hazardous Materials]

### ***b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?***

*LESS THAN SIGNIFICANT.* The project does not require a permanent, long-term water source. Water would be used as needed for dust control during construction and would be obtained from offsite water purveyors. A water truck would deliver water to the work area during site preparation and tower installation. Upon completion, the proposed project would not generate any demand for water demand. Overall, the proposed project would not be expected to exceed the existing water supplies and would not decrease groundwater supplies or interfere with groundwater recharge. Therefore, impacts would be less than significant. No mitigation is required.

### ***c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:***

#### ***(i) result in substantial erosion or siltation on- or off-site;***

*LESS THAN SIGNIFICANT.* The project site is an existing already disturbed telecommunications facility that is relatively flat, but minor grading may be required for the tower foundations. Any earthwork would enable

water to flow in the direction of the natural drainage and would be designed to prevent ponding and erosion that could cause damage to the new tower footings. The minor earthwork as part of construction activities would not substantially alter the existing drainage pattern of the site or area and the tower would not impede water flow.

Erosion control measures would be implemented for exposed surfaces potentially subject to soil erosion. Best Management Practices to reduce erosion and transport of soil particles or turbid water into the drainage course flowing from the construction site would be employed. All conditions of existing water quality regulatory agency permits would be adhered to as well. Impacts related to erosion or siltation would be less than significant. No mitigation is required.

***(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?***

*LESS THAN SIGNIFICANT.* As stated above under Items (c)(i) and (c)(ii), minor earthwork and grading may be required as part of construction activities. However, the minor grading would not result in the substantial increase in the rate or amount of surface runoff that would result in flooding on- or offsite; therefore, any impacts would be less than significant.

***(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or***

*LESS THAN SIGNIFICANT.* As stated above under Items (c)(i) and (c)(ii), minor grading may be required as part of construction activities. However, the minor grading would not create or contribute runoff water, leading to the exceedance of the capacity of existing or planned stormwater drainage systems. In addition, the minor grading would not lead to an additional source of polluted runoff. Overall, impacts would be less than significant.

***(iv) impede or redirect flood flows?***

*NO IMPACT.* Areas susceptible to flood hazard are relatively limited in Nevada County. The project site at the summit of Banner Mountain is not in or near a flood zone. The minor earthwork as part of construction activities would not substantially alter the existing drainage pattern of the site or area and the tower would not impede water flow. The proposed project would not impede or redirect flood flows and there would be no impact.

***d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?***

*NO IMPACT.* There are no lakes near the project that could produce seiche. The Pacific Ocean is approximately 150 miles to the west of Banner Mountain and 3,902 feet lower in elevation than the proposed project, located at the summit of Banner Mountain. There is no risk of tsunami at this location. In addition, as stated above, areas susceptible to flood hazard are relatively limited in Nevada County and the project site on Banner Mountain and the surrounding area are not in a 100-year floodplain. Overall, there would be no impact related to the release of pollutants due to project inundation.

***e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* The proposed project is under the jurisdiction of the Central Valley Regional Water Quality Control Board. The Central Valley Regional Water Quality Control Plan covers all the drainage basin areas for the Sacramento and San Joaquin rivers, extending approximately 400 miles from the California-Oregon border to the headwaters of the San Joaquin River.

This plan describes the beneficial uses to be protected in these waterways, water quality objectives to protect those uses, and implementation measures to make sure those objectives are achieved. Compliance with NPDES, and other applicable regulations, will be required. It is expected that the proposed project would follow all applicable permits and regulations.

Project activities would not include any discharge of water that could impact water quality. The minor earthwork that may be required as part of the project could result in runoff. In addition, there is a potential for spills of oil, grease, or other water contaminants associated with the use of vehicles, equipment, and materials used in construction, as well as the potential for increased erosion and sedimentation associated with soil disturbance. Implementation of Mitigation Measures H-1 (Prepare and Implement Worker Environmental Awareness Program) and H-2 (Prepare and Implement a Hazardous Materials and Waste Management Plan) would reduce potential water quality impacts that could conflict with the Water Quality Control Plan to less than significant.

The California Department of Water Resources developed the Sustainable Groundwater Management Act (SGMA), which provides information on the annual monitoring data and conditions of the Martis Valley Groundwater Basin, which is the groundwater resource for eastern Nevada County (Nevada County, 2018). The proposed project site is located in western Nevada County. There is no equivalent plan or information for western Nevada County, where the groundwater resources are characterized as poorly defined and variable. There would therefore be no impact since the proposed project would not conflict with or obstruct an applicable sustainable groundwater management plan.

## 5.11 Land Use and Planning

### LAND USE PLANNING

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

#### 5.11.1 Setting

Nevada County is composed of residential, commercial, industrial, agricultural, and public land uses. In the unincorporated area of the County, the greatest residential density occurs in the Alta Sierra area to the south of Grass Valley/Nevada City, Lake Wildwood to the west of Grass Valley/Nevada City, and Lake of the Pines to the south of Alta Sierra along the most southerly County boundary (Nevada County, 2016)

The proposed project would be located on State land in an existing telecommunications facility in an unincorporated area in western Nevada County. The area surrounding the project site on Banner Mountain summit is largely undeveloped forest with steep terrain. Banner Mountain and the surrounding area are located in Land Use Zone RUR-5 (Rural with a 5-acre minimum parcel size) according to the Nevada County General Plan (2016) and in zoning district RA-5 (Residential Agricultural with a 5-acre minimum parcel size). All construction disturbance areas would be within the project site and primarily localized around the work area only. The nearest residential receptor would be located approximately 200 feet from the proposed construction and approximately 60 feet from the edge of the access road.

#### Regulatory Background

There are no federal or state regulations related to land use and planning applicable to the project.

##### *Local*

**Nevada County General Plan.** The Nevada County General Plan Land Use Element has goals and policies that establish the desired land use pattern that balances growth between rural and urban area (Nevada County, 2016). The following policies in the Land Use Element are relevant to the proposed project:

- **Policy 1.5.4.** Where such resources are present, the standards shall require that professional field inventory and review shall be undertaken to delineate the extent of the resource and determine the impact of the proposed development. The following siting and design measures shall be implemented as appropriate to meet the performance criteria:
  - Identification of building envelopes;
  - Conservation easements/deed restrictions;
  - Use of common vs. individual driveways;
  - Specification of location and type of fencing;
  - Identification of setbacks and/or buffers;
  - Development restrictions;
  - Use of Transfer of Development Rights; and
  - Offsite mitigation/mitigation banking.

The County shall approve a project for a discretionary permit only if it can be demonstrated that the project, as designed and sited, meets the intent of the performance criteria of the Comprehensive Site Development Standards.

- **Policy 1.3.11.** Encourage future improvements of public and private facilities/services to that which will enhance the specific character and lifestyle of Rural Regions.

### 5.11.2 Environmental Impacts and Mitigation Measures

#### ***a. Would the project physically divide an established community?***

*NO IMPACT.* All construction disturbance areas would be within the State land and primarily localized around the work area only. Direct site access would occur via existing roads where CAL FIRE has leased access and maintenance agreements in place and there would be no road closures in public roads. The proposed project involves the construction of a new telecommunications tower, a vertical structure that would not divide an established community. In addition, the objective of the project is to improve communication abilities in the area by upgrading/supplementing CAL FIRE's telecommunications infrastructure with a new telecommunications tower to support the State's PSMN and continue to provide an essential emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the area. Overall, no aspect of the proposed project would result physically divide an established community.

#### ***b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect***

*NO IMPACT.* The proposed project would be consistent with the policies of the Nevada County General Plan, as noted above in Section 5.11.1, Regulatory Background. The State would obtain the necessary permits and approvals required for project-related activities, such as from the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, California Air Resources Board, and other agencies, as applicable, prior to commencing project activities. The proposed project therefore would not conflict with any applicable land use plans, policy, or regulation.

## 5.12 Mineral Resources

### MINERAL RESOURCES

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.12.1 Setting

Historically, mining has played an important part in the history and economic development of Nevada County. Mineral resources, particularly gold, silver, copper, lead, zinc, chromite, and small amounts of tungsten and manganese have been found in Nevada County. Industrial minerals found in the County include barite, quartz for silicon production, and small amounts of limestone, asbestos, clay, and mineral paint. In addition, significant deposits of sand, gravel, and rock types suitable for construction aggregate are exposed throughout the County. (Nevada County, 1995b).

As a result of the history of extensive gold mining in Nevada County, there are many past or present mines in the County (Nevada County, 1995b). However, there are no mines directly in the proposed project area (USGS, 2018). A review of U.S. Geological Survey (USGS) data indicate that the proposed project area is located in a classified mineral resource zone (MRZ), MRZ-2b (S&G)<sup>A-6</sup> (DOC, 1990). This area is classified for sand and gravel resources of alluvial origin.

### Regulatory Background

There are no federal or local regulations associated with mineral resources that are relevant to the proposed project.

#### State

**California Surface Mining and Reclamation Act of 1975 (SMARA).** SMARA requires that the State Geologist classify land into Mineral Resource Zones (MRZs) according to the known or inferred mineral potential of the land. The California Department of Conservation's Office of Mine Reclamation (OMR) and the State Mining and Geology Board (SMGB) are jointly charged with administration of the Act's requirements. The OMR provides technical assistance to lead agencies and operators, maintains a state-wide database of mine locations and operational information, and is responsible for matters involving SMARA compliance. The SMGB promulgates regulations to clarify and interpret SMARA requirements in addition to serving as a policy and appeals board (DOC, 2018b). The SMGB has the authority to further regulate the authority of the local agencies if it finds that the agencies are not in compliance with the provisions of SMARA.

Mineral resources in the State have been mapped using the California Mineral Land Classification System, which include the following four MRZs:

- **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence;



- **MRZ-2:** Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence;
- **MRZ-3:** Areas containing mineral deposits, the significance of which cannot be evaluated; and
- **MRZ-4:** Areas where available information is inadequate for assignment to any other zone.

**California Division of Oil, Gas, and Geothermal Resources.** PRC Section 3106 mandates the supervision of drilling, operation, maintenance, and abandonment of oil wells for the purpose of preventing the following:

- Damage to life, health, property, and natural resources
- Damage to underground and surface waters suitable for irrigation or domestic use
- Loss of oil, gas, or reservoir energy
- Damage to oil and gas deposits by infiltrating water and other causes

### **Local**

**Nevada County General Plan.** The Nevada County General Plan includes a Mineral Management Element, which provides guidance for identifying, evaluating, and resolving conflicts between interests in renewed mining and interests in the expanding growth of urban and suburban uses of the land (Nevada County, 1995a). There are no policies in the Mineral Management Element that are relevant to the proposed project.

## **5.12.2 Environmental Impacts and Mitigation Measures**

### ***a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?***

**LESS THAN SIGNIFICANT.** The proposed project and the surrounding vicinity are located within a classified Mineral Resource Zone, MRZ-2b (S&G)<sup>A-6</sup>. This area is classified for sand and gravel resources of alluvial origin. However, there are no active or past mines on Banner Mountain, the location of the proposed project. The minor grading and excavation for the new tower foundations as part of construction activities would occur within the project site and would not result in any significant loss to sand and gravel resources that would be of value to the region and residents of California. Therefore, impacts would be less than significant. No mitigation is required.

### ***b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?***

**NO IMPACT.** As stated above, there are no active or past mines on Banner Mountain, the location of the proposed project. In addition, Banner Mountain does not have any important mineral resources delineated in the Nevada County General Plan. Therefore, the project would have no impact on any locally important mineral resource recovery sites.

## 5.13 Noise

### NOISE

#### Would the project result in:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.13.1 Setting

#### Existing Conditions

**Community Noise.** To describe environmental noise and to assess project impacts on areas that are sensitive to community noise, a measurement scale that simulates human perception is used. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that can be used to conveniently compare wide ranges of sound intensities.

Community noise levels can be highly variable from day to day as well as between day and night. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day-night period (Ldn). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually one hour. The L50, is the median noise level that is exceeded fifty per cent of the time during any measuring interval. The Ldn, or day-night average sound level, is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m. Community Noise Equivalent Level (CNEL) is another metric that is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. To easily estimate the day-night level caused by any noise source emitting steadily and continuously over 24-hours, the Ldn is 6.4 dBA higher than the source's Leq. For example, if the expected continuous noise level from equipment is 50.0 dBA Leq for every hour, the day-night noise level would be 56.4 dBA Ldn.

Community noise levels are usually closely related to the intensity of human activity. Noise levels are generally considered low when below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although

people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference. At 70 dBA, sleep interference effects become considerable (U.S. EPA, 1974).

**Noise Environment in the Project Area.** The project area is within a natural and rural residential area. Background data gathered for the Nevada County General Plan included noise monitoring results, measured in 1990, that showed noise levels along Idaho-Maryland Road were as high as 65 dB Ldn for locations within 77 feet of the centerline (Nevada County, 1991).

The Nevada County Air Park, east of Grass Valley, is approximately 2 miles southwest of the site. The noise levels near the air park runway were found to be above 55 dBA CNEL for locations within about one-quarter mile of the runway (Nevada County, 1991).

**Noise Sensitive Areas.** Private residences near the proposed staging and work areas and access road represent the nearest noise sensitive receptors. The nearest residential receptor would be located approximately 200 feet from the proposed construction and approximately 60 feet from the edge of the access road.

## Regulatory Background

Regulating environmental noise is generally the responsibility of local governments. The U.S. EPA once published guidelines on recommended maximum noise levels to protect public health and welfare (U.S. EPA, 1974), and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR, 2003). The following summarizes the local requirements.

**Nevada County General Plan.** The County General Plan includes a Noise Element (2014) that sets forth policies designed to discourage unnecessary and annoying environmental noise. The policies establish noise standards for land use categories, with rural districts being provided the greatest protections. The noise standards set forth in the General Plan are made enforceable by the County Code. However, the noise standards shall not apply to "those activities associated with the actual construction of a project or to those projects associated with the provision of emergency services or functions" (General Plan Policy 9.1.2).

**Nevada County Land Use and Development Code.** The County Land Use and Development Code contains a noise ordinance to ensure that future development minimizes unnecessary and annoying noise (Nevada County Code, Sec. L-II 4.1.7, Noise). The limits in the County Code for Rural land use categories are set at 55, 50, and 40 dBA Leq for average daytime, evening, and nighttime noise levels, respectively, and at 75, 65, and 55 dBA Lmax for peak daytime, evening, and nighttime noise levels, respectively. However, consistent with the General Plan, the standards in the County Code do not apply to construction activities or to projects associated with the provision of emergency services or functions [Sec. L-II 4.1.7(D)(8)].

### 5.13.2 Environmental Impacts and Mitigation Measures

- a. *Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

*DURING CONSTRUCTION, LESS THAN SIGNIFICANT.* The proposed project would result in a temporary increase in noise levels in the vicinity of the proposed construction activities, which include mobilizing construction equipment, crews, and materials, as necessary to rehabilitate the existing access roads, establish staging and work areas, install tower foundations, install the new tower, and restore the work areas. Some blasting or larger excavation equipment may be required due to hard bedrock encountered at the project site.

Construction noise would affect the locations closest to the staging and work areas and along the access road that would be used by haul trucks and other construction traffic. The surrounding land uses would experience a temporary increase in noise above the conditions that exist without the project. However, the intermittent and variable nature of construction noise limits the potential for adverse effects such as annoyance to be experienced for any single location, and sleep interference would not be a concern because activities would be limited to daylight hours. Construction would primarily occur Monday through Saturday (6 days a week) between 7:00 a.m. to 6:00 p.m., in accordance with all applicable local noise and traffic ordinances. The duration of this temporary noise increase would be approximately 150 days of work over 16 months and would cease upon completing site restoration.

Intermittent and continuous types of construction noises would have the potential to lead to a substantial increase. The characteristics of the noise would depend on the activity. For example, continuous noise would emanate from equipment used steadily during a workday, such as when a crane is positioning a structure or when a compressor is needed. The maximum intermittent noise levels from a construction work spread would typically range from 85 to 88 dBA when measured at 50 feet from the multiple equipment. Higher instantaneous peak noise levels of 90 dBA could be expected near the use of a rock hammer or jackhammer (FHWA, 2006). The equivalent continuous noise levels near active work could range up to about 84 dBA. Because sound fades over distance, these levels would diminish over the distances to noise sensitive residences and could be reduced further by intervening topography or structures. At 200 feet from a work spread, the equivalent continuous daytime noise levels would attenuate to about 72 dBA.

The local noise ordinance, as established by the standards in the County Code do not apply to construction activities or to projects associated with the provision of emergency services or functions [Nevada County Code, Sec. L-II 4.1.7(D)(8)]. Incremental noise from construction vehicles, equipment, and traffic noise would not represent a temporary substantial increase in the context of the project surroundings. As such, this impact would be less than significant. No mitigation is required.

*DURING OPERATION, LESS THAN SIGNIFICANT.* Operational noise would be generated by the limited activity necessary for occasional maintenance and repair, and the proposed project would not result in any notable incremental increase in O&M activities beyond those that occur for maintenance of the existing Banner Mountain communications tower and facilities. Accordingly, operation of the project would not result in a permanent substantial increase in noise levels, and this impact would be less than significant. No mitigation is required.

- b. *Would the project result in generation of excessive groundborne vibration or groundborne noise levels generation of excessive groundborne vibration or groundborne noise levels?***

*LESS THAN SIGNIFICANT.* Groundborne vibration levels from construction equipment and activities might be perceptible in the immediate vicinity of the staging or work areas. The activities that would be most likely

to cause groundborne vibration would be use of the rock hammer or jackhammer for site preparation and tower installation, and the passing of heavy trucks on uneven surfaces. Blasting would not be required for rock anchors. The impact from construction-related groundborne vibration would be short-term and confined to only the immediate area around activities (within about 25 feet). As work sites would be more than 25 feet from residences, no homes would be exposed to excessive vibration, and this impact would be less than significant. No mitigation is required.

***c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?***

*NO IMPACT.* The proposed project would be approximately 2 miles from the runway at the Nevada County Air Park. During development of the Nevada County General Plan, the noise levels near the air park runway were found to be above 55 dBA CNEL for locations within about one-quarter mile of the runway (Nevada County, 1991). Because the project would require no permanent staffing, the project would not expose people to noise from the airport. Similarly, no excessive noise would result from project operations that could impact noise levels experienced by people presently residing or working near the airport. As such, people would not be exposed to excessive aircraft noise, and there would be no impact.

## 5.14 Population and Housing

### POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.14.1 Setting

The total land area of Nevada County is 958 square miles. Of that total land area, 70 percent is privately owned and 30 percent is public lands. The incorporated areas of Grass Valley, Nevada City and Truckee are home to 33 percent of the county's population; the remaining 67 percent of residents live in outlying unincorporated areas (Nevada County, 2016).

The proposed project area is located in Land Use Zone RUR-5 (Rural with a 5-acre minimum parcel size) and in zoning district RA-5 (Residential Agricultural with a 5-acre minimum parcel size). The vicinity of the proposed project is not built-out and is primarily forest with scattered rural residences.

Table 5.14-1 provides existing conditions for Nevada County and Nevada City, CA (approximately 2.1 miles west/northwest of the proposed project location at the summit of Banner Mountain). There is no information for the unincorporated communities near Banner Mountain, such as Deer Creek Park, CA (less than two miles to the northeast of the summit).

**Table 5.14-1. Year 2017 Existing Conditions – Population, Housing, and Employment: City of Nevada City and County of Nevada**

Location	Population	Housing Units		Employment	
		Total Units	Vacancy Rate	Total Employed <sup>1</sup>	Unemployment Rate
Nevada City	3,226	1,545	8.0%	1,550	0.9%
Nevada County	99,155	53,745	22.5%	47,570	3.3%

1 - Accounts for population greater than 16 years of age and in Labor Force.

2 - Data unavailable.

Source: CA DOF, 2018; CA EDD, 2018.

### Regulatory Background

There are no federal or state regulations, plans, and standards for population and housing that apply to the proposed project.

#### Local

**Nevada County General Plan.** The Nevada County General Plan includes a Housing Element, which establishes specific goals and policies relative to the provision of housing and includes a five-year schedule of



actions to achieve this purpose. There are no goals or policies in the Housing Element that applies to the proposed project.

### 5.14.2 Environmental Impacts and Mitigation Measures

- a. *Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?***

*LESS THAN SIGNIFICANT.* There would be no direct population growth induced by the project, as it would not provide new housing and would not introduce any new personnel at the existing Banner Mountain communications tower and facilities. O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to that occurring under existing conditions. The approximately 20 project construction personnel are expected to be mostly, if not completely, derived from the local labor pool. Construction needs are not anticipated to result in workers relocating to the area. The proposed project would therefore generate neither a permanent increase in population levels nor a decrease in available housing.

The construction and operation of the new telecommunications tower would enhance the emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the area and would be used for communications by other State agencies as well. Greater communications capability could potentially facilitate development or increased employment opportunities to the regional workforce, but since the tower would facilitate remote communications, any potential development in the project area would be minimal. Impacts would be less than significant and no mitigation is required.

- b. *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?***

*NO IMPACT.* The proposed project would not be expected to result in an increase in population within the area. Construction is expected to take approximately 150 days over 16 months and would not require the permanent relocation of workers to the proposed project area. All the construction personnel (approximately 20 workers) would most likely be sourced from existing local labor force. Any non-regional workers are not expected to remain in the area after construction of the proposed project is completed.

O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to that occurring under existing conditions. Therefore, O&M would not introduce any new personnel at the existing Banner Mountain communications tower and facilities. The proposed project would not displace any housing and therefore would not necessitate the construction of replacement housing. Therefore, no impacts would occur.

## 5.15 Public Services

### PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.15.1 Setting

#### Fire Protection

Structural fire management and other types of wildland fire responsibilities in Nevada County are distributed among eight local fire districts, one water district, two City fire departments, CAL FIRE, the Bureau of Land Management (BLM), and the US Forest Service (USFS) (Nevada County, 2014). The proposed project area falls within a very high fire hazard severity zone within the State Responsibility Area (CAL FIRE, 2007). CAL FIRE, the project proponent, has responsibility for providing fire protection services to the project area on Banner Mountain.

#### Police Protection

The Nevada County Patrol is responsible for patrolling all of the unincorporated areas of Nevada County (Nevada County Sheriff's Office, 2016). Deputies assigned to the Patrol Division are the first to respond to any emergency in the Nevada County (Nevada County Sheriff's Office, 2018). Patrol Deputies are trained to handle and enforce any criminal, civil, or traffic related violation. The sheriff's main office is located at 950 Maidu Avenue Suite 280, Nevada City, CA 95959 (Nevada County Sheriff's Office, 2018), about 6 miles to the west by car from Banner Mountain.

#### Schools

The proposed project area is served by the Nevada City School District (Nevada County, 2014b). There are three schools in the District (Nevada City School District, 2018):

- Deer Creek Elementary School. The school is located at 805 Lindley Ave, Nevada City and houses transitional kindergarten through fourth grade students.
- Seven Hills Middle School. The school is located at 750 Hoover Lane, Nevada City, CA and teaches grades fifth-eighth.
- Nevada City Charter School. The school is located at 750 Hoover Lane, Nevada City, CA and teaches kindergarten through eighth grade.

Deer Creek Elementary School is closest to the project site; it is approximately 5.8 miles by car to the west of Banner Mountain.

### **Parks**

There are three recreation and park districts in Nevada County. Western Gateway Regional and Bear River are located in western Nevada County and Truckee Donner is located in eastern Nevada County. Western Gateway operates the Western Gateway Park, a large park offering a variety of recreational facilities. Bear River is a new District and currently operates the Magnolia Sports Complex in conjunction with the Pleasant Ridge School District (Nevada County, 1995). Bear River is closest to Banner Mountain at approximately 19 miles to the south.

Empire Mine State Park is located in Grass Valley, CA, approximately 9 miles southwest of Banner Mountain. The park consists of forested backcountry and 8 miles of trails, including trails used for hiking, mountain biking, and horseback riding (CA Parks, 2018). Other parks in the project vicinity are Pioneer Park and Nisenan Tribute Site in Nevada City. Tahoe National Forest is about 5 miles to the east of Banner Mountain. There are no parks within 0.25 mile of the proposed project.

### **Hospitals**

The main hospital in the project area is the Sierra Nevada Memorial Hospital, located at 155 Glasson Way, Grass Valley, CA. The hospital is located approximately 7 miles by car to the southwest of Banner Mountain. The hospital offers many services, including an emergency department, heart and vascular care, neurological care, and cancer care (Dignity Health, 2018).

### **Regulatory Background**

There are no federal regulations associated with public services that are relevant to the proposed project.

#### ***State***

**2010 Strategic Fire Plan for California.** The 2010 Strategic Fire Plan for California was developed in coordination with the State Board of Forestry and Fire Protection and CAL FIRE to reduce and prevent the impacts of fire in California. Goal 6 of the Plan sets objectives to determine the level of suppression resources (staffing and equipment) needed to protect private and public state resources. Specific objectives include, but are not limited to, maintaining an initial attack policy which prioritizes life, property, and natural resources; determining suppression resources allocation criteria; analyzing appropriate staffing levels and equipment needs in relation to the current and future conditions; increasing the number of CAL FIRE crews for fighting wildfires and other emergency response activities; maintaining cooperative agreements with local, state, and federal partners; and implementing new technologies to improve firefighter safety, where available (State Board of Forestry and Fire Protection). The standards outlined are applicable to the fire protection agency serving the Banner Mountain area in the County of Nevada.

#### ***Local***

**Nevada County General Plan.** The Safety Element of the Nevada County General Plan addresses natural and manmade potential safety hazards (Nevada County, 2014a). The following policies are relevant to the proposed project:

- **Policy SF-10.6.1.** Maintain appropriate levels of safety and protection services and facilities on land and water for both Community and Rural Regions.

- **Policy FP-10.7.5.** Encourage fire protection agencies to determine appropriate levels of fire protection facilities and services for both Community and Rural Regions.
- **Policy FP-10.7.6.** Encourage the upgrading of facilities within existing fire protection districts, and encourage the expansion of existing districts where warranted by the population density allowed under the General Plan.
- **Policy FP-10.7.7.** Cooperate with CAL FIRE, US Forest Service, local fire districts, and the Nevada County Fire Safe Council in fire prevention programs.

### 5.15.2 Environmental Impacts and Mitigation Measures

***Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:***

#### ***a) Fire protection?***

*LESS THAN SIGNIFICANT.* Construction and operation of the new telecommunications tower would not result in an increased fire risk. The proposed project area, while in a very high fire hazard severity zone as designated by CAL FIRE, would continue to be supported by the existing fire protection services and the construction and operation of the proposed project would not induce growth in the project area. The fire risk from the proposed project would not create the need for new or physically altered fire protection facilities. In addition, operation and maintenance would not affect the ability of fire personnel to respond to fires. Overall, impacts on local or regional fire protection would be less than significant. No mitigation is required.

#### ***b) Police Protection?***

*LESS THAN SIGNIFICANT.* The proposed project would not require police services during construction or operation and maintenance beyond routine patrols and response at the level currently provided. As with fire protection services discussed in Item (a) above, the construction and operation of the proposed project would not induce growth in the project area, result in a need for additional police facilities, or significantly affect response times or other service performance. Any potential impacts to police protection services would result in a less than significant impact. No mitigation is required.

#### ***c) Schools?***

*LESS THAN SIGNIFICANT.* The proposed project would not be expected to result in an increase in population within the area. The proposed project would not be expected to result in an increase in population within the area. Construction is expected to take approximately 150 days over 16 months and would not require the permanent relocation of workers to the proposed project area. All the construction personnel (approximately 20 workers) would most likely be sourced from existing local labor force. Any non-regional workers are not expected to remain in the area after construction of the proposed project is completed. There would not be an expected increase in families or in school-age children as a result of the temporary construction activities or any workers who might temporarily migrate to the area.

O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to that occurring under existing conditions. Therefore, O&M would not introduce any new personnel at the existing Banner Mountain communications tower and facilities. Therefore, no additional

staff would be required after project construction work is completed. The proposed project would result in a less than significant impact related to requiring expanded schools. No mitigation is required.

**d) Parks?**

*LESS THAN SIGNIFICANT.* The required construction workforce for the project would likely be hired from the available regional workforce. There would potentially be temporary in-migration that would increase the local population during construction; however, it would not warrant the need for new or expanded parks and recreational facilities within the project area. Although some workers may use recreational areas during project construction, increased use would be minimal and/or temporary and would not contribute substantially to the physical deterioration of existing facilities. Less than significant impacts would occur and no mitigation is required. Park and other recreational facilities are discussed in detail in Section 5.16, Recreation.

**e) Other Public Facilities?**

*LESS THAN SIGNIFICANT.* Project construction has the potential to temporarily increase the number of people in communities in the project vicinity. However, public facilities, such as local area emergency medical facilities, are expected to adequately handle a potential small, temporary increase in the local population. Therefore, potential impacts on other public facilities would be less than significant. No mitigation is required.

## 5.16 Recreation

### RECREATION

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.16.1 Setting

The project area is known for a wide range of recreational activities, such as hiking, fishing, camping, biking, gold panning, boating, golfing, snow sports and off-road ATVs and snowmobiles. Nevada City is popular by recreationists as an access point to the surrounding parks and public lands. Banner Mountain itself has hiking trails, such as the Cascade Canal Trail.

In Nevada County, there are three recreation and park districts (Nevada County, 1995). Western Gateway Regional and Bear River are located in western Nevada County and Truckee Donner is located in eastern Nevada County. Of these County parks, Bear River is closest to Banner Mountain at approximately 19 miles to the south. Bear River operates the Magnolia Sports Complex in conjunction with the Pleasant Ridge School District (Nevada County, 1995).

Empire Mine State Historic Park, located near Grass Valley and approximately 9 miles southwest of Banner Mountain, is the closest State Park. The nearly 850-acre park consists of forested backcountry and eight miles of trails, including trails used for hiking, mountain biking, and horseback riding (CA Parks, 2018). The park welcomes around 100,000 visitors annually.

The Tahoe National Forest covers approximately 169,000 acres of land in Nevada County. The Toiyabe National Forest covers 2,600 acres in eastern Nevada County. The Spenceville Wildlife and Recreation Area contains 11,000 acres, with half of its area in Nevada County and the other half in Yuba County (Nevada County, 1995).

In addition to the public lands, Nevada County supports a variety of private and commercial recreational facilities. These include ski areas and resorts, golf courses, and campgrounds (Nevada County, 1995). Nevada County also has a relatively large network of informal dirt trails that have been historically used for transportation and recreation (Nevada County Planning Department, 2010). The majority of existing trails in western Nevada County are located on federal land operated by the U.S. Forest Service and the Bureau of Land Management, on State land operated by the California Departments of Parks and Recreation and Fish and Wildlife, on land managed by the Cities of Grass Valley and Nevada City, and on easements held by the Nevada County Land Trust or other nonprofit organizations (Nevada County Planning Department, 2010).



## Regulatory Background

There are no federal or State regulations associated with recreation that are relevant to the proposed project.

### *Local*

**Nevada County General Plan – Recreation Element.** The Recreation Element of the Nevada General Plan addresses the many recreational facilities and activities in Nevada County. The Recreation Element does not contain policies relevant to the proposed project.

**Western Nevada County Non-Motorized Trails Master Plan.** The Western Nevada County Non-Motorized Trails Master Plan was developed to guide the review of discretionary projects, including but not limited to, Subdivisions, Use Permits, and Development Permits, in Western Nevada County and is intended to be a tool for the Nevada County Planning Department and decision-makers to work with developers to provide recreational trails consistent with a regional system (Nevada County Planning Department, 2010). The Western Nevada County Non-Motorized Trails Master Plan does not contain policies relevant to the proposed project.

## 5.16.2 Environmental Impacts and Mitigation Measures

***a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?***

*LESS THAN SIGNIFICANT.* Construction and operation of the new communications tower would not be expected to result in an increase in population within the area. Construction is expected to take approximately 150 days over 16 months and would not require the permanent relocation of workers to the proposed project area. All construction personnel (approximately 20 workers) would most likely be sourced from existing local labor force. Any non-regional workers are not expected to remain in the area after construction of the proposed project is completed. Although some workers may use recreational areas during project construction, increased use would be minimal and/or temporary and would not contribute substantially to the physical deterioration of existing facilities. Less than significant impacts would occur. Consequently, the proposed project would not increase any long-term demands on existing parks or recreational facilities in the project area, and no new or expanded park facilities would be required because of the proposed project. No mitigation is required.

***b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?***

*NO IMPACT.* The proposed project does not include recreational facilities, nor does it require the construction of new or expanded parks or recreational facilities that could create an adverse physical effect on the environment. There would be no impact.

## 5.17 Transportation

### TRANSPORTATION

#### Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.17.1 Setting

The proposed project would use regional and local roadways, primarily State Route (SR-) 49, SR-20, Banner Lava Cap Road, and Quaker Hill Cross Road, for accessing the project work area on Banner Mountain during construction. Direct site access would occur via existing roads where CAL FIRE has leased access and maintenance agreements in place. Baseline conditions of regional and local roadways likely used to access the proposed project area and those temporarily affected by proposed project construction activities are discussed below.

#### Highways

During the construction season, access to the proposed project area would be via SR-40 and SR-20, which would be used to access Idaho Maryland Road, which becomes Banner Lava Cap Road and permits access to the project site from the south, and Red Dog Road, which becomes Quaker Hill Cross Road and permits access to Banner Lava Cap Road and the project site from the north. At the Grass Valley and Idaho Maryland Road intersection of SR-20, the 2016 average daily traffic (ADT) volume on SR-20 was 48,200 vehicles per day (Caltrans, 2016). At the Junction of SR-49 and SR-20 in Nevada City, which provides access to Red Dog Road, the 2016 ADT volume was 16,200 vehicles per day (Caltrans, 2016). The 2016 ADT volumes are the most recently published data.

#### Mass Transit

The nearest mass transit system is the Golden Country Stage bus system located in Nevada City (Nevada County, 2018b), approximately 2.1 miles west/northwest of Banner Mountain.

#### Air Transportation

The Nevada County Airport is the closest airport to the project site at Banner Mountain. The Nevada County Airport is located approximately 2.7 miles southwest from Banner Mountain. There is currently no commercial air service from the Nevada County airport, but charter flights are available (Nevada County 2018a). Potential safety hazards of the project related to the airport is discussed in Section 5.9 (Hazards and Hazardous Materials).

## Rail

The Southern Pacific railroad owns and operates one set of tracks that follows Interstate 80, about 7.5 miles south of Banner Mountain along the southern border of Nevada County. The rail line is used for the shipment of goods and provides passenger service with a mid-day train in each direction between Chicago and San Francisco providing service to Sacramento, Roseville, Colfax, Truckee, and Reno (Nevada County, 2010). It is the closest railway system to the project site.

## Bicycle

Bicycle, pedestrian, and equestrian trails geared primarily towards recreation are located throughout Nevada County. There are no bicycle, pedestrian, and equestrian trails in the immediate vicinity of the project site.

## Regulatory Background

There are no applicable federal regulations related to transportation.

### State

**California Vehicle Code (CVC).** The CVC includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

**Caltrans Guide for the Preparation of Traffic Impact Studies (TIS).** TIS identifies the following criteria as a starting point in determining when a TIS is needed for a project (Caltrans, 2002):

1. *Generates over 100 peak hour trips assigned to a State highway facility.*
2. *Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS C or D).*
3. *Generates 1 to 49 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing significant delay; unstable or forced traffic flow conditions (LOS E or F).*

Applicable Caltrans highways include State Highway 96. As stated in Caltrans' *Guide for the Preparation of Traffic Impact Studies*, a TIS may be as simple as providing a traffic count to as complex as a microscopic simulation (Caltrans, 2002). (Because the proposed project does not result in traffic after the construction period, the need for a separate full TIS analysis is not warranted and was not prepared. The analysis provided in Section 3.16.1 compares project trips against the existing volumes and capacities of affected roadways. This level of analysis is considered consistent with the *Guide for the Preparation of Traffic Impact Studies*).

### Local

**Nevada County General Plan – Circulation Element.** The Circulation Element of the Nevada County General Plan is intended to address circulation and capacity needs, safety and emergency access, and non-motorized transportation in the County (Nevada County, 2010). There are no policies in the Circulation Element that are relevant to the proposed project.

## 5.17.2 Environmental Impacts and Mitigation Measures

***a. Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?***

*NO IMPACT.* The proposed project would result in temporary traffic trips during construction. Truck trips associated with materials and equipment deliveries would likely be distributed throughout the workday. Temporary construction worker commute trips are assumed to come from the local area or from the greater Sacramento area. While temporary trips would occur on regional and local roadways, the project would not generate traffic volumes that would significantly diminish the performance of the circulation system. When daily construction trips are added to the ADT volumes of project area freeways, only minor increases to the existing ADT volumes are anticipated. Once constructed, operation and maintenance of the project would generate very few vehicle trips. Therefore, temporary and permanent traffic volumes associated with the project would not conflict with any State (refer to Caltrans TIS guidelines identified earlier) or local program pertaining to performance of the circulation system and less than significant impacts would occur.

All construction disturbance would be on State land within the project site and primarily localized around the work area only. While vehicle trips would occur on access roads where CAL FIRE has leased access and maintenance agreements in place and local roads, the project would not impact any County program plan, ordinance, or policy related to transit, bicycle, or pedestrian facilities in the vicinity of Banner Mountain. There would be no impact to such facilities.

***b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?***

*LESS THAN SIGNIFICANT.* As discussed in CEQA Guidelines Section 15064.3(b.3), a qualitative analysis of construction traffic vehicle miles travelled (VMT) may be appropriate. As discussed, temporary construction worker commute trips are assumed to come from the local area or from the greater Sacramento area. Truck trips associated with materials and equipment deliveries are expected to originate from the greater Sacramento area, with some materials trips likely originating from the Port of San Francisco. While some construction truck trips may require high VMT to access the project site, they would be temporary trips and only in limited volumes necessary to deliver equipment and materials to the site. Upon completion of construction, all worker commute trips and truck trips would cease. Long-term operation and maintenance of the project would generate very few vehicle trips, most coming from within the local area. At this time, no known applicable VMT thresholds of significance for temporary construction trips that may indicate a significant impact are known. Therefore, while the proposed project would include temporary construction trips that may include high VMT, they would not affect existing transit uses or corridors and are presumed to cause a less than significant transportation impact. No mitigation is required.

***c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?***

*LESS THAN SIGNIFICANT.* All construction disturbance would be on State land within the project site and primarily localized around the work area only. The project does not include the modifications to any public roadways or driveways. Typical pre-construction activities associated with rehabilitation of existing access roads include recompacting to fill potholes. These road modifications would not result in increased hazards, but would instead likely result in beneficial impacts with respect to roadway hazards and safety.

During construction, oversize truck trips are expected to deliver large pieces of construction equipment and communications tower materials to the site. All oversized truck trips would require obtaining permits from Caltrans and local jurisdictions, as needed. The construction contractor would follow all rules and

requirements of such permits. Impacts due to increased hazards associated with the project would be less than significant and no mitigation is required.

***d. Would the project result in inadequate emergency access?***

*LESS THAN SIGNIFICANT.* As discussed, portions of the existing access road system may require maintenance or repair prior to construction. Additionally, oversize truck trips are expected to deliver large pieces of construction equipment and communications tower materials to the site. These activities may require brief temporary roadway or lane closures/disruptions on local roads providing access to the site. Any road repairs on public roadways would include flagmen to ensure traffic flow, including emergency vehicle flow through the area and access to any nearby residences or areas, would not be impacted. In addition, all oversized truck trips would require obtaining permits from Caltrans and local jurisdictions, as needed. The construction contractor would follow all rules and requirements of such permits. These permits include assurances for emergency vehicle movements and access. Impacts during construction would be less than significant. No mitigation is required.

Once operational, the proposed project is intended to facilitate emergency communications and it would have no impact on access or movement to emergency service providers. O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to that occurring under existing conditions, which include access road maintenance, inspections, tower checks, and necessary equipment replacement. Minimal maintenance of the project components is anticipated after completion of project construction and would not result in any impacts to roadways. Therefore, maintenance of the proposed project would have no impact to emergency vehicle access and movements.

## 5.18 Tribal Cultural Resources

### TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
(i) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.18.1 Setting

Tribal Cultural Resources (TCRs), as defined under Assembly Bill 52 (AB 52) are resources that include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a California Native American tribe. Tribal representatives are considered experts appropriate for providing substantial evidence regarding the locations, types, and significance of TCRs within their traditional and cultural affiliated geographic areas, and therefore the identification and analysis of TCRs should involve government-to-government tribal consultation between the CEQA lead agency and interested tribal groups and/or tribal persons (Public Resources Code [PRC] §21080.3.1(a)).

Additionally, best practices show that a lead agency should make a good faith effort to identify TCRs that may be impacted by a project even if a Native American tribe does not identify any during consultation. This includes requesting a search of the Native American Heritage Commission's (NAHC) Sacred Lands file, conducting ethnographic research, and using information that has been previously provided during tribal consultation for other projects in the area.

### Records Search and Pedestrian Survey Results

As documented in Section 5.5 (Cultural Resources), the records search identified one sensitive historical resource within the project area (29-002534); however, no unique archaeological resources were identified in the project area or within the 1/8-mile surrounding radius.

To evaluate the potential for cultural remains, a systematic intensive archaeological pedestrian survey of the project area and 30-meters adjacent to the project area was completed. The survey consisted of an opportunistic survey, depending on topography and proximity to existing developed structures. Evidence of past human occupation and use of the area was searched for carefully by observing the ground surface



for any changes in soil discoloration or cultural materials. Objects that typically would suggest human use of the area include stone tools, beads, ground stone, historic cans, and other historic debris. Archaeological subsurface testing was not conducted. Attention was given to observing the ground surface for indication of buried human remains present in the project area. Joshua Noyer, MA, a qualified archaeologist per the Secretary of the Interior's Qualification Standards for Professional Archaeology, performed the pedestrian survey on June 26, 2018. No archaeological resources were identified and one historic resource, the Banner Mountain Fire Lookout Station (P-29-2534), is discussed in Section 5.5 (Cultural Resources).

## Ethnography

The project lies within the ethnographic territory of the Hill Nisenan, an ethnographic branch of the Southern Maidu. The Nisenan linguistically are grouped with the Northern Maidu and Konkow within the Penutian family (Riddell 1978:387). Kroeber (1929) distinguished three dialects within the larger territory occupied by the Nisenan, but Riddell indicated more distinctions are possible. Wilson and Towne (1978) distinguished several "centers," presumably linguistic and social groupings.

The Nisenan occupied a region encompassing the American, Bear, southern Feather and Yuba River drainages. Hydrologic and geologic boundaries generally included the Sacramento River on the west, the Feather River on the northwest, probably the Yuba on the north, the north side of the Cosumnes on the south and the crest of the Sierras on the east. Nisenan political organization was based on territorial ownership. "Nisenan" means 'from among us', or 'of our side' (Wilson & Towne 1978). They resided in several different settlements while still referring to themselves as one distinct political unit, a "tribelet" according to Kroeber (1925). Each tribelet usually had one principal village and several allied subsidiary villages. In the foothills, villages were located on ridges and on flats, especially those with southern exposure, near major streams. Village areas for the Hill Nisenan were located at lower elevations where habitation was easier in the winter. The upper elevations were the scene of warm weather hunting and gathering, the people moving about and utilizing small campsites; thus, the general clustering of large village sites in the foothill Nevada City/Grass Valley area, with its milder winters, and no valley fog. The foothill area also had more water in the warmer summer months than did the adjacent lower foothills bordering the valley.

Nisenan subsistence was patterned around the seasonal gathering of a multitude of plant and animal resources. Plant food sources consisted of acorns (especially those of the Black oak), roots, grasses, herbs, berries, fruits and seeds. Game animals taken by snare, net or arrow included deer, antelope, rabbit, elk, birds, salmon and other fish. Although they were not domesticators, a certain amount of 'plant enhancement' occurred, primarily by using the practice of careful burning to enhance new plant growth and to allow more visibility for hunting. Some plants, especially those used for basketry, were 'encouraged' by removal of weeds and probably by water implementation. Deer and rabbits were hunted in drives, often by members of several villages. Smaller animals such as woodrats, field mice and squirrels were also an important food source (Gardner, 1977). Some birds were netted and eaten while others, such as hawks, eagles and flickers, were used only for their feathers. Fish were taken by use of soaproot poison or with bi-pointed hooks. Rabbits and medium-sized birds were covered with mud and steam-roasted, small animals and birds were cooked in their skins or skinned, dried and pounded into powder. Grasshoppers were trapped in pits, then smoked and steamed in grape leaves (Wilson, 1972).

## **Tribal Outreach**

There are currently no tribes or tribal representatives with cultural affiliations to the project area that have previously contacted CAL FIRE in writing to request to be notified of projects. Therefore, pursuant to Public Resources Code 21080.3.1. (a), the State has fulfilled its legal obligations under AB 52.

However, Aspen Environmental Group, on behalf of DGS, contacted the Native American Heritage Commission requesting a list of tribes who may have an interest in communicating with DGS regarding ancestral or traditional resources within the project. Therefore, on August 21, 2018, DGS mailed courtesy notifications to the following tribes requesting input on potential cultural resources within the project area: Tsi Akim Maidu; United Auburn Indian Community of the Auburn Rancheria; and Washoe Tribe of Nevada and California. This request was not part of any formal local, State, or federal government-to-government consultation process. No responses were received from tribes.

The proposed project's effects on potentially buried and therefore presently unidentified TCRs was evaluated using the significance criteria set forth in Appendix G of the CEQA Guidelines and with consideration to AB 52 and the Governor's Office of Planning and Research's, "Revised Technical Advisory: AB 52 and Tribal Cultural Resources in CEQA" (OPR, 2017).

## **Sacred Lands File Search**

On May 21, 2018, Aspen Environmental Group requested a search of the Native American Heritage Commission's (NAHC) Sacred Lands File database to determine the presence or likelihood of encountering TCRs within the project area. On May 29, 2018, the NAHC responded that the search was completed with negative results for known sacred sites or TCRs as defined by the CEQA within the Banner Mountain project area or surrounding ¼-mile radius.

## **Regulatory Background**

There are no federal regulations associated with TCRs that are relevant to the proposed project.

### ***State***

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the proposed project and impact analysis from a state perspective. These laws identify four types of resources: historical resources, unique archaeological resources, human remains, and tribal cultural resources (TCRs). Please see Section 5.5, Cultural Resources, for more details about potentially relevant state regulations.

**Assembly Bill 52.** AB 52 requires consultation with a tribe that is traditionally and culturally affiliated to the geographic area where a project is located if the tribe has requested consultation regarding projects in the tribe's area of traditional and cultural affiliation. The Public Resources Code section 21074 defines a TCR as "a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe." TCRs also include "non-unique archaeological resources" that may not be scientifically significant, but still hold sacred or cultural value to a consulting tribe.

**California Environmental Quality Act.** CEQA requires that impacts to TCRs be identified and, if impacts will be significant, that mitigation measures be implemented to reduce those impacts to the extent feasible (PRC § 21081). In the protection and management of the cultural environment, both the statute and the CEQA Guidelines provide definitions and standards for management of TCRs.

A resource is considered significant if it is: (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PCR § 5020.1(k); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in of PCR § 5024.1(c). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

A project may have substantial adverse change in the significance of a TCR if:

- *The adverse change is identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (PCR § 21084.2).*
- *The resource is listed, or eligible for listing, in the California Register of Historical Resources or in a local register of historical resources, and it is demolished as described in detail above (State CEQA Guidelines section 15064.5 (b)).*

The fact that a TCR is not listed in or determined to be ineligible for listing in the CRHR, is not included in a local register of historical resources, or is not identified in a historical resources survey does not preclude a lead agency from determining that the resource may be a historical resource.

#### **Local**

**Nevada County General Plan.** The Nevada County General Plan contains a Cultural Resources Element that addresses the preservation of cultural resources in the County for progeny. The following policy in the Cultural Resources Element is relevant to the proposed project (Nevada County, 1995):

- **Policy 19.7.** Cooperate with local historical societies and the Native American Indian community to protect significant historical, cultural and archaeological artifacts, improve access to and interpretation of unrestricted resources and archaeological history by involving them in the development review process.

### **5.18.2 Environmental Impacts and Mitigation Measures**

- a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:***

- (i) *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?***

**LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.** There are no known TCRs that are listed in, or are known to be eligible for listing in, the CRHR or local register of historical resources within the proposed project site or within 0.25 mile of the project site. Although there is no evidence that TCRs exist within the proposed project site, it is possible that previously unidentified TCRs that may be eligible for inclusion in the NRHP, CRHR, or local registers could be discovered and damaged, or destroyed, during ground disturbance, which would constitute a significant impact absent mitigation. Implementation of Mitigation Measure TCR-1 would evaluate and protect unanticipated TCR discoveries, thereby reducing this impact to a less than significant level after mitigation.

### **Mitigation Measure for Unanticipated Tribal Cultural Resources**

**MM CR-2**      **Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources** [see full text under Section 5.5, Cultural Resources]

***(ii) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* No known TCRs were identified during a search of the NAHC's Sacred Lands File, or during ethnographic research, and Native American tribes did not request to be notified of projects pursuant to AB 52, and thus did not participate in government-to-government consultation to identify TCRs present. Nevertheless, it is possible that previously unidentified TCRs that may qualify as a significant resource according to lead agency determination could be discovered and damaged, or destroyed, during ground disturbance. Such a discovery or inadvertent damage/destruction to a previously unknown TCR would constitute a significant impact absent mitigation. Implementation of Mitigation Measures TCR-1, which is discussed under Item (a), would evaluate and protect unanticipated TCR discoveries, thereby reducing this impact to a less than significant level.

### **Mitigation Measure for Unanticipated Tribal Cultural Resources**

**MM CR-2**      **Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources** [see full text under Section 5.5, Cultural Resources]

## 5.19 Utilities and Service Systems

### UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.19.1 Setting

#### Utilities

##### *Water Supply*

Water in the area of Banner Mountain is served by the Nevada Irrigation District (NID) (NID, 2018b). Water from NID is sourced from Mountain Division reservoirs. The water is used to generate power for NID and Pacific Gas and Electric Company (PG&E) as it flows down before supplying NID customers in southern Nevada County and Placer County (NID, 2018a).

##### *Electricity and Natural Gas*

PG&E provides electrical and gas services in the project area (PG&E, 2014). Privately-owned propane tanks, solar energy generators, or electrical generators may also be used.

#### Service Systems

##### *Sewerage/Wastewater*

There is no sewer collection facility or wastewater treatment provider that serves the unincorporated area in the vicinity of Banner Mountain. Wastewater treatment systems are primarily privately owned and operated.

### ***Solid Waste Disposal***

Waste Management, Inc., contracts with the County to provide solid waste and recyclable materials collection, transfer, and disposal services to its customers, including residential, commercial, and industrial. Waste Management operates the McCourtney Road Transfer Station, North San Juan, and Town of Washington rural transfer stations and recycling programs in Nevada County (Nevada County, 2018).

Two active, permitted solid waste disposal facilities are available in western Nevada County. The McCourtney Road Transfer Station is located at 14741 Wolf Mountain Road Grass Valley, CA and is closest to Banner Mountain. The transfer station has a maximum throughput of 180 tons per day and a permitted capacity of 64,800 tons per year (CalRecycle, 2018b). The Bear River Debris Management Site is located at 12022 & 12270 La Barr Meadows Rd. Grass Valley, CA and has a maximum permitted throughput of 300 tons per day (CalRecycle, 2018a).

### **Regulatory Background**

There are no federal regulations associated with utilities and service systems that are relevant to the proposed project.

#### ***State***

**California Government Code – Protection of Underground Infrastructure.** The responsibilities of California utility operators working in the vicinity of utilities are detailed in Section 1, Chapter 3.1, “Protection of Underground Infrastructure” (Article 2 of California Government Code §§4216-4216.9). This law requires that an excavator must contact a regional notification center at least two days prior to excavation of any subsurface installation. Any utility provider seeking to begin a project that may damage underground infrastructure can call Underground Service Alert, the regional notification center. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area. The code also requires excavators to probe and expose underground facilities by hand prior to using power equipment.

**California Integrated Waste Management Act of 1989.** Assembly Bill 939 codified the California Integrated Waste Management Act of 1989 in the Public Resources Code and established a hierarchy to help the California Integrated Waste Management Board (CIWMB) and local agencies implement three major priorities under the Integrated Waste Management Act: source reductions; recycling and composting; and environmentally safe transformation and land disposal. Waste diversion mandates are included under these priorities. The duties and responsibilities of the CIWMB have since been transferred to the California Department of Resources Recycling and Recovery (CalRecycle) after the abolishment of the CIWMB in 2010, but all other aspects of the Act remain unchanged.

The Act requires all local and county governments to adopt a waste reduction measure designed to manage and reduce the amount of solid waste sent to landfills. This Act established reduction goals of 25 percent by the year 1995 and 50 percent by the year 2000. Senate Bill 1016 (2007) streamlines the process of goal measurement related to Assembly Bill 939 by using a disposal-based indicator: the per capita disposal rate. The per capita disposal rate uses only two factors: the jurisdiction’s population (employment can be considered in place of population in certain circumstances) and the jurisdiction’s disposal as reported by disposal facilities. CalRecycle encourages reduction measures through the continued implementation of reduction measures, legislation, infrastructure, and support of local requirements for new developments to include areas for waste disposal and recycling on-site.

**California Code of Regulations (Title 27).** Title 27 (Environmental Protection) of the California Code of Regulations defines regulations and minimum standards for the treatment, storage, processing, and dis-



posal of solid waste at disposal sites. The State Water Resources Control Board maintains and regulates compliance with Title 27 (Environmental Protection) of the California Code of Regulations by establishing waste and site classifications and waste management requirements for solid waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment units. The compliance of the proposed project would be enforced by the Central Valley RWQCB Region 5 and the California Department of Resources Recycling and Recovery (CalRecycle) (formerly the California Integrated Waste Management Board). Compost facilities are regulated under CCR Title 14, Division 7, Chapter 3.1 Section 17850 through 17895, by CalRecycle. Permit requests, Reports of Waste Discharge, and Reports and Disposal Site Information are submitted to the RWQCB and CalRecycle, and are used by the two agencies to review, permit, and monitor these facilities.

### **Local**

**Nevada County General Plan.** The Nevada County General Plan includes a Public Facilities and Services Element, which addresses the provision of adequate public services to a diverse and growing county and the correlation of service needs with economic and population growth and maintaining these for the long-term development of the County. The following policies generally apply to the proposed project (Nevada County, 1995).

- **Policy 3.19A.** For all discretionary development, increases in stormwater runoff due to new development, which could result in flood damage to downstream residences, commercial, industrial, active natural resource management uses (i.e., farming, ranching, mining, timber harvesting, etc.), public facilities, roads, bridges, and utilities shall not be permitted. Required retention/detention facilities, where necessary, shall be designed such that the water surface returns to its base elevation within 24 hours after the applicable storm event. The sizing of such facilities, when needed, shall be based upon the protection of downstream facilities.
- **Policy 3.21.** Where water, sewer, and other underground utilities are extended through undeveloped natural areas, consideration shall be given to restoration of areas of cut, back-fill, and grading. All surfaces shall be revegetated with appropriate ground covers and plant materials.

## **5.19.2 Environmental Impacts and Mitigation Measures**

- a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?***

**LESS THAN SIGNIFICANT.** The proposed project involves upgrading/supplementing CAL FIRE's telecommunications infrastructure with a new telecommunications tower to support the State's PSMN and continue to provide an essential emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the area. The existing project site at the summit of Banner Mountain is developed and cleared of vegetation. There are several existing buildings, a tank, a generator, concrete footings, a telecommunication tower, and a CAL FIRE lookout tower.

Upon completion of construction activities and testing of project components, all disturbed work areas (including access roads) would be restored to prior conditions. Since the project involves the replacement of an existing telecommunications tower at a previously disturbed site that is generally clear of vegetation and with the plans for restoration, no significant environmental impacts would result from project construction activities. The project does not require and would not result in the relocation or construction of any new or expanded water, wastewater treatment or storm water drainage, electric power, or natural gas facilities. Overall, the project would have less than significant impact. No mitigation is required.

***b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?***

*LESS THAN SIGNIFICANT.* The project does not require a permanent, long-term water source. Water would be used as needed for dust control during construction and concrete, and would be obtained from offsite water purveyors. A water truck would deliver water to the work area during site preparation and tower installation. Upon completion, the proposed project would not generate any demand for water. Overall, the proposed project would not be expected to exceed the existing water supplies available to serve the proposed project and reasonably foreseeable future development during normal, dry and multiple dry years, and this impact would be less than significant. No mitigation is required.

***c. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?***

*NO IMPACT.* There is no sewer collection facility or wastewater treatment provider that serves the unincorporated area in the vicinity of Banner Mountain. Water would be used as needed for dust control during construction and this water would either evaporate or absorb into the ground. During construction, restroom facilities would be provided by portable units to be serviced by licensed providers. During operation, minimal water would be required, and no wastewater would be generated. Overall, since no wastewater treatment provider services the area, there would be no impact.

***d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?***

*LESS THAN SIGNIFICANT.* Soil spoils from the new tower foundations excavation would be the main source of solid waste generated by construction. Spoils from foundation excavations would be placed within the project site, used as fill, or spread on adjacent existing access roads. The amount of waste materials for disposal generated as a result of construction activities is anticipated to be minor compared to the capacity of the McCourtney Road Transfer Station or locally used landfills. No solid waste would be generated as a result of operation or maintenance of the project. Therefore, the project would not generate solid waste in excess of State or local standards, in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; any impacts would be less than significant. No mitigation is required.

***e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?***

*NO IMPACT.* The California Integrated Waste Management Act of 1989, which emphasizes resource conservation through the reduction, recycling, and reuse of solid waste guide solid waste management requires that localities conduct a Solid Waste Generation Study (SWGS) and develop a Source Reduction Recycling Element (SRRE). The proposed project would operate in accordance with these applicable Solid Waste Management Policy Plans by including recycling where feasible. As identified in Item (d) above, the disposal site serving the project would have sufficient capacity to accommodate project construction solid waste disposal needs, and project solid waste disposal would not require the need for new or expanded landfill facilities. Therefore, the proposed project would comply with federal, State, and local statutes and regulations related to solid waste disposal limits and landfill capacities. No impact would occur.

## 5.20 Wildfire

### WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, **would the project:**

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

### 5.20.1 Setting

Generally, the fire season in Nevada County extends from early spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in the air. These conditions, when combined with high winds and years of drought, increase the potential for wildfire to occur. Potential losses from wildfire include: human life, structures and other improvements; natural and cultural resources; the quality and quantity of the water supply; other assets such as timber, range and crop land, and recreational opportunities; and economic losses. In addition, catastrophic wildfire can lead to secondary impacts or losses such as future flooding landslides during the rainy season (Nevada County, 2014).

There are three major factors that sustain wildfires and predict a given area's potential to burn: fuel, topography, and weather (Nevada County, 2014). Wildfire risk is predominantly associated with Wildland-Urban Interface (WUI) areas. WUI applies to development that is interspersed or adjacent to landscapes that support wildland fire. A fire along this wildland/urban interface can result in major property and structure loss (Nevada County, 2014).

The project site is located at the summit of Banner Mountain. The area surrounding the Banner Mountain summit is largely undeveloped forest with steep terrain. The proposed project area falls within a very high fire hazard severity zone within the State Responsibility Area (CAL FIRE, 2007). CAL FIRE, the project proponent, has responsibility for providing fire protection services to the project area on Banner Mountain.

### Regulatory Background

#### *Federal*

**Federal Wildland Fire Management Policy.** The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a federal multi-agency group

that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. Guidance for Implementation of Federal Wildland Fire Management Policy was issued in 2009. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation guidance are founded on the following guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

### ***State***

**California Fire Code.** The California Fire Code is contained within Chapter 9 of Title 24 of the California Code of Regulations (CCR). Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

**California Health and Safety Code.** State fire regulations are established in Section 13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Section 13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

**California Fire Plan.** The California Fire Plan is the statewide plan for reducing the risk of wildfire. The basic principles of the Fire Plan are as follows:

- Involve the community in the fire management planning process
- Assess public and private resources that could be damaged by wildfires
- Develop pre-fire management solutions and implement cooperative programs to reduce community's potential wildfire losses.

One of the more important objectives of the plan regards pre-fire management solutions. Included within the realm of pre-fire management solutions are fuel breaks, the establishment of Wildfire Protection Zones, and prescribed fires to reduce the availability of fire fuels. In addition, the Fire Plan recommends

that clearance laws, zoning, and related fire safety requirements implemented by state and local authorities address fire-resistant construction standards, hazard reduction near structures, and infrastructure.

**Public Resources Code 4291.** Public Resources Code 4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

### ***Local***

**Nevada County Community Wildfire Protection Plan.** The Nevada County Fire Safe Council developed a Community Wildfire Protection Plan (CWPP) based on the requirements of the Healthy Forest Restoration Act of 2003, which identifies measures that protect and restore forest land. The CWPP coordinates with the Local Hazard Mitigation Plan, developed by the Nevada County Office of Emergency Services in coordination with the Nevada County Operational Area Emergency Services Council, on wildfire issues as required by the Disaster Mitigation Act of 2000. The CWPP provides educational opportunities for the public to understand the complex issues of fire and fuels and to engage in the decision-making process for community safety. An adopted CWPP increases opportunities for pre-disaster funding to the County from the USFS and BLM.

**Nevada County Local Hazard Mitigation Plan.** The Disaster Mitigation Act of 2000, PL-106-390 requires that each State develop a hazard mitigation plan, in order to receive future disaster mitigation funding following a disaster. The requirements also call for the development of local or county plans for that particular county to be eligible for post-disaster mitigation funding. The purpose of these requirements is to encourage state and local government to engage in systematic and nationally uniform planning efforts that will result in locally tailored programs and projects that help minimize loss of life, destruction of property, damage to the environment and the total cost of disasters before they occur. The Nevada Operational Area Emergency Services Council prepared the Local Hazard Mitigation Plan for Nevada County for the years 2011 to 2016 and the plan addresses the high fire risk in the County. Nevada County specifically includes and adopts the most recent State of California Multi-Hazard Mitigation Plan where the State's plan relates to issues pertaining to Nevada County.

**Nevada County Land Use and Development Code Chapter XVI.** Nevada County Land Use and Development Code Chapter XVI requires new projects and construction meet fire safety standards described in PRC 4290 and establishes requirements for fuel modification and emergency water supply, as well as minimum fire safe driveway and road standards. New structures built in Nevada County must also comply with fire safety building regulations. These building codes require the use of ignition-resistant building materials and establish design standards to improve the ability of a building to survive a wildfire.

**Nevada County General Plan.** The Nevada County General Plan Safety Element includes goals and policies to address the high fire risk in Nevada County (Nevada County, 2014). The following are policies from the Safety Element that are relevant to the proposed project:

- **Policy FP-10.8.1.** As needed, review and revise existing wildland fire-related codes and ordinances to address the recognized hazards of development in the wildland urban interface.
- **Policy FP-10.8.2.** Recognize the ignition-resistant building standards in Land Use and Development Code Chapter V, Building.

## 5.20.2 Environmental Impacts and Mitigation Measures

### ***a. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?***

*LESS THAN SIGNIFICANT.* The Nevada County Community Wildfire Protection Plan includes plans for the establishment of evacuation routes and wildfire fuel load reduction actions. Implementation of the Local Hazard Mitigation Plan mitigation actions and multi-hazard mitigation strategies include the installation of fire hydrants, vegetation and tree management, and creation of defensible space around the project sites. Both plans have the goal of reducing the impacts from wildfires and large-scale wildfire emergency events in Nevada County.

During construction of the proposed project, portions of the existing access road system may require maintenance or repair prior to construction. Additionally, oversize truck trips are expected to deliver large pieces of construction equipment and communications tower materials to the site. These activities may require brief temporary roadway or lane closures/disruptions on local roads providing access to the site that would impact evacuation plans in the event of a wildfire. However, any road repairs on public roadways would include flagmen, including emergency vehicle flow through the area and access to any nearby residences or areas, to ensure traffic flow would not be impacted. In addition, all oversized truck trips would require obtaining permits from Caltrans and local jurisdictions, as needed. These permits include assurances for emergency vehicle movements and access.

Once operational, the proposed project is intended to facilitate emergency communications and it would have no impact or impair an adopted emergency response plan or emergency evacuation plan. O&M activities for the new tower would be performed by existing CAL FIRE personnel and would remain similar to those occurring under existing conditions, which include access road maintenance, inspections, tower checks, and necessary equipment replacement. Minimal maintenance of the project components is anticipated after completion of project construction and would not result in any impacts to roadways.

Overall, since the potential impacts to roadway and evacuation routes are temporary and since the State would take appropriate actions to coordinate with local jurisdictions, there would be a less than significant impact an adopted emergency response plan or emergency evacuation plan. No mitigation is required.

### ***b. Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?***

*LESS THAN SIGNIFICANT.* The proposed project is located at the summit of Banner Mountain and the surrounding area is largely undeveloped forest with steep terrain. Fossil fuels would be used for construction vehicles and other equipment during site grading, foundation excavation, and construction, and tower installation. In addition, the new telecommunications tower would introduce a new source utilizing electricity, diesel/propane, and/or solar energy for power for operation and lighting purposes at the project site. These combined conditions of steep slope, high wind potential at the summit, and the presence and usage of fuels and power could lead to an increased risk of wildfire and pollutant concentrations in the event of a wildfire. However, fossil fuel use would be primarily limited to during construction and while the new tower would require power, it would not significantly change the baseline conditions since the project site has existing buildings and other infrastructure at the facility, including an existing telecommunications tower, that also require electrical, diesel, or solar power. In addition, to reduce the wildfire risk, the State would implement standard CAL FIRE fire prevention protocols and follow a fire prevention plan.



Therefore, the proposed project would have a less than significant impact to wildfire risk and increased pollutant concentrations as a result of the prevailing winds, slope and elevation of the project site.

***c. Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?***

*LESS THAN SIGNIFICANT.* The proposed project includes construction of a new communications tower designed to improve CAL FIRE's emergency communications. Most activities associated with the proposed project would occur at the existing telecommunications facility, but portions of the existing access road system may also require maintenance or repair. During construction, project-related activities at these locations have the potential to be an ignition source for a wildland fire. Examples of ignition sources include sparks from welding or from metal striking metal or stone igniting surrounding vegetation, parking vehicles over dry vegetation where hot undercarriages could ignite grass or shrubs, and improperly discarded smoking materials. To reduce the wildfire risk, the State would implement standard CAL FIRE fire prevention protocols and follow a fire prevention plan. While the proposed project would result in additional infrastructure, because the State would implement a CAL FIRE-approved fire prevention plan during construction, the increase in associated fire risk during construction would be less than significant. No mitigation is required.

Operation and maintenance activities would be incorporated into the existing O&M schedule for the existing telecommunications facilities. As with current operations and maintenance, CAL FIRE would comply with all current federal and State laws related to vegetation clearance, if needed, and fire prevention. No additional impact would occur due to operating and maintaining the project.

***d. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?***

*LESS THAN SIGNIFICANT.* As discussed in Section 5.7 (Geology and Soils), the proposed project is located at the summit of Banner Mountain and the surrounding area is largely undeveloped forest with steep terrain. Ground disturbance in the proposed project work area from excavation of the tower foundation could destabilize adjacent slopes and trigger slope failures, including landslides. Excavation within or near existing slope failures could also trigger movement. Although the surrounding area has moderate landslide susceptibility, the proposed tower location itself is relatively flat and within an existing telecommunications facility. The local geology of the project site consists of volcanic rock, but does not note any evidence of landslide movement. Any earthwork would enable water to flow in the direction of the natural drainage and would be designed to prevent ponding and erosion. The overall goal of restoration would be to restore natural contours approximately equivalent to pre-construction conditions.

The State has conducted geotechnical/geologic surveys that identify areas with the potential for unstable slopes, landslides, rock fall, and debris flows where earthquakes or project excavation could trigger slope failure (DGS, 2018a and 2018b). Final engineering would incorporate the results of the geotechnical evaluations into the tower design and location, and adherence to building standards would ensure any impacts related to downstream flooding or landslides would be less than significant. No mitigation is required.

## 5.21 Mandatory Findings of Significance

### MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? ( <i>Cumulatively considerable</i> means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Significance criteria established by CEQA Guidelines, Appendix G.

- a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?**

**LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.** As described in Sections 5.1 through 5.20, the project would not have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. The majority of the impacts are less than significant and where the potential for a significant impact exists, mitigation has been included to reduce the impact to less than significant.

- b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, effects of other current projects, and the effects of probable future projects.)**

The area surrounding the Banner Mountain telecommunications facility is largely undeveloped forest with steep terrain. There are some rural residences and Nevada City is located approximately 2.1 miles west of the proposed project. Limited cumulative projects are anticipated to occur in the project vicinity. Projects planned in the nearby area include the following:

- Providence Quartz Mill Site Cleanup in Nevada City (Nevada City, 2018);
- Proposed General Plan Land Use Map Amendment to change the Nevada County Consolidated Fire District surplus property at 13376 Quaker Hill Cross Road from Rural Commercial to Urban Single Family and Zoning District Map Amendment (Nevada County, 2016); and
- Northern Sierra Propane Project, east of Grass Valley (Nevada County, 2017).

No projects are planned in the immediate vicinity of the project site.

*LESS THAN SIGNIFICANT.* The proposed project would only have cumulatively considerable impacts if the project impacts could combine with cumulative project impacts to result in a significant impact. For most resources (Agriculture and Forestry, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, Utilities and Service Systems, and Wildlife), the cumulative projects are too far away to combine with the impacts of the proposed project given the scale of the project impacts and the duration of the impacts (short term). Greenhouse gas emissions is a cumulative analysis and concluded that the impacts would be less than significant.

Because the proposed project would be visible throughout the life of the project, it could contribute to a cumulative aesthetic impact. However, the cumulative projects are all located almost a mile or more away with a lot of intervening vegetation that would break up any views of the proposed project. Because of the distance and the existing baseline, the proposed project and the cumulative projects would not combine to result in a significant cumulative impact.

***c. Does the project have environmental effects, which would cause substantial adverse effects on human beings, either directly or indirectly?***

*LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.* As described in Sections 5.1 through 5.20, the project would not have substantial adverse effects on human beings, directly or indirectly. Most impacts are less than significant and where the potential for a significant impact exists, mitigation has been included to reduce the impact to less than significant.

## 6. Mitigation Monitoring Plan

CAL FIRE proposes to construct and operate the Banner Mountain Communications Tower Project (proposed project). An Initial Study was prepared by DGS on behalf of CAL FIRE to assess the proposed project's potential environmental effects. The Initial Study was prepared based on information provided by CAL FIRE, project site reconnaissance by the Aspen environmental team in August 2018, discussions with the Nevada County Planning Department, other environmental analyses, and supplemental research. The majority of the proposed project's impacts would occur during project construction.

This Mitigation Monitoring Program (MMP) will be used by the State to ensure that each mitigation measure, adopted as a condition of project approval, is implemented. The MMP is consistent with CEQA Guidelines (Sections 15074(d), 15091(d), and 15097) for the implementation of mitigation. This MMP includes:

- The mitigation measures that the State must implement as part of the proposed project;
- The actions required to implement these measures;
- The monitoring requirements; and
- The timing of implementation for each measure.

The State will be responsible for monitoring the implementation of the mitigation measures presented in Table 6-1). The State will designate specific personnel to implement and document all aspects of the MMP. The State will ensure that the designated personnel have authority to enforce mitigation requirements and will be capable of terminating project construction activities found to be inconsistent with mitigation objectives. Additionally, the State will be responsible for ensuring that construction personnel understand their responsibilities for adhering to the MMP and other contractual requirements related to the implementation of mitigation.

**Table 6-1. Mitigation Monitoring Plan**

Impact	Mitigation Measure	Monitoring Requirement	Timing of Action
<b>Biological Resources</b>			
Special Status Animal Species	<b>MM B-1. California Red-legged Frog Avoidance.</b> To avoid the risk of harm or take of dispersing California red-legged frog, construction will be halted at the onset of rain of any duration. In addition, construction should be halted for a minimum of 48 hours following a rain lasting 30 minutes or longer in any season. If work must occur during a storm or within 48 hours of measurable rainfall (>0.25 inches), a pre-construction survey shall be completed prior to construction work resuming to ensure that California red-legged frog and other special-status species are not present in the project area.	Ensure construction is halted at onset of rain or a pre-construction survey is performed prior to work resuming.	During construction
Special Status Animal Species	<b>MM B-2. Special-status Bird Avoidance.</b> To avoid or minimize impacts to California spotted owl, northern goshawk, olive-sided flycatcher, and other migratory birds, construction will take place outside the nesting season for migratory birds, as feasible. Such activities include construction, road grading, vegetation trimming or removal, and equipment staging. The nesting season is generally accepted as February 15 through August 15. No restrictions would be necessary for activities that take place outside the nesting season (i.e., between August 16 and February 14). If avoidance during the nesting season is not practical, a qualified biologist will conduct a pre-construction survey of work areas and a 500-foot buffer around the work area, no more than 1 week prior to construction to identify the locations of avian nests. Should nests be found, an appropriate buffer will be established around each nest site based on the professional judgement of a qualified biologist. To the extent feasible, no construction will take place within this buffer until the nest is no longer active. If construction must occur within the buffer, a biological monitor will be assigned to the project and the biological monitor will take steps to ensure that construction activities are not disturbing or disrupting nesting activities. If the biological monitor determines that construction activities are disturbing or disrupting nesting activities, then the biologist will have the authority to halt construction to reduce the noise and/or disturbance to the nests, as appropriate.	Ensure preconstruction bird nesting surveys are conducted and monitor for significant disturbance to birds if nests are identified.	Prior to construction and during construction
Special Status Animal Species	<b>MM B-3. Update of Baseline Conditions.</b> If project construction does not start within 2 years of the date of project approval, an updated biological resources background search will be completed. An updated site assessment will also be completed to ensure that the conditions at the proposed project area have not changed. This re-evaluation and assessment will take place no more than 120 days prior to the onset of construction. A project memorandum will be prepared to summarize the results of this update.	Review updated background search memo and recommendations, if the start of construction is delayed.	Prior to construction

**Table 6-1. Mitigation Monitoring Plan**

Impact	Mitigation Measure	Monitoring Requirement	Timing of Action
<b>Cultural Resources</b>			
Previously- Unidentified Archaeological, Historical or Tribal Cultural Resources	<b>MM CR-1. Train Construction Personnel.</b> Prior to the initiation of construction, all construction personnel shall be trained, by a qualified archaeologist, regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) and protection of all archaeological resources during construction. The State shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of cultural materials. All personnel shall be instructed that unauthorized removal or collection of artifacts is a violation of State law. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend the Workers' Environmental Training Program so they are aware of the potential for inadvertently exposing buried archaeological deposits. The State shall provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources and anticipated procedures to treat unexpected discoveries.	Construction personnel sign an environmental training attendance sheet. No damage to cultural resources results from project construction.	Prior to and during construction
Previously Unidentified Archaeological, Historical or Tribal Cultural Resources	<b>MM CR-2. Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources.</b> If previously unidentified cultural resources are identified during construction activities, construction work within 50 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist assesses the significance of the resource. The archaeologist, in consultation with the State, the State Historic Preservation Officer, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under California Environmental Quality Act Section 21083.2, or are determined to be tribal cultural resource as defined in Section 21074. If previously unidentified cultural resources or tribal cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the State, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under CEQA Section 21083.2 or determined to be tribal cultural resource as defined in Section 21074.	Monitor implementation of unanticipated discovery protocols. No damage to unanticipated resources results from project construction.	During construction



**Table 6-1. Mitigation Monitoring Plan**

Impact	Mitigation Measure	Monitoring Requirement	Timing of Action
Unanticipated discovery of human remains	<p><b>MM CR-3. Treatment of Human Remains.</b> All human remains discovered are to be treated with respect and dignity. Upon discovery of human remains, all work within 50 feet of the discovery area must cease immediately, nothing is to be disturbed, and the area must be secured. The County Coroner's Office must be called. The Coroner has two working days to examine the remains after notification. The appropriate land manager/owner of the site is to be called and informed of the discovery. If the remains are located on federal lands, federal land managers, federal law enforcement, and the federal archaeologist must be informed as well, due to complementary jurisdiction issues. It is very important that the suspected remains, and the area around them, are undisturbed and the proper authorities called to the scene as soon as possible, as it could be a crime scene. The Coroner will determine if the remains are archaeological/historic or of modern origin and if there are any criminal or jurisdictional questions.</p> <p>After the Coroner has determined the remains are archaeological/historic-era, the Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative. If the Coroner believes the remains to be those of a Native American, he/she shall contact the Native American Heritage Commission (NAHC) by telephone within 24 hours.</p> <p>The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains. The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.</p> <p>According to the California Health and Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains is a felony (Section 7052).</p>	Monitor implementation of human remain discovery protocols	During construction

**Table 6-1. Mitigation Monitoring Plan**

Impact	Mitigation Measure	Monitoring Requirement	Timing of Action
<b>Hazards and Hazardous Materials</b>			
Accidental Spill of Hazardous Materials	<p><b>MM H-1. Prepare and Implement Worker Environmental Awareness Program (WEAP).</b> An existing CAL FIRE-approved worker training program, or if no such program is in place, a project specific WEAP shall be prepared and submitted to the State for approval prior to construction. The WEAP shall include, at a minimum, the following provisions related to hazards and hazardous materials:</p> <ul style="list-style-type: none"> <li>▪ A presentation shall be prepared by the State and used to train all site personnel prior to the commencement of work. A record of all trained personnel shall be kept.</li> <li>▪ Instruction on compliance with proposed project mitigation measures.</li> <li>▪ A list of phone numbers of the State environmental specialist personnel associated with the proposed project (archaeologist, biologist, environmental coordinator, and regional spill response coordinator).</li> <li>▪ Instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific BMPs, and the location of Material Safety Data Sheets for the project.</li> <li>▪ Worker Training on Emergency Release Response Procedures to include hazardous materials handling procedures for reducing the potential for a spill during construction, and hazardous material clean up procedures and training to ensure quick and safe cleanup of accidental spills.</li> <li>▪ Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil, groundwater, or surface water contamination. The foreman or regional spill response coordinator shall have authority to stop work at that location and to contact the Certified Unified Program Agency (CUPA) (Nevada County Environmental Health Division, Hazardous Materials Management; see Section 5.9.1, Regulatory Background, above) immediately if unanticipated visual evidence of potential contamination or chemical odors are detected. Work will be resumed at this location after any necessary consultation and approval by the CUPA or other entities as specified by the CUPA.</li> <li>▪ Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project.</li> </ul>	Review and attend construction employee education program and monitor training implementation	Prior to and during construction

**Table 6-1. Mitigation Monitoring Plan**

Impact	Mitigation Measure	Monitoring Requirement	Timing of Action
Accidental Spill of Hazardous Materials	<p><b>MM H-2. Prepare and Implement a Hazardous Materials and Waste Management Plan.</b> Prior to approval of the final construction plans for the proposed project, an existing CAL FIRE-approved hazardous materials management plan, or if no such plan is in place, a project-specific Hazardous Materials and Waste Management Plan for the construction phase of the proposed project will be prepared and submitted to the State for approval prior to construction. The Plan will be prepared to ensure compliance with all applicable federal, state, and local regulations. The Hazardous Materials and Waste Management Plan will reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from soil, groundwater, and surface water contamination, and proper disposal of hazardous materials. The plan will include the following information related to hazardous materials and waste, as applicable:</p> <ul style="list-style-type: none"> <li>▪ A list of the hazardous materials that will be present on site and in the local construction yard during construction, including information regarding their storage, use, and transportation;</li> <li>▪ Any secondary containment and countermeasures that will be required for onsite and construction yard hazardous materials, as well as the required responses for different quantities of potential spills;</li> <li>▪ A list of spill response materials and the locations of such materials at the proposed project site and in the local construction yard during construction. Additionally, the Plan shall designate that spill response materials be kept onsite for all activities per-formed near to or adjacent to a stream or the river;</li> <li>▪ Procedure for Fueling and Maintenance of Construction Vehicles and Equipment: Written procedures for fueling and maintenance of construction equipment would be prepared prior to construction. The Plan shall include the following procedures: <ul style="list-style-type: none"> <li>– Construction vehicles shall be fueled and maintained offsite at the construction yard or at local fuel stations. Construction vehicles operated near to or adjacent to the stream/river channel shall be inspected and maintained daily to prevent leaks.</li> <li>– Construction equipment such a drill rigs and excavators shall be fueled offsite when feasible. When refueling offsite is not feasible for drilling equipment and other construction equipment onsite refueling of the equipment by refueling vehicles or fuel trucks shall follow specified procedures to prevent leaks or spills. Procedures will require refueling be located a minimum of 150 feet from a stream channel and the use of spill mats, drop cloths made of plastic, drip pans, or trays to be placed under refueling areas to ensure that fuels do not come into contact with the ground. Spill cleanup materials shall be kept readily available on the refueling vehicles.</li> <li>– Drip pans or other collection devices would be placed under equipment, such as motors, pumps, generators, and welders, during operation and at night to capture drips or spills. Equipment would be inspected and maintained daily for potential leakage or failures.</li> </ul> </li> <li>▪ A list of the adequate safety and fire suppression devices for construction activities involving toxic, flammable, or exposure materials;</li> <li>▪ A description of the waste-specific management and disposal procedures that will be conducted for any hazardous materials that will be used or are discovered during construction of the proposed project; and</li> <li>▪ A description of the waste minimization procedures to be implemented during construction of the proposed project.</li> </ul>	Review Hazardous Materials and Waste Management Plan and ensure that protocols are implemented.	Prior to and during construction

## 7. Response to Comments

Reserved for Final IS/MND

# **Appendix A**

## List of Preparers

## Appendix A. List of Preparers

A consultant team headed by Aspen Environmental Group prepared this document under the direction of the California Department of General Services. The preparers and technical reviewers of this document are presented below.

### Lead Agency

#### ***California Department of General Services***

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Aubree French, Project Director.....	Lead Agency Project Director
Janet Esola, OES Program Manager.....	Engineering/Technical Support Oversight
Patrick Vadnais, OES.....	Engineering/Technical Support

### Project Management and Document Production

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Brewster Birdsall, MS, PE, QEP, Senior Associate.....	Air Quality, Greenhouse Gas Emissions, Noise
Emily Capello, Senior Associate.....	Mandatory Findings of Significance
Josh Noyer, Archaeologist.....	Cultural Resources
Justin Wood, Senior Biologist.....	Biological Resources
Melissa Do, MS, Environmental Scientist.....	Aesthetics; Agriculture and Forestry; Geology and Soils; Greenhouse Gas; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Mineral Resources; Noise; Population and Housing; Public Services, Utilities, and Service Systems; Recreation; Transportation
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Kati Simpson, Senior Graphic Designer.....	Graphics
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Mark Tangard, Documents Manager.....	Document Production

#### ***Ecobridges Environmental Consulting, Inc.***

Anne Wallace, Biologist.....	Wildlife Biology
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# Appendix B

## References

## Appendix B. References

### B.1 Project Description

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### B.2 Aesthetics

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# **Appendix C**

## Special-status Wildlife Assessment



235 Montgomery Street, Suite 935, San Francisco, CA 94104  
Tel. 415-696-5306, [www.aspeneg.com](http://www.aspeneg.com)

## PROJECT MEMORANDUM

### DGS CALFIRE REPLACEMENT COMMUNICATION FACILITIES PROJECT

**Date:** August 1, 2018  
**To:** Terry Ash, Senior Environmental Planner, DGS  
**From:** Hedy Koczwar, Project Manager, Aspen Environmental Group  
**Subject:** Banner Mountain Special-status Plant Assessment Results

The California Department of General Services (DGS) retained Aspen Environmental Group (Aspen) to complete an assessment of biological resources at the proposed Banner Mountain Communication Tower Project (Project). This Project is one of several included in the larger Replacement Communication Facilities Project that is being completed on behalf of the Department of Forestry and Fire Protection (CAL FIRE).

## Project Site Description and Location

The Project would install a new telecommunication tower with microwave dishes at the existing CAL FIRE Banner Mountain communication facility to support current microwave technology and decrease dependency and overloading of an existing communication tower at the site. The new communication tower would be a self-supporting, 4-legged lattice structure (80 feet) with a 40-foot upper monopole, as well as a safety ladder, platform and an 18-foot mast and 10-foot lightning arrestor at the top. Up to three levels of 10-foot diameter microwave dishes would be installed on the lattice structure at the minimum height required for a clear line of sight to distant mountain peaks. Lighting would also be installed at the top of the new tower to ensure there would not be a hazard to air navigation. No structures are proposed for removal, however existing unused structures may be identified during final engineering and would be removed during Project construction or cleanup. Operation of the new Banner Mountain Communication Tower is also included in the Project.

The Project site is located on private lands within unincorporated Nevada County, approximately 2.1 miles east/southeast of Nevada City. Access to the Banner Mountain site is provided by Red Dog Road to the north and Idaho Maryland Road to the south. The Project site appears on the USGS Chicago Peak 7½-minute topographic map in Township 16 North, Range 9 East, in the southeast corner of Section 16. The elevation of the Project site is approximately 3,900 feet above sea level.

## Methods

Aspen Senior Biologist Justin M. Wood reviewed available literature to identify special status plants known from the vicinity of the Project site. This review included searches of the California Natural Diversity Database (CNDDDB; CDFW, 2018a) for the following USGS 7½ minute topographic quadrangles (quads): Chicago Peak, Grass Valley, Nevada City, and North Bloomfield (Attachment 2). Wood also reviewed the California Native Plant Society (CNPS) On-line Electronic Inventory (CNPS, 2018) and Consortium of California Herbaria data (CCH, 2018) for special-status plant locations near the site. Attachment 1 lists all special-status plants identified during the literature review and summarizes their habitat, distribution, conservation status, and probability of occurrence on the site. Wood also reviewed the NRCS soil web to determine what soil types are present at the Project site (NRCS, 2018).

On April 13, 2018, biologist Anne Wallace visited the Project site to conduct a reconnaissance-level biological survey and assess the habitat for special-status species.



## Results

### Soils and Vegetation

The Project site is dominated by large exposed areas of boulders and bedrock. The soils are mapped as Sites very stony loam, 15 to 50 percent slopes (SmE). Sites very stony loam is typically found at elevations of 2,000 to 4,000 feet above sea level. It is made up of Sites and similar soils (85 percent) and various other minor components. This soil is derived from metabasic residuum weathered from metasedimentary rock. It does not contain serpentinite soils. In addition, no wetland soils or mapped blue-lines streams are present on the Project site or in the immediate adjacent habitat.

The Project site is located within an existing communication facility that is likely to be regularly disturbed by operations and maintenance activities. Vegetation on the Project site is composed primarily of native and non-native ruderal species that persist in these areas that are frequently disturbed. Vegetation on the undisturbed lands surrounding the Project site are vegetated by a mixed coniferous and deciduous forest dominated by incense cedar (*Calocedrus decurrens*), Douglas fir (*Pseudotsuga menziesii*), black oak (*Quercus kelloggii*) and white fir (*Abies concolor*). Understory species such as California coffee berry (*Frangula californica*), mountain grape (*Berberis aquifolium*), buttercup (*Ranunculus* sp.), and mountain misery (*Chamaebatia foliolosa*) are also present throughout.

The vegetation surrounding the Project site is likely to best match the description of White fir - Douglas fir forest (*Abies concolor* - *Pseudotsuga menziesii* Forest Alliance) in *A Manual of California Vegetation* (Sawyer et al. 2009).

### Special-status Plants

Plants may be ranked as special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Certain species have been listed as threatened or endangered under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA). Others have not been listed, but declining populations or habitat availability cause concern for their long-term viability. These species of conservation concern appear on lists compiled by resource agencies or private conservation organizations. In this memo, "special-status species" includes all plants listed as threatened or endangered or included in these other compilations. All special-status plants occurring in the region in habitats like those found on the Project site are shown in Attachment 1, with brief descriptions of habitat and distribution, conservation status, and probability of occurrence on the site.

No special-status plants are known from the Project site. Eleven special-status plants were identified in the literature search (Attachment 2). All of these have either a low or minimal potential to be present based on habitat, elevation, geographic range, and do not rely on the results of the reconnaissance-level survey.

## Discussion

No special-status plants were found on the Project site and none of those identified in the literature search have at least a moderate potential to be present.

## References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, D.H. Wilken (eds.) 2012. The Jepson Manual: Vascular Plants of California, 2<sup>nd</sup> ed. University Press, Berkeley, California.

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- NRCS (Natural Resource Conservation Service). 2018. Web Soil Survey 2.0. <http://websoilsurvey.nrcs.usda.gov/>. Accessed July 2018.
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. Manual of California Vegetation, 2nd ed. California Native Plant Society, Sacramento, California. 1300 pp.

**Photo Exhibit**



Photo 1: View of communication infrastructure at the Project site.



Photo 2: View of communication infrastructure and vegetation at the Project site.





Photo 3: View of the vegetation in and adjacent to Project site.



Photo 4: View of vegetation and outbuildings at the Project site.

Attachment 1. Special-status Species Known from the Vicinity of the Project Site

Species Name	Habitat Requirements	Activity Season	Conservation Status	Potential to Occur
<b>PLANTS</b>				
<i>Allium sanbornii</i> var. <i>congdonii</i> <b>Congdon's onion</b>	Perennial herb (bulb); Serpentine or volcanic soils in chaparral and cismontane woodland; Mariposa Co. north to Nevada Co.; elev. of about 1,000 to 4,600 ft.	Apr-June	Fed: none CA: S3 CRPR: 4.3	Minimal; no suitable volcanic or serpentine soil present; known from within about 3 miles.
<i>Brodiaea sierrae</i> <b>Sierra foothills brodiaea</b>	Perennial herb; serpentine or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest; Butte Co. north to Nevada Co.; elev. of about 160 to 3,200 ft.	May-Aug	Fed: none CA: S3 CRPR: 4.3	Minimal; no suitable gabbroic or serpentine soils present; above the elevation range; known from within about 3 miles.
<i>Cypripedium fasciculatum</i> <b>Clustered lady's slipper</b>	Rhiz. perennial herb; serpentine soils at seeps and streambanks in lower montane coniferous forest and North Coast coniferous forest; scattered locations throughout N. Calif.; elev. of about 330 to 7,800 ft.	Mar-Aug	Fed: none CA: S4 CRPR: 4.2	Minimal; no suitable serpentine soils; known from within about 4 miles.
<i>Lewisia cantelovii</i> <b>Cantelow's lewisia</b>	Perennial herb; mesic seeps on granitic and serpentine soils in broad-leaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest; El Dorado Co. north to Shasta Co.; elev. of about 1,050 to 5,600 ft.	May-Oct	Fed: none CA: S3 CRPR: 1B.2	Minimal; no suitable seep habitat present; known from within about 3 miles.
<i>Madia radiata</i> <b>Showy madia</b>	Annual herb; cismontane woodland and native valley and foothill grassland; scattered locations throughout southern San Joaquin Valley; elev. of about 80 to 4,100 ft.	Mar-May	Fed: none CA: S2 CRPR: 1B.1	Low; minimally suitable woodland habitat present; one record known from within about 4 miles.
<i>Perideridia bacigalupii</i> <b>Bacigalupi's yampah</b>	Perennial herb; serpentine soils in chaparral and lower montane coniferous forest; Fresno Co. north to Butte Co.; elev. of about 1,500 to 3,400 ft.	Jun-Aug	Fed: none CA: S3 CRPR: 4.2	Minimal; no suitable serpentine soil; above the elevation range; known from within about 2 miles.
<i>Plagiobothrys glyptocarpus</i> var. <i>modestus</i> <b>Cedar crest popcorn flower</b>	Annual herb; mesic sites in cismontane woodland and native valley and foothill grasslands: Nevada, Butte, and Yuba Cos.; elev. of about 2,500 to 3,000 ft.	Apr-Jun	Fed: none CA: SH CRPR: 3	Minimal; no suitable mesic habitat present; above the elevation range; known from within about 3 miles.
<i>Rhynchospora capitellata</i> <b>Capitate beaked rush</b>	Perennial herb; meadows, seeps, marshes, and swamps in lower and upper montane coniferous forest; most populations located between Tuolumne and Butte Cos.; elev. of about 160 to 6,500 ft.	Jul-Aug	S1 2B.2	Minimal; no suitable meadow, seep, marsh, or swamp habitat present; known from within about 2 miles.
<i>Senecio aphanactis</i> <b>California groundsel</b>	Annual herb; alkaline soils in chaparral, cismontane woodland, and coastal scrub; scattered locations throughout Calif.; elev. of about 50 to 2,600 ft.	Jan-May	Fed: none CA: S2 CRPR: 2B.2	Minimal; no alkaline soils present; above the elevation range; known from within about 4 miles.

**Attachment 1. Special-status Species Known from the Vicinity of the Project Site**

Species Name	Habitat Requirements	Activity Season	Conservation Status	Potential to Occur
<i>Sidalcea gigantea</i> <b>Giant checkerbloom</b>	Perennial herb; meadows and seeps in lower and upper montane coniferous forest; Nevada Co. north to Shasta Co.; elev. of about 2,200 to 6,400 ft.	Jul-Oct	Fed: none CA: S3 CRPR: 4.3	Minimal; no suitable meadow or seep habitat present; known from within about 3 miles.
<i>Symphotrichum lentum</i> <b>Suisun marsh aster</b>	Rhiz. perennial herb; marshes and swamps (brackish and freshwater); scattered locations around San Francisco Bay and central San Joaquin Valley; elev. of about sea level to 100 ft.	Apr-Nov	Fed: none CA: S2 CRPR: 1B.2	Minimal; no suitable marsh or swamp habitat present; above the elevation range; known from within about 3 miles.

General references (botany): Baldwin et al., 2012; CDFW, 2018; CNPS, 2018; and CCH, 2018.

**Conservation Status**

**Federal designations (Fed):** (federal ESA, USFWS).

END: Federally listed, endangered.

THR: Federally listed, threatened.

Delisted: Previously Federally listed and formally delisted.

**State designations (CA):** (CESA, CDFW, Fish and Game Commission, Nature Serve)

END: State listed, endangered.

THR: State listed, threatened.

RARE: State designated rare, may not be taken without permit from CDFW.

SX: Presumed Extirpated

SH: Possibly Extirpated

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

S4: Apparently Secure

S5: Secure

**California Rare Plant Rank designations.** Note: According to the California Native Plant Society

(<http://www.cnps.org/cnps/rareplants/ranking.php>), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.

1A: Plants presumed extinct in California.

1B: Plants rare and endangered in California and throughout their range.

2A: Plants presumed extinct in California but more common elsewhere in their range.

2B: Plants rare, threatened or endangered in California but more common elsewhere in their range.

3: Plants about which we need more information; a review list.

4: Plants of limited distribution; a watch list.

**California Rare Plant Rank Threat designation extensions:**

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

.2 Fairly endangered in California (20-80% occurrences threatened)

.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

**Definitions of occurrence probability:** Estimated occurrence probabilities are based on literature sources cited earlier, field surveys, and habitat analyses reported here.

*Present:* Observed on the site by qualified biologists.

*High:* Habitat is a type often utilized by the species and the site is within the known range of the species.

*Moderate:* Site is within the known range of the species and habitat on the site is a type occasionally used.

*Low:* Site is within the species' known range but habitat is rarely used, or the species was not found during focused surveys covering less than 100% of potential habitat or completed in marginal seasons.

*Minimal:* No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or a focused study covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall, did not detect the species.





# Selected Elements by Scientific Name

## California Department of Fish and Wildlife

### California Natural Diversity Database



**Query Criteria:** Quad< IS (Nevada City (3912131) OR North Bloomfield (3912038) OR Grass Valley (3912121) OR Chicago Park (3912028))<br />< AND Taxonomic Group (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Calystegia stebbinsii</i></b> Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1	1B.1
<b><i>Carex xerophila</i></b> chaparral sedge	PMCYP03M60	None	None	G2	S2	1B.2
<b><i>Clarkia biloba ssp. brandegeae</i></b> Brandegee's clarkia	PDONA05053	None	None	G4G5T4	S4	4.2
<b><i>Fremontodendron decumbens</i></b> Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1	1B.2
<b><i>Fritillaria eastwoodiae</i></b> Butte County fritillary	PMLIL0V060	None	None	G3Q	S3	3.2
<b><i>Juncus digitatus</i></b> finger rush	PMJUN013E0	None	None	G1	S1	1B.1
<b><i>Lathyrus sulphureus var. argillaceus</i></b> dubious pea	PDFAB25101	None	None	G5T1T2	S1S2	3
<b><i>Lewisia cantelovii</i></b> Cantelow's lewisia	PDPOR04020	None	None	G3	S3	1B.2
<b><i>Lycopodiella inundata</i></b> inundated bog-clubmoss	PPLYC03060	None	None	G5	S1?	2B.2
<b><i>Mielichhoferia elongata</i></b> elongate copper moss	NBMUS4Q022	None	None	G5	S4	4.3
<b><i>Poa sierrae</i></b> Sierra blue grass	PMPOA4Z310	None	None	G3	S3	1B.3
<b><i>Rhynchospora capitellata</i></b> brownish beaked-rush	PMCYP0N080	None	None	G5	S1	2B.2
<b><i>Sidalcea stipularis</i></b> Scadden Flat checkerbloom	PDMAL110R0	None	Endangered	G1	S1	1B.1

**Record Count: 13**

# **Appendix D**

## **Special-status Plant Assessment**

## MEMORANDUM

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**To:** Hedy Koczwara, Project Manager, Aspen Environmental Group  
**From:** Anne Wallace, Senior Wildlife Biologist, EcoBridges Environmental Consulting  
**Date:** October 9, 2018  
**Subject:** Special-status Wildlife Assessment  
CAL FIRE Banner Mountain Communication Tower Project

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The California Department of Forestry and Fire Protection (CAL FIRE) proposes to replace communications facilities at a number of mountaintop locations throughout northern California. The project is called CAL FIRE Banner Mountain Communication Tower project, and this memo-report has been prepared for the project to be implemented at the Banner Mountain communications facility. Project purpose, need, and objectives are provided in the accompanying Initial Study/Mitigated Negative Declaration. A separate accompanying memo-report describes soils, vegetation, and special-status plants.

The memo-report below addresses potential project-related impacts to special-status wildlife.

### Project Description and Location

Located in the forested neighborhoods east of Nevada City, Nevada County, approximately 2.1 miles east/southeast from downtown Nevada City, the Banner Mountain project would construct and operate one new communication tower. Lighting would be installed at the top of the new tower to ensure there would not be a hazard to air navigation. Consistent with Federal Aviation Administration (FAA) guidelines (Advisory Circular 70/7460-1L), the new lighting could include steady or flashing lights, white or red in color. The selected lighting plan would be determined during final engineering.

Construction is expected to start in 2021 and would span approximately three years, incorporating delays that may occur due to weather, due to environmental work windows, or during construction sequencing to maintain continuity of service. Construction would primarily occur Monday through Saturday (6 days a week) between 7:00 a.m. to 6:00 p.m., in accordance with local noise and traffic ordinances.

# Methods

## Background Review and Site Visit

Background review included an evaluation of aerial imagery of the project site in Google Earth, an initial records search of the California Natural Diversity Database (CNDDDB) for special-status species known to occur within five miles of the project site, and generation of an informal species list from the US Fish and Wildlife Service IPaC (Information for Planning and Conservation) website (USFWS 2018).

An expanded nine-quad CNDDDB records search was conducted on August 8, 2018, for the following US Geological Survey 7.5-minute quadrangles: Chicago Park, North Bloomfield, Nevada City, Grass Valley, Lake Combie, Colfax, Foresthill, Dutch Flat, and Washington (CDFW 2018). An updated IPaC informal species list from the US Fish and Wildlife Service (USFWS) was generated on June 16, 2018 (USFWS 2018). The CNDDDB and USFWS species lists are provided at the end of this memo-report.

Background review was followed by a site visit by wildlife biologist Anne Wallace on April 13, 2018.

## Regulatory Considerations

For purposes of this memo-report, special-status animals have been defined as those species or taxa that are:

- Listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA);
- Candidates for listing as threatened or endangered under FESA;
- Species that are listed or proposed for listing as threatened or endangered under the California Endangered Species Act (CESA);
- Candidates for listing as threatened or endangered under CESA;
- Identified by California Department of Fish and Wildlife (CDFW) as species of special concern (species not formally protected by CESA or FESA but known to be declining);
- Designated as fully protected by CDFW; and/or
- Protected by California Fish and Game Code or federal statutes such as the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act.

Only those special-status species or taxa that 1) fall into one of the above classifications, 2) occur in this geographic area and at this general elevation, 3) could potentially use or be found in habitats found in the project vicinity, or 4) could otherwise be affected by project-related activities, such as fishes or amphibians occurring downstream of the project area that could be affected by water quality degradation at the project site, are considered in this report.

Special-status species found in agency species lists were divided into two groups: those meeting the above criteria for consideration in this memo-report and those not meeting criteria for consideration. Both groups are discussed below and included in Table 1.

## Results

Figure 1 shows the rural-residential character of the Banner Mountain setting. Figure 2 provides a close-up view of the project site. The site itself is developed and ecologically altered by roadways, buildings, vaults, and towers, but supports native vegetation to some degree and natural rock outcrops occur in the northwest corner. The site of the new tower is clear of vegetation. The surrounding habitats are typical of local oak and conifer forest. Six large homes are sited within 350 to 600 feet of the project site. Banner Mountain itself is considered the headwater source of three creeks; however, there are no creeks, ponds, seeps, springs, or wetlands at or near the project site.

Table 1 presents the special-status species that agency species lists (attached) show could be present at or near the project site. These species meet the criteria outlined under Regulatory Considerations above, i.e., they meet one or more definition of special-status, and they are known to occur in this geographic region at this elevation even if they are not expected to occur in or near the project site.

The species found on agency lists but not given consideration for this project at this location are listed at the bottom of Table 1 along with the reasons for their exclusion. They include animals that do not meet our definition of special status as well as animals that may meet one or more of those criteria but occur in habitats not present on or near the site, such as ponds or wetlands.

### Special-status Species

Table 1 shows that the California red-legged frog and three special-status birds could potentially occur at or near the project site.

California Red-legged Frog. The California red-legged frog is considered potentially present. This frog typically breeds along the margins of permanent and near-permanent sunlit ponds, lakes, and streams where water is still or slow, shoreline and emergent vegetation is dense and extensive, and water depth is at least 0.7 m (2.1 ft) close to the shoreline (Jennings and Hayes 1994, Barry 1999, Barry and Fellers 2013). However, this frog can also be found in habitats quite unlike this description, including springs, backwaters of streams, shallow edges of large reservoirs, and ponds with no shoreline vegetation (USFWS 2002, 2005; Rathbun *et al.* 1997).

Since 1991, at least 10 occurrences have been discovered in the Sierra Nevada foothills (Barry and Fellers 2013), including an extant historical occurrence as well as new populations and new single-frog occurrences in an area extending from Butte County south to Mariposa County, at elevations ranging from 1080 to 3350 ft. Based on 21 years of studying historical and recent occurrence records, including conducting hundreds of surveys at suitable habitats throughout the historic range of this frog in the Sierra, Barry and Fellers (2013) conclude that the California red-legged frog remains widespread in the Sierra Nevada but it may rarely have occurred in large or geographically extensive populations. Single-frog occurrences at three locations show that this frog can disperse from breeding sites and may persist in marginal habitats.



Figure 1. Banner Mountain facility, Nevada County, Chicago Park USGS quadrangle, showing rural-residential character of the setting.





Figure 2. Banner Mountain project site, Nevada County, Chicago Park USGS quadrangle.

Table 1. Special-status wildlife potentially affected by the CAL FIRE Banner Mountain Communication Tower Project. Species eliminated from consideration are listed at table bottom<sup>1</sup>.

Scientific Name Common Name	Listing Status		Habitat Type/ General Geographic Range	Potential for Impact?
	Fed <sup>2</sup>	State <sup>3</sup>		
REPTILES				
<i>Phrynosoma blainvillii</i> Coast horned lizard	*	SSC	Most common along sandy washes with open areas for sunning, scattered low bushes for cover, patches of loose soil for burial, and abundant ant and insect prey.	No. Known to occur in this vicinity but no suitable habitats on site.
AMPHIBIANS				
<i>Rana draytonii</i> California red-legged frog	FT	SSC	Breeds in deep, still or slow-moving water with associated bulrush, willow, or cattail, including stock ponds and other sites; may also use ponds without veg. May be found in uplands some distance from aquatic sites outside the breeding season. Except when dispersing, generally not found more than 300 feet from aquatic habitats.	Yes. Potentially present when dispersing but unlikely. Could use any of a number of small ponds within 1.25 mi. Only known local occurrence is 4.6 mi N. Next closest record is 17 mi NW.
<i>Rana sierra</i> Sierra Nevada yellow-legged frog	FE	ST	Inhabits lakes, ponds, meadow streams, isolated pools, and sunny riverbanks in the Sierra. Usually encountered within several feet of water. Current range is high-elevation Sierra Nevada mountains.	No. Banner Mountain does not provide suitable aquatic habitat and is outside the current elevational and geographic range.
BIRDS				
<i>Accipiter gentilis</i> Northern goshawk	*	SSC	Yearlong resident in Sierra Nevada at middle- to higher-elevation mature, dense conifer and deciduous forest interspersed with meadows, other openings, and riparian. Near water.	Yes. Known to occur in the area and could nest in nearby forest. Nearest CNDDDB records are 7 to 8 miles north.
<i>Contopus cooperi</i> Olive-sided flycatcher	*	SSC	Late-successional conifer forests with open canopies (0–39% cover), especially fragmented forests with edges and openings, from sea level to timberline.	Yes. Known to occur in the area and could nest in surrounding forests. No nearby CNDDDB records.
<i>Haliaeetus leucocephalus</i> Bald eagle	FD	SE, CFP	Nests in large, old-growth or dominant live trees with open branchwork near water. Forages over marshes, rivers, lakes, grasslands, taking waterfowl, water birds, small to medium mammals, and carrion. Local and statewide range is expanding.	No. Could nest around Scotts Flat Reservoir ~2.7 miles northeast but no suitable nesting/foraging habitat near Banner Mountain.
<i>Strix occidentalis occidentalis</i> California spotted owl	*	SSC	Shaded mountain slopes and canyons in dense old-growth or mixed mature and old-growth forests with uneven and multi-layered canopy. Occasionally in older second-growth forests.	Yes. Known to nest in the vicinity. Nearest known activity center is ~1 mi west of the project site.
Migratory birds <sup>4</sup>	MBTA	Cal FGC	Nesting migratory birds and their nests and young are protected by California Fish and Game Code and the federal Migratory Bird Treaty Act.	Yes. Suitable nesting habitat surrounds the project site.

<b>MAMMALS</b>				
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	*	SSC	Found throughout California in many habitats. Distribution is patchy and strongly correlated with caves and cave-like roosting habitat, w/population centers occurring in areas dominated by exposed, cavity-forming rock and/or historic mining areas.	No. Roosting habitat unlikely anywhere near Banner Mountain but this bat could forage over the project area. No project-related impacts to foraging bats.
<i>Pekania pennanti</i> Fisher—West Coast DPS	*	SCT, SSC	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas; forests with high percent canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning. Needs large areas of mature, dense forest. Nearest CNDDDB record is ~26 miles east.	No. Project site is too developed and too low in elevation, and current distribution is restricted to certain parts of the Sierra and southern Cascades.
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	FC	ST	Prefers forest interspersed with meadows or alpine fell-fields. Hunts in open areas; dens and breeds in forest. Most sightings above 7000 ft but as low as 3900 ft.	No. Currently occurs only in a restricted range many miles from the project site and at higher elevation. A 1989 CNDDDB record from 5 mi NE of Banner Mtn is considered dubious.
<b>SPECIES ELIMINATED FROM FURTHER CONSIDERATION<sup>5</sup></b>				
Cooper's hawk, great blue heron, rufous hummingbird, Williamson's sapsucker, obscure bumblebee, western bumble bee, western pearlshell, Sierra marten, fringed myotis, goldrush hanging scorpionfly, spiny rhyacophilan caddisfly				Do not fit listing criteria for consideration <sup>6</sup>
<u>Invertebrates/branchiopods</u> : valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp <u>Fishes</u> : Delta smelt <u>Amphibians and reptiles</u> : foothill yellow-legged frog, western pond turtle <u>Birds</u> : California black rail, black swift <u>Mammals</u> : Sierra Nevada mountain beaver				Require wetlands, waters, and/or associated habitats <sup>7</sup>

- Species included in this table were compiled from a database search of the California Natural Diversity database and of the USFWS IPaC website. Note that the literature and other resources used to compile the biological information for the species above are provided in text but are not cited specifically here.
- Federal listing  
 FT = federally threatened  
 FC = federal candidate for listing  
 FD = federally delisted  
 \* = no federal status  
 MBTA = Migratory Bird Treaty Act
- State listing—status codes  
 SE = state endangered  
 ST = state threatened  
 SCT = state candidate for listing as threatened  
 SSC = California species of special concern  
 CFP = California fully protected. 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.  
 \* = No state status  
 CalFGC = California Fish and Game Code
- Includes all birds named in the migratory birds section of USFWS IPaC resource list that are not otherwise mentioned above.
- Scientific names of species are provided in agency species lists attached to the report.
- See memo text for definitions of included species.
- Wetlands/waters and associated habitats include creeks, rivers, ponds, lakes, ocean, salt ponds, alkali lakes, vernal pools, meadows, mudflats, emergent wetlands, and riparian habitats, and/or their banks or adjacent uplands.

California red-legged frogs may complete their entire life cycle in a particular habitat or they may seek multiple habitat types (USFWS 2002). They often forage in uplands within 100 ft of aquatic sites (J Alvarez pers comm), especially at night, and may take shelter in small-mammal burrows and other refugia up to 300 ft from water at any time of the year (USFWS 2005). They have been observed to make long-distance movements that are straight-line point-to-point migrations of up to several miles without apparent regard to topography, vegetation type, or riparian corridors (Bulgur 1999, J Alvarez pers comm). Long-distance movements typically occur during or within 24 hours of a rain.

The US Fish and Wildlife Service considers any upland habitat within 1.25 miles of suitable breeding sites to be potentially occupied. Because this frog can breed in small numbers in a variety of aquatic sites, will move through any type of habitat if it migrates or disperses, and the forests surrounding Banner Mountain contain many small to medium ponds, California red-legged frog occurrence at the Banner Mountain project site cannot be dismissed. It is also, however, quite unlikely at this time. First, there is only one known occurrence within 17 miles in any direction, and it is 4.6 miles north of Banner Mountain. While this is not evidence of absence, it suggests at least scarcity. Second, while there are many ponds west of Banner Mountain, only three can be detected on aerial photography within 1.25 miles. Two of those are nearly 0.5 miles away and the third is nearly 0.9 miles away. Banner Mountain is not in a direct travel line between any two detectable ponds, making it an unlikely place for a dispersing frog to be found. Third, given that there are no aquatic habitats within roughly 0.5 miles, a frog occurring at the Banner Mountain site would be a dispersing frog and likely to only be passing through. This would most likely occur during or the day after a rain, a condition that would probably preclude construction. The likelihood of a dispersing California red-legged frog passing through the Banner Mountain project site during construction is considered extremely low but not impossible.

Special-status Birds. Three special-status bird species could nest near the project site: California spotted owl (*Strix occidentalis occidentalis*), olive-sided flycatcher (*Contopus cooperi*), and northern goshawk (*Accipiter gentilis*). Habitat requirements for each are provided in Table 1; all are known from either the general vicinity or the specific area. Figure 3 shows that the nearest known California spotted owl activity center is approximately 1 mile west of the project site. The nearest three CNDDDB records for northern goshawk within the nine-quad search area are for nests 7 to 8 miles north. There are no CNDDDB records for nesting olive-sided flycatchers in the nine-quad search area; however, one was heard in the area (pers. obs.) in spring of 2018.

Migratory Birds. In addition to these California species of special concern, California Fish and Game Code protects most nesting birds and their nests, eggs, and chicks during the nesting season, and the federal Migratory Bird Treaty Act protects many of California's migratory birds both within and outside of the nesting season.

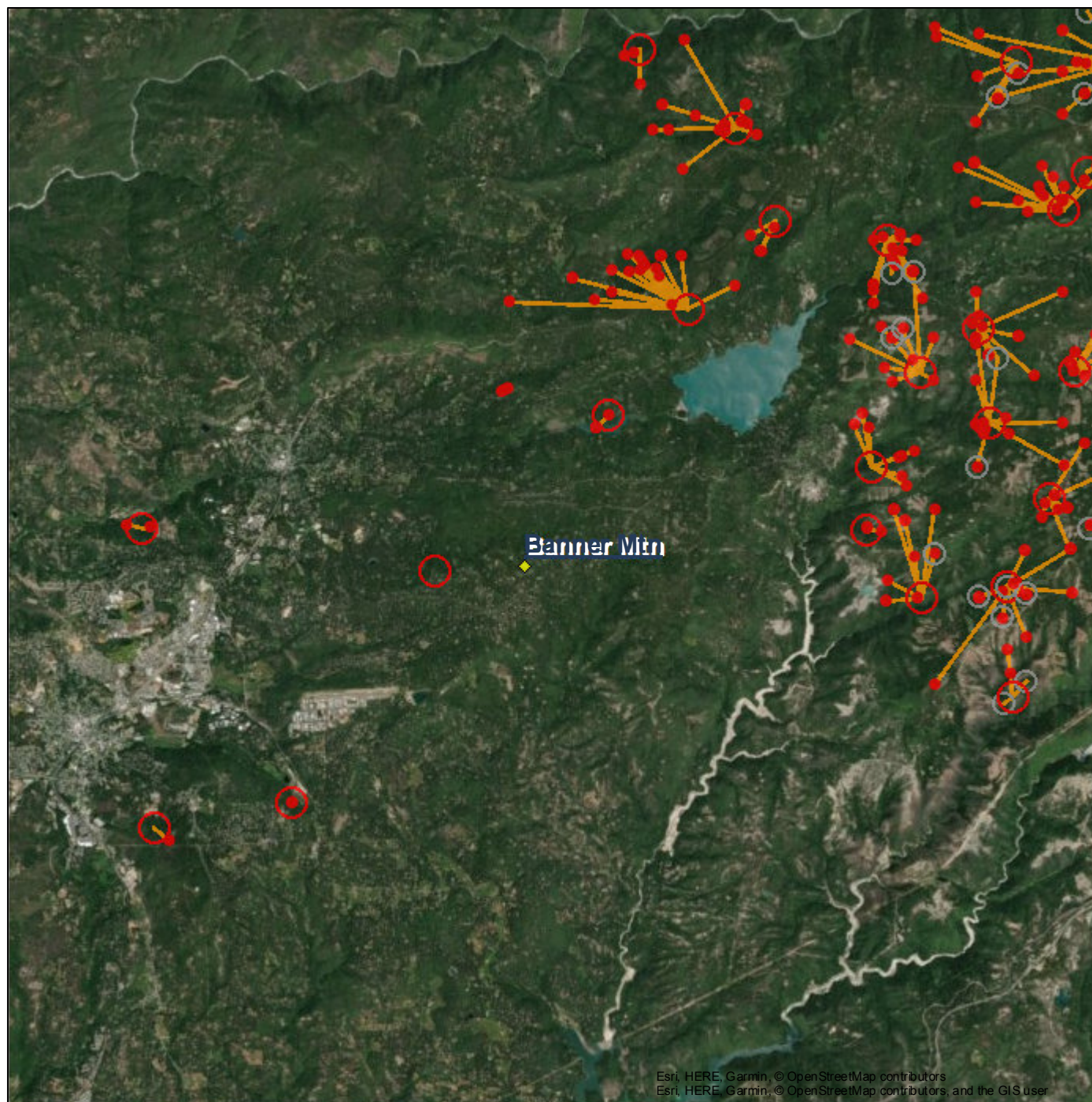
No other special-status species are currently expected to occur in this area or in habitats found at the project site.



Figure 2. California spotted owl observations, Banner Mountain site.

**Spotted Owl Observations  
[ds704]**

- Positive Observation
- Negative Observation
- Activity Center
- Not Valid Activity Center
- ◇ Abandoned
- Spotted Owl Observations Spider Diagram [ds705]



## Discussion and Potential Impacts

There are no aquatic resources at or near the project site, i.e., no streams or ponds or wetland/riparian habitats. There would therefore be no impacts to any wildlife species requiring aquatic features for any part their life cycle, and there would be no downstream impacts to other aquatic features or species. The only special-status wildlife potentially affected by project-related activities are California species of special concern and other migratory birds. No impacts are expected to species that are formally listed, proposed for listing, or candidates for listing.

Importantly, this wildlife assessment is based on an evaluation of habitat conditions, CNDDDB records, a USFWS informal species list, and a project description as of October 2018; however, the project is currently scheduled for a three-year construction period beginning in 2021. Habitat conditions for most species are not likely to substantially improve in the next three to six years—i.e., ponds or wetlands will not arise, species found mostly at higher elevations will not likely begin to use lower elevations, and forest quality and canopy cover will not likely increase. However, the endangerment status of some species could change (new listings, delistings, or down-listings), agency protection protocols for listed or special-status species could change, species lists could expand or contract, and California red-legged frogs or California spotted owls could be detected much closer to Banner Mountain than current records show them to be. Moreover, while the current project description provides that all construction disturbance areas would be within CAL FIRE lease hold areas and primarily localized around the work area only, staging-area locations have not yet been identified nor have the specific sites of access-road improvements. Additionally, old fencing would be removed and new fencing installed and the northwest corner of the Banner Mountain site could support special-status plants that could be affected by fencing or other project activities.

The results presented in this memo-report cannot be construed as covering all species and all conditions without change between now and 2021, nor can they accurately address additions or changes to the current project description. The primary changes that could need updating at the time of construction would be to species that require consideration and to protection protocols for those species. Such changes and updates would not likely affect the conclusions of this memo-report; however, a fresh evaluation should be conducted just prior to construction to ensure environmental compliance.

## Avoidance and Minimization Measures

To ensure compliance with regulations that are current at the time of construction and to ensure adequate and appropriate protections for special-status wildlife at the time of construction, measure AMM-BIO-1 is recommended. This could result in additions or modifications to avoidance and minimization measures described below.

**AMM-BIO-1 Update Species List, Impact Table, and Avoidance/Minimization Measures.** Pursuant to the California Endangered Species Act and the federal Endangered Species Act as well as to the California Environmental Quality Act, the following data should be updated to ensure that conditions and conclusions for special-status species presented herein have not changed or to update them if they have:



- Nine-quad record search of the California Natural Diversity Database, including the spotted owl database,
- Species list from the U.S. Fish and Wildlife Service IPaC (Information for Planning and Consultation) website,
- Current literature search for special-status species potentially present.

Potential impacts to newly listed species should be evaluated in addition to potential impacts to California spotted owl activity centers that might be substantially closer to the project in future years. Based on updated results, temporal or spatial measures may need to be redefined. This updated evaluation should be based on the full project footprint, including the construction site, staging areas, access-road upgrades, and any other impacted areas.

This re-evaluation should take place no more than 120 days prior to the onset of construction.

**AMM-BIO-2 Avoid Project-related Disturbance during the Nesting Season.** To avoid or minimize impacts to California spotted owl, northern goshawk, olive-sided flycatcher, and other migratory birds, measures AMM-BIO-2 and/or AMM-BIO-3 should be implemented.

Project-related activities should take place outside the nesting season for migratory birds, as feasible. Such activities include construction, road grading, vegetation trimming or removal, and equipment staging. The nesting season is generally accepted as February 15 through August 15. No restrictions would be necessary for activities that take place outside the nesting season (i.e., between August 16 and February 14).

### **AMM-BIO-3 Conduct Nesting-bird Surveys**

Pursuant to California Fish and Game Code and the Migratory Bird Treaty Act, a nesting-bird survey is recommended for any disturbing project activity that cannot be conducted outside the nesting season, which is February 15 through August 15). The survey should be conducted by a qualified biologist no more than two weeks prior to project initiation within 500 feet of the project footprint. The survey area should be based on the full project footprint, including the active construction site and the locations of access-road upgrades, staging areas, and other areas of impact.

If an active nest is found, a visible no-disturbance buffer zone should be established around it. Currently accepted CDFW and USFWS nesting-bird buffer distances are 250 feet for passerines and 500 feet for raptors. The vulnerability of a nest to disturbance may be mitigated by such factors as the amount and proximity of disturbance, the amount and density of tree and shrub cover around the nest, and the presence or absence of visual or acoustic barriers. For example, a bird nesting behind a building might be undisturbed by activities 30 feet away in front of the building, depending on the nature of the disturbance.

Where standard buffer distances are prohibitive to necessary project activities, mitigating factors and onsite biological monitoring could be considered to reduce buffer distances at the discretion of the qualified biologist. Buffer distances should be sized to ensure that project activities do not cause nest abandonment, premature fledging of nestlings, distress that keeps adults from incubating or feeding young, or nest failure for other project-related reasons. Onsite biological monitoring would be required to ensure that a reduced buffer size would not compromise nest success. Biological monitoring would not be required for maintenance of full buffer distances.

Within established buffer zones, no project-related activities should take place during the nesting season or until the qualified biologist determines that the nest is no longer active. For project-related activities taking place outside the nesting season, no precautions for nesting birds would be necessary (see AMM-BIO-2 above).

Note that any raptor choosing to nest within 500 feet or any passerine choosing to nest within 250 feet of the project during active construction will be assumed to be undisturbed by project activities. However, if there is a lull in activities lasting longer than two weeks, another nesting-bird survey should be conducted following the same protocol to protect nests established during the lull.

**AMM-BIO-4 Avoid Construction During Rain.** To minimize the risk of harm to a dispersing California red-legged frog, AMM-BIO-4 should be implemented.

Construction should be halted at the onset of rain of any duration. In addition, construction should be halted for a minimum of 48 hours following a rain lasting 30 minutes or longer in any season.

This measure should be expanded or further clarified if the updated review just prior to construction finds that the likelihood of California red-legged frog occurrence in the vicinity has increased.

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RESULTS OF  
NINE-QUAD RECORD SEARCH  
CALIFORNIA NATURAL DIVERSITY DATABASE



# Summary Table Report

## California Department of Fish and Wildlife

### California Natural Diversity Database



**Query Criteria:** Quad</span> IS </span>(Chicago Park (3912028)</span> OR </span>North Bloomfield (3912038)</span> OR </span>Nevada City (3912131)</span> OR </span>Grass Valley (3912121)</span> OR </span>Lake Combie (3912111)</span> OR </span>Colfax (3912018)</span> OR </span>Foresthill (3912017)</span> OR </span>Dutch Flat (3912027)</span> OR </span>Washington (3912037))  
</span> AND </span>Taxonomic Group</span> IS </span>(Fish</span> OR </span>Amphibians</span> style="color:Red"></span> OR </span>Reptiles</span> style="color:Red"></span> OR </span>Birds</span> style="color:Red"></span> OR </span>Mammals</span> style="color:Red"></span> OR </span>Mollusks</span> style="color:Red"></span> OR </span>Arachnids</span> style="color:Red"></span> OR </span>Crustaceans</span> style="color:Red"></span> OR </span>Insects)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<b><i>Accipiter cooperii</i></b> Cooper's hawk	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	3,003 3,003	115 S:1	0	0	0	0	0	1	0	1	1	0	0
<b><i>Accipiter gentilis</i></b> northern goshawk	G5 S3	None None	BLM_S-Sensitive CDF_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	3,000 3,400	432 S:3	0	1	0	0	2	0	3	0	1	0	2
<b><i>Aplodontia rufa californica</i></b> Sierra Nevada mountain beaver	G5T3T4 S2S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern		131 S:1	0	0	0	0	0	1	1	0	1	0	0
<b><i>Ardea herodias</i></b> great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	3,075 3,075	154 S:1	0	1	0	0	0	0	0	1	1	0	0
<b><i>Bombus caliginosus</i></b> obscure bumble bee	G4? S1S2	None None	IUCN_VU-Vulnerable	2,450 2,450	181 S:1	0	0	0	0	0	1	1	0	1	0	0
<b><i>Bombus occidentalis</i></b> western bumble bee	G2G3 S1	None None	USFS_S-Sensitive XERCES_IM-Imperiled	2,500 3,000	282 S:2	0	0	0	0	0	2	2	0	2	0	0
<b><i>Corynorhinus townsendii</i></b> Townsend's big-eared bat	G3G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBGW_H-High Priority	2,600 3,450	626 S:2	0	2	0	0	0	0	0	2	2	0	0





# Summary Table Report

## California Department of Fish and Wildlife

### California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Cypseloides niger</i> black swift	G4 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_YWL-Yellow Watch List USFWS_BCC-Birds of Conservation Concern	3,240 3,240	46 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T2 S2	Threatened None		1,785 1,875	271 S:3	0	1	2	0	0	0	0	3	3	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	1,260 3,379	1343 S:5	1	1	0	0	0	3	1	4	5	0	0
<i>Laterallus jamaicensis coturniculus</i> California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	1,860 2,550	303 S:3	0	1	0	0	0	2	2	1	3	0	0
<i>Margaritifera falcata</i> western pearlshell	G4G5 S1S2	None None		965 965	78 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Martes caurina sierrae</i> Sierra marten	G5T3 S3	None None	USFS_S-Sensitive	4,200 4,200	149 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Myotis thysanodes</i> fringed myotis	G4 S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	3,300 3,300	86 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Orobittacus obscurus</i> gold rush hanging scorpionfly	G1 S1	None None		3,300 3,300	2 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Pekania pennanti</i> fisher - West Coast DPS	G5T2T3Q S2S3	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern USFS_S-Sensitive	2,400 2,400	737 S:1	0	0	0	0	0	1	1	0	1	0	0



# Summary Table Report

## California Department of Fish and Wildlife

### California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<b><i>Phrynosoma blainvillii</i></b> coast horned lizard	G3G4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	2,250 3,220	774 S:8	1	1	0	1	0	5	8	0	8	0	0
<b><i>Rana boylei</i></b> foothill yellow-legged frog	G3 S3	None Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	840 4,234	2054 S:66	6	5	7	0	0	48	13	53	66	0	0
<b><i>Rana draytonii</i></b> California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	3,050 3,050	1497 S:1	1	0	0	0	0	0	0	1	1	0	0
<b><i>Rana sierrae</i></b> Sierra Nevada yellow-legged frog	G1 S1	Endangered Threatened	CDFW_WL-Watch List IUCN_EN-Endangered USFS_S-Sensitive	2,700 3,600	658 S:6	0	5	0	0	0	1	5	1	6	0	0
<b><i>Rhyacophila spinata</i></b> spiny rhyacophilan caddisfly	G1G2 S1S2	None None		2,200 2,200	4 S:1	0	0	0	0	0	1	1	0	1	0	0
<b><i>Vulpes vulpes necator</i></b> Sierra Nevada red fox	G5T1T2 S1	Candidate Threatened	USFS_S-Sensitive	2,260 3,700	201 S:4	0	0	0	0	0	4	4	0	4	0	0

IPaC INFORMAL SPECIES LIST  
US FISH AND WILDLIFE SERVICE

# IPaC resource list

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

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

## Location

Nevada County, California



## Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

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

# Endangered species

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

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

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

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

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

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

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

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

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

## Amphibians

NAME

STATUS

California Red-legged Frog *Rana draytonii*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/2891>

## Fishes

NAME

STATUS

Delta Smelt *Hypomesus transpacificus*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/321>

## Crustaceans

NAME

STATUS

Vernal Pool Fairy Shrimp *Branchinecta lynchi*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

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

Vernal Pool Tadpole Shrimp *Lepidurus packardii*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/2246>

## Flowering Plants

NAME

STATUS

Pine Hill Flannelbush *Fremontodendron californicum* ssp. *decumbens*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/4818>

Stebbins' Morning-glory *Calystegia stebbinsii*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/3991>

## Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.



# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

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

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

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

NAME

BREEDING SEASON (IF A  
BREEDING SEASON IS INDICATED  
FOR A BIRD ON YOUR LIST, THE  
BIRD MAY BREED IN YOUR  
PROJECT AREA SOMETIME WITHIN  
THE TIMEFRAME SPECIFIED,  
WHICH IS A VERY LIBERAL  
ESTIMATE OF THE DATES INSIDE  
WHICH THE BIRD BREEDS  
ACROSS ITS ENTIRE RANGE.

"BREEDS ELSEWHERE" INDICATES  
THAT THE BIRD DOES NOT LIKELY  
BREED IN YOUR PROJECT AREA.)

#### Bald Eagle *Haliaeetus leucocephalus*

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

#### California Spotted Owl *Strix occidentalis occidentalis*

Breeds Mar 10 to Jun 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/7266>

#### Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

#### Rufous Hummingbird *Selasphorus rufus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

#### Williamson's Sapsucker *Sphyrapicus thyroideus*

Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/8832>

## Probability of Presence Summary

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

### Probability of Presence (■)

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

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

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

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

### Breeding Season (■)

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

### Survey Effort (|)

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

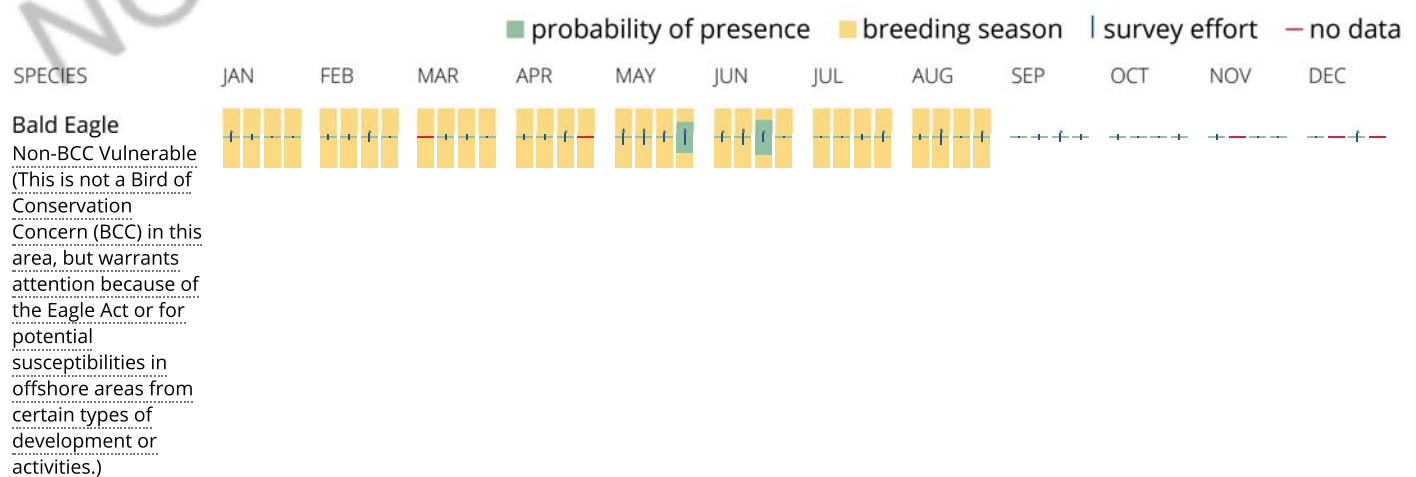
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

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







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

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

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

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

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

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

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

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

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

## What are the levels of concern for migratory birds?

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

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

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

## Details about birds that are potentially affected by offshore projects

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

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

## What if I have eagles on my list?

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

## Proper Interpretation and Use of Your Migratory Bird Report

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

## Facilities

### Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

## Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1C](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PSSC](#)

[PFOC](#)

[PSSA](#)

FRESHWATER POND

[PUBHh](#)



[PUBHx](#)[PUBF](#)[PUBK](#)[PUBFh](#)[PUBFx](#)[PABF](#)[PABFx](#)[PABHh](#)

## LAKE

[L1UBHh](#)[L2USCh](#)

## RIVERINE

[R4SBC](#)[R5UBFx](#)[R4SBCx](#)[R5UBF](#)[R3UBH](#)[R4SBA](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

**Data limitations**

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

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

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

**Data exclusions**

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

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in

activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

# **Appendix E**

## **Cultural Resources Phase I Evaluation**



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[www.aspeneg.com](http://www.aspeneg.com)

## **PROJECT MEMORANDUM**

### **CALFIRE BANNER COMMUNICATION TOWER PROJECT**

**Date:** August 30, 2018  
**To:** Terry Ash, DGS  
**From:** Michael Macko, MA, RPA

#### **Subject: Cultural Resources Phase I Evaluation (Aspen #3409)**

This memo provides the results of a CHRIS records search completed by Aspen Environmental Group (Aspen) for the CalFire Banner Communication Tower Project(Project).

The study described herein was performed to determine the presence or absence of cultural resources in the Project area and the surrounding 1/8-mile radius (Figure 1). The study consisted of a search of the California Historical Resources Information System's (CHRIS) cultural resources records, Native American Heritage Commission (NAHC) Sacred Lands File, and desktop research of paleontological online resources.

### **Project Description**

The objective of the Project is to install new Department of Forestry and Fire Protection (CAL FIRE) telecommunications tower, vaults and other supporting infrastructure within the State's Public Safety Microwave Network (PSMN). CAL FIRE'S telecommunications sites provide the essential emergency communications linkage for CAL FIRE'S fire protection and emergency response command and control throughout the state. In addition, these facilities are essential components of California's PSMN that transmits 911 calls and emergency instructions during major public safety incidents, including floods, firestorms and other natural disasters. Many of the CAL FIRE-managed mountaintop sites are also utilized and relied upon by other public safety agencies for their telecommunications needs.

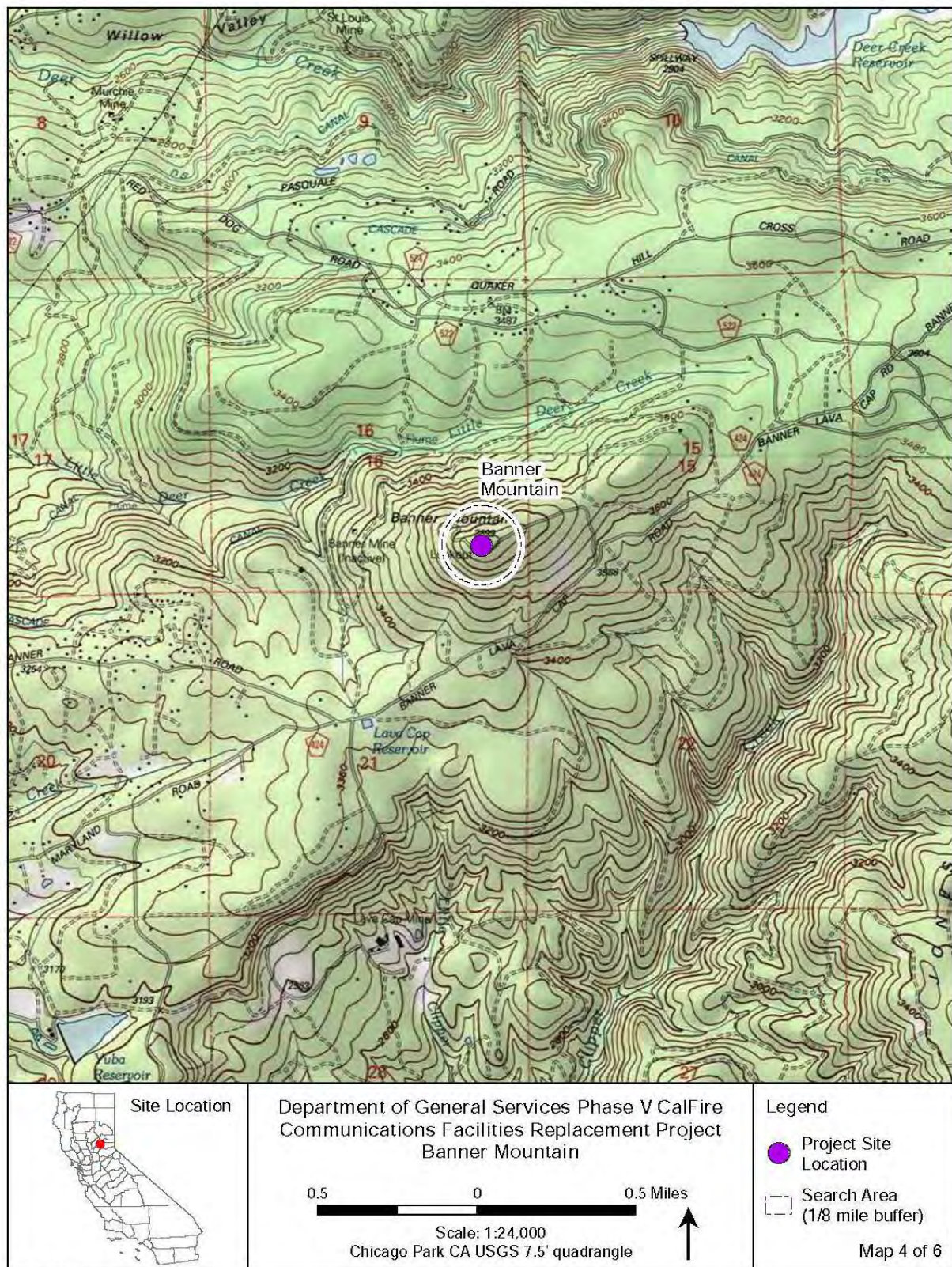
The Project would construct a new telecommunications tower and supporting facilities at the CalFire Banner communication facility to support current microwave technology. New equipment would include a telecommunications tower with microwave dishes, radio equipment vaults, and new buildings/facilities housing environmental control equipment and fuel systems (generators).

### **Location and Setting**

Banner Mountain is located in Nevada County. The existing tower at Banner Mountain is fully loaded, precluding any further expansion of the paths out of that site for the State Microwave System. Banner Mountain's prime location for public safety radio has overloaded the existing tower to the extent that if any more dishes or antennas are added the tower could fail. To implement the planned conversion expansion, an additional tower is required to complement the existing tower.



Figure 1



## **Construction Activities**

### **New Tower and Vault Construction**

The new tower foundations would be constructed with poured-in- place mat foundations or with drilled piles. Depending on final geotechnical engineering, the tower may need to be rock anchored for stability. Spoils from foundation excavations would be placed within the lease hold area or spread on adjacent existing access roads.

After survey positioning is verified, the foundation footings would be excavated or drilled. Anchor bolts may be drilled into bedrock at depths below 20 feet, if necessary, to properly anchor the foundation. Then rebar would be set, and concrete would be poured. Steel-reinforced rebar cages would be assembled at staging yards on the Project site. Each replacement tower would require concrete delivered to the site or produced at an on-site batch plant.

Once the foundations are complete, new towers would be installed. A crane would be used to set the steel tower onto the new foundations. When the new tower is in place, the structure would be bolted to the foundation and together (if erected in pieces). Sections may also be spot welded together for additional stability. Depending on the terrain and available equipment, the tower may be assembled into a complete structure at the staging yard or erected in pieces.

The new vaults would be premanufactured buildings or concrete masonry unit (CMU) block wall construction depending on final engineering.

### **Restoration Activities**

Upon completion of construction activities and testing of Project components, all disturbed work areas (including access roads) would be restored to prior conditions. The overall goal of restoration would be to restore natural contours and to allow the re-establishment of vegetation that is approximately equivalent to pre-construction conditions in terms of coverage and species composition.

## **Regulatory Framework**

Numerous laws, ordinances, regulations, and standards on federal, state, and local levels seek to protect and manage cultural resources. The Project is not located on federally owned or managed lands, which precludes the evaluation of the Project under Section 106 of the National Historic Preservation Act. Applicable State of California regulations include the CEQA PRC Sections 21000 et seq., Section 5024, Section 5024.5; California Code of Regulations (CCR) Title 14, Chapter 3, Sections 15000 et seq.; and AB 52. These are discussed in detail below.

### **State Regulations**

**California Environmental Quality Act (CEQA) 1970 (PRC Sections 21000 et seq., Section 5024, Section 5024.5; CCR Title 14, Chapter 3, Sections 15000 et seq.)** establishes that historical, archaeological, and paleontological resources must be afforded consideration and protection by the CEQA (14 CCR Section 21083.2, 14 CCR Section 15064). CEQA Guidelines define significant cultural resources under three regulatory designations: historical resources, unique archaeological resources, and tribal cultural resources.

Pursuant to Guideline 15064.5(a), the term “historical resource” includes: a resource listed in or determined to be eligible by the State Historical Resources Commission for listing in, the California



Register of Historical Resources (CRHR). A resource included in a local register of historical resources...or identified as significant in a historical resource survey...shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

As defined in PRC Section 21083.2(g), a "unique archaeological resource" is not eligible for the CRHR but is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- It has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- It is directly associated with a scientifically recognized important prehistoric or historical event or person.

PRC Section 21074 defines a Tribal Cultural Resource as "a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe." TCRs also include "non-unique archaeological resources" that may not be scientifically significant, but still hold sacred or cultural value to a consulting tribe. A resource shall be considered significant if it is: (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PCR § 5020.1(k) (discussed in detail above); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in of PCR § 5024.1(c). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

**Native American Historic Resource Protection Act (PRC Section 5097 et seq.; Section 5097.9; Section 5097.98)** establishes that both public agencies and private entities using, occupying, or operating on public property under a public license, permit, grant, lease, or contract on state property under public permit, shall not interfere with the free expression or exercise of Native American religion, and shall not cause severe or irreparable damage to Native American sacred sites.

**California Health and Safety Code 7050.5** establishes that any person who knowingly mutilates, disinters, wantonly disturbs, or willfully removes any human remains in or from any location without authority of law is guilty of a misdemeanor. It further defines procedures for the discovery and treatment of Native American human remains. All work at the site of discovery must cease immediately, and notification made to the County Coroner. Within 48 hours of discovery, the Coroner must determine if the remains are Native American in origin. If this is determined, then the Coroner must notify the NAHC within 24 hours.

**Public Resources Code 5097.98 (b) and (e)** require a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reenter the remains elsewhere on the property in a location not subject to further disturbance.

## **Environmental Setting**

The Project area is located in the Western Foothills of the Sierra Nevada Range. The geology of the area is comprised of metavolcanic (Mesozoic Metavolcanic) and granitic (Mesozoic Granitic) formations, that comprise the lava dome of an extinct volcano. These geological features preclude the existence of paleontological resources in the Project area (Caltrans 2015).

Soils are typically shallow and comprised of mostly sands formed by eroded bedrock and a layer of decomposing organics. Elevation is around 3,900 feet above mean sea level at the property and while relatively level on the summit (slope <15 degrees), the property contains steep slopes (>20 degrees) to the north towards Little Deer Creek. Vegetation is predominantly coniferous forests interspersed with patches of grassland and shrubs.

## **Cultural Setting**

### **Ethnographic**

The Project lies within the ethnographic territory of the Hill Nisenan, an ethnographic branch of the Southern Maidu. The Nisenan linguistically are grouped with the Northern Maidu and Konkow within the Penutian family (Riddell 1978:387). Kroeber distinguished three dialects within the larger territory occupied by the Nisenan, but Riddell indicated more distinctions are possible. Wilson and Towne (1978) distinguished several "centers," presumably linguistic and social groupings.

The Nisenan occupied a region encompassing the American, Bear, southern Feather and Yuba River drainages. Hydrologic and geologic boundaries generally included the Sacramento River on the west, the Feather River on the northwest, probably the Yuba on the north, the north side of the Cosumnes on the south and the crest of the Sierras on the east. Nisenan political organization was based on territorial ownership. "Nisenan" means 'from among us', or 'of our side' (Wilson & Towne 1978). They resided in several different settlements while still referring to themselves as one distinct political unit, a "tribelet" according to Kroeber (1925). Each tribelet usually had one principal village and several allied subsidiary villages. In the foothills, villages were located on ridges and on flats, especially those with southern exposure, near major streams. Village areas for the Hill Nisenan were located at lower elevations where habitation was easier in the winter. The upper elevations were the scene of warm weather hunting and gathering, the people moving about and utilizing small campsites; thus, the general clustering of large village sites in the foothill Nevada City/Grass Valley area, with its milder winters, and no valley fog. The foothill area also had more water in the warmer summer months than did the adjacent lower foothills bordering the valley.

Nisenan subsistence was patterned around the seasonal gathering of a multitude of plant and animal resources. Plant food sources consisted of acorns (especially those of the Black oak), roots, grasses, herbs, berries, fruits and seeds. Game animals taken by snare, net or arrow included deer, antelope, rabbit, elk, birds, salmon and other fish. Although they were not domesticators, a certain amount of 'plant enhancement' occurred, primarily by using the practice of careful burning to enhance new plant growth and to allow more visibility for hunting. Some plants, especially those used for basketry, were 'encouraged' by removal of weeds and probably by water implementation. Deer and rabbits were hunted in drives, often by members of several villages. Smaller animals such as woodrats, field mice and squirrels were also an important food source (Gardner 1977). Some birds were netted and eaten while others, such as hawks, eagles and flickers, were used only for their feathers. Fish were taken by use of soaproot poison or with bi-pointed hooks. Rabbits and medium-sized birds were covered with mud and steam-roasted,

small animals and birds were cooked in their skins or skinned, dried and pounded into powder. Grasshoppers were trapped in pits, then smoked and steamed in grape leaves (Wilson 1972).

## Prehistory

Archaeological data gathered over the past century have shown that humans have inhabited California since the terminal Pleistocene, approximately 12,000 years before present (BP). Due to the varied topography and climate over time, technological adaptations have varied greatly from region to region. However, Native American technology, subsistence systems, and land use patterns appear to have had similar general elements during various periods of prehistory. Anthropologists working for Sacramento City Junior College and the University of California, Berkeley, have developed a Central California Taxonomic System and a tripartite classification scheme of Early Period (12,000 - 8,000 BP), Middle Period (8,000 – 1,500 BP), and Late Period (1,500 – 150 BP) to aid in the description of past human activity in the region. Bennyhoff and Hughes (1987) have subdivided the Middle period further, which is presented below in summary form.

The following overview of these temporal periods is based upon a more detailed discussion of the broad cultural patterns proposed for Central California found in Bennyhoff and Fredrickson (1969) and is supplemented with information outlined by Moratto (1984). It should be noted that many of the prehistoric cultural groups that inhabited the Sierra Nevada range also occupied winter territories in the Central Valley.

The **Early Period** is characterized by archaeological evidence of the entry and spread of humans into present-day California. Many of the earliest sites that date to this period are situated along shores of pluvial lakes and artifacts characteristic of this period include distinctive fluted projectile points and flaked crescent-shaped implements. Traditionally, researchers typically have attributed these tools to implements likely used in hunting of Pleistocene mega-fauna. However, there is little archaeological evidence supporting the notion that Paleo-Indian lifeways were consistently tied to the pursuit of mega-fauna. A developed milling tool technology may also have existed during this period and has been noted at some sites. The social units are thought to have been small, highly mobile, and not heavily dependent upon exchange of resources, with only infrequent evidence of any type of exchange activities.

The **Middle Period** extends over a large temporal span, and is generally divided into three distinct cultural subperiods based on broad patterns of settlement, subsistence, and land use:

- The **Lower Archaic Period** (8,000 – 5,000 BP) coincides with a middle Holocene climatic change. Generally drier conditions prevailed, bringing about a reduction in the size and number of pluvial lakes that appear to have been so important in earlier land use patterns. Subsistence appears to have been focused on the consumption of plant foods over faunal resources and settlement appears to have been semisedentary. Distinctive artifact types include large projectile points of varying morphology, and milling slabs and grinding stones are frequently encountered on sites.
- The **Middle Archaic Period** (5,000 – 3,000 BP) begins at the end of the mid-Holocene when climatic conditions were similar to those of the present day. During this period, there is a diversification of the economic base and the emergence of millingstone tools associated with acorn-processing. Hunting remained an important source of food, although there was clearly a shift in emphasis toward plant, seed and nut resources. Characteristic artifacts for this period include the mortar and pestle, continued use of the milling stone and hand-stone, and the continued use of large projectile points. Overall, sites of this period display a higher degree of sedentism with larger and harder to transport tool types emerging. However, little evidence is present for development of regularized trade between groups.

- The **Upper Archaic Period** (3,000 – 1,500 BP) is marked by the growth of sociopolitical complexity and the development of status distinctions based upon material wealth. There is increased evidence of inter-group trade and regular exchange systems. Religious activity begins to emerge and may represent the origins of the Kuksu religion at the end of the period. Prestige and trade goods, such as shell beads, also gained significance. Lithic artifacts are still typically large projectile points; however, new and more distinct styles begin to emerge. In addition, portable bowl mortar and pestle technology replaced the milling stone and hand-stone.

The **Late Period** is distinguished by several technological and social changes. The bow and arrow were introduced, ultimately replacing the dart and atlatl. Territorial boundaries between groups became well established and settlement patterns were highly sedentary. The ability to distinguish an individual's social status based on acquired wealth became more common. Exchange of goods between groups became more regularized with more raw materials and other resources entering the exchange networks. During the latter portion of this period (500 - 150 BP), exchange relations became highly regularized and sophisticated. The clamshell disk bead developed into a monetary unit for exchange and increasing quantities of goods moved greater distances. Specialists within groups retained an ability to govern various aspects of the production and exchange of these shell beads. Near the conclusion of this period, large-scale European settlement began to greatly affect traditional Native lifeways.

Some of the earliest archaeological surveys in the Sierra Nevada were part of the Smithsonian Institution River Basin Surveys between 1947 and the early 1950s. The first effective synthesis of Sierra Nevada archeology was produced by Heizer and Elsasser (1953), and further refined by Elsasser (1960). Since that time, major archeological projects in the Sierra have proliferated, largely due to work on water projects and other cultural resources management research efforts. These early field surveys were performed in the lower foothills and edges of the lower plains, along with areas in the central and southern Sierras (Moratto 1984). For the northern Sierra alone, archeological sequences, based on excavation of stratified sites and other data, are available for the Lake Tahoe vicinity (Elston 1979, 1972; Elston and Davis 1972; Elston et al. 1977), the Lake Oroville locality (Jewell 1964; Olsen and Riddell 1963; Ritter 1970), and for the proposed Auburn Reservoir area.

### **Historic Period**

The Spanish entered the Sacramento valley by navigating up the Sacramento River as early as 1808 (Moraga) and may have subsequently explored the Yuba and Bear Rivers in 1822. Russian, American and Hudson's Bay trappers were also in the general area in search of beaver in the 1820s. In 1822-23 the Russians reportedly built cabins on the Bear River 25 miles east of Nevada City. The earliest documentation of Euro-American presence in the Grass Valley area was in 1846, when Claude Chana and some other French immigrants passed through this area on their way down from the Truckee Pass (Hoover, Rensch and Rensch 1990). The spring-fed meadow was discovered by their hungry cattle who had broken away from their camp during the night.

After Marshall's discovery of gold at Coloma in January 1848, exploration of other creek areas began to determine if the existence of gold was widespread. In the summer of 1848 John Marshall camped overnight on Deer Creek at the site of present-day Nevada City and recovered a small amount of gold by panning. At approximately the same time Jonas Spect worked lower Deer Creek as far as what is now Penn Valley. By 1851, over 10,000 miners were working in the Nevada City and Grass Valley areas. The first mining was almost entirely from surface placering. Drift mining began in the 1850s and continued until about 1900. In October 1850 the most noteworthy discovery of gold-bearing quartz was made on Gold Hill in Grass Valley by George Knight, which led to the development of quartz-mining in the area.

The area around Banner Mountain, on which the project area is located, was exploited by lode mining operations registered as the Banner Mine from the 1860s through the 1930s. Most of the mining activity near Banner Mountain was located on the lower, western slope well outside the current project area. Superstructures and other surface indicators of these mines have been largely removed, although exposed and frequently collapsed shafts and widely scattered debris related to these operations are widespread throughout this area, including the area around Banner Mountain.

Activity around Banner Mountain after the 1930s largely consisted of logging, water storage, and water diversion projects. In 1920 the Banner Mountain Fire Lookout Station (P-29-2534) was constructed on the peak of the mountain. And in the 1990s a communications tower and two support structures were constructed adjacent to the fire lookout station.

## **Methods**

### **Paleontological Resources**

A desktop review of paleontological resources was conducted online. No identified fossil sites were noted, and none are expected since the igneous geological formations on the Project site preclude the existence of paleontological resources (Caltrans 2015).

### **Cultural Resources**

#### ***Records Search***

Aspen performed an in-person records search at the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC), Sonoma State University, Sonoma, California, on April 20, 2018. The NWIC is the official repository for all cultural resources site records and reports for Humboldt County. The NWIC records search results are presented below (Table 1).

On May 21, 2018, Aspen requested a search of the Native American Heritage Commission's (NAHC) Sacred Lands File database. On May 29, 2018, the NAHC responded with a negative result for known sacred sites or tribal cultural resources as defined by the CEQA are documented within the Banner Mountain project area or surrounding ¼-mile radius. (A copy of the letter from the NAHC is attached at the end of this report.)

#### ***Pedestrian Survey***

To evaluate the potential for cultural remains a systematic intensive archaeological pedestrian survey of the Project area and 30-meters adjacent to the Project area was completed. The survey consisted of opportunistic survey, depending on topography and proximity to existing developed structures. Evidence of past human occupation and use of the area was searched for carefully by observing the ground surface for any changes in soil discoloration or cultural materials. Objects that typically would suggest human use of the area include stone tools, beads, ground stone, historic cans and other historic debris. Archaeological subsurface testing was not conducted. Attention was given to observing the ground surface for indication of buried human remains present in the Project area. Joshua Noyer, MA, a qualified archaeologist per the Secretary of the Interior's Qualification Standards for Professional Archaeology, performed the pedestrian survey on June 26, 2018.

## **Cultural Records Search Results**

The records search at the CHRIS NWIC identified three previously completed survey report located within or adjacent to the Project and area within a 1/8-mile of the Project area (Table 1, below). One sensitive

historical resource was identified within the Project area (29-002534); however, no unique archaeological resources, or tribal cultural resources were identified in the Project area or within the 1/8-mile surrounding radius.

**Table 1. CHRIS Cultural Resources Reports**

Report Number	Year	Title	Author	Location
000507	1991	Archaeological Inventory Survey of the Proposed Brackett Subdivision of 15 Acres, Banner Mountain, Nevada County, California.	Peter Jensen	Banner Mountain
017181	1993	An Inventory and Historical Significance Evaluation of CDF Fire Lookout Stations.	Mark V. Thornton	Banner Mountain
002187	1994	Archaeological Inventory Survey, Banner Mountain Radio Tower Project Area, 5 acre Development Site, Near Banner Mountain Lookout, Banner Mountain, Nevada County, California.	Jensen and Associates	Banner Mountain
005750	2001	Nextel Mobile Radio Facilities	Lorna Billat	Banner Mountain

## Pedestrian Survey Results

The **Banner Mountain Fire Lookout Station** (P-29-2534) This historic site is located directly within and surrounding the Project area. The site was originally constructed in 1920 and consists of a fire tower and multiple support structures. While the fire tower, several buildings and a water tank remain intact, in the case of two of the support structures only concrete slab foundations remain. The historic resource was originally recorded in 1991 by Mark V. Thornton as part of a larger study to determine the NHPA eligibility of fire lookout stations across California (Thornton 1993). In the original 1991 determination of historic eligibility, the Banner Mountain Fire Lookout Station was found to meet both criteria A and D for eligibility and protection under the NHPA. While the tower and its components are afforded protection under the NHPA, the current Project is not expected to impact any of the components associated with the Banner Mountain Fire Lookout Station.

No other historic resources were noted in the Project area.

## Management Recommendations

The current archaeological assessment did not identify any NRHP or CRHR eligible cultural resources within the Project area. Pursuant to California PRC Section 21084.1, Aspen recommends to responsible public agencies a finding that no known NRHP or CRHR eligible cultural resources will be affected by the proposed project.

Aspen recommends that a *monitor is not required during construction*. However, as with all construction projects as-yet-unidentified buried resources may be present within the project area. Based on these factors the following standard inadvertent discovery measures are recommended:

1. **Train Construction Personnel.** Prior to the initiation of construction, all construction personnel shall be trained, by a qualified archaeologist, regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) and protection of all archaeological resources during construction. DGS or CalFire shall complete training for all construction personnel. Training shall inform all construction personnel of the



procedures to be followed upon the discovery of cultural materials. All personnel shall be instructed that unauthorized removal or collection of artifacts is a violation of State law. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend the Workers' Environmental Training Program so they are aware of the potential for inadvertently exposing buried archaeological deposits. DGS or CalFire shall provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources and anticipated procedures to treat unexpected discoveries.

2. **Inadvertent Discovery of Historical Resources, Unique Archaeological Resources or Tribal Cultural Resources.** If previously unidentified cultural resources are identified during construction activities, construction work within 50 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist assesses the significance of the resource. The archaeologist, in consultation with the CEQA lead agency, State Historic Preservation Officer, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under California Environmental Quality Act Section 21083.2, or are determined to be tribal cultural resource as defined in Section 21074. If previously unidentified cultural resources or tribal cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National or California Registers, qualify as a unique archaeological resource under CEQA Section 21083.2 or determined to be tribal cultural resource as defined in Section 21074.
3. **Treatment of Human Remains.** All human remains discovered are to be treated with respect and dignity. Upon discovery of human remains, all work within 50 feet of the discovery area must cease immediately, nothing is to be disturbed, and the area must be secured. The County Coroner's Office must be called. The Coroner has two working days to examine the remains after notification. The appropriate land manager/owner of the site is to be called and informed of the discovery. If the remains are located on federal lands, federal land managers, federal law enforcement, and the federal archaeologist must be informed as well, due to complementary jurisdiction issues. It is very important that the suspected remains, and the area around them, are undisturbed and the proper authorities called to the scene as soon as possible, as it could be a crime scene. The Coroner will determine if the remains are archaeological/historic or of modern origin and if there are any criminal or jurisdictional questions.

After the Coroner has determined the remains are archaeological/historic-era, the Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative. If the Coroner believes the remains to be those of a Native American, he/she shall contact the Native American Heritage Commission (NAHC) by telephone within 24 hours.

The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains. The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

According to the California Health and Safety Code, six (6) or more human burials at one (1) location constitute a cemetery (Section 8100), and willful disturbance of human remains is a felony (Section 7052).

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## **Appendix – Native American Heritage Commission Correspondence**



March 21, 2018

8801 Folsom Boulevard, Suite 275, Sacramento, CA  
95826-3250 Tel. 916-235-9389, [www.aspeneg.com](http://www.aspeneg.com)

Native American Heritage Commission  
1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95691

**Subject:** DGS Phase V Communication Sites, California – Sacred Lands File Search and Request for AB 52 Native American Contacts. Aspen Project No. 3409

To Whom It May Concern,

CAL FIRE is proposing to replace antiquated telecommunications equipment at six existing sites with upgraded equipment. CAL FIRE is taking action to comply with the legislatively mandated plan for the California Technology Agency's Public Safety Communications Office (PSCO) to convert all telecommunications sites in the State's Public Safety Microwave Network (PSMN) to digital technology.

CAL FIRE's telecommunications sites provide essential emergency communications for fire protection and emergency response command and control throughout the State, including components of California's PSMN that transmits 911 calls and emergency instructions during major public safety incidents. In addition to these valuable and essential services, many of the CAL FIRE-managed mountaintop sites are also utilized and relied upon by other major public safety agencies for their telecommunications needs.

At the request of the District, Aspen Environmental Group's (Aspen) Cultural Resources Technician, Ms. Sarah Mace, respectfully submits this request for a search of the Sacred Lands File for the proposed project area and immediate surrounding area (see Figures 1-6). Aspen also requests a list of Native American contacts who may have an interest in learning about the proposed project, and who may potentially want to participate in official AB 52 government-to-government consultation involving tribal representatives and Cal Fire staff. AB 52 tribal consultation would occur between authorized Cal Fire staff and tribal representatives, and include discussion of any tribal cultural resources that may be affected by proposed activities, potential protection measures, and possible alternatives to proposed activities or project areas if during consultation it is determined that the proposed project (or a portion of it) may cause a substantial adverse change in the significance of a Tribal cultural resource.

*Project Location Information*

See Figures 1-6 for project locations on USGS Chalk Mountain, Scotia, Harris, Chicago Park, Calaveritas, and Solyo 7.5-minute topographic quadrangles. They can be located respectively by UTM coordinates at: NAD 1983, UTM Zone 11, 603527m E 4525593m N; 404965.9m E, 4474658m N; 440970.2m E, 4441320m N; 675561.9m E, 4346021m N; 708822m E, 4234016m N; 643685.2m E, 4152389m N; and 563033.3m E, 4112915m N.

Thank you for your assistance in completing these tasks. If you have questions or need additional information, please contact me at (916) 235-9381 or [smace@aspeneg.com](mailto:smace@aspeneg.com).

Sincerely,

Sarah Mace, MA  
Cultural Resources Technician  
Aspen Environmental Group

*Enclosures: Sacred Lands File & Native American Contacts List Request, Figures 1-6*



## Local Government Tribal Consultation List Request

### Native American Heritage Commission

1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95691  
916-373-3710  
916-373-5471 – Fax  
[nahe@nahe.ca.gov](mailto:nahe@nahe.ca.gov)

#### Type of List Requested

☒ **CEQA Tribal Consultation List (AB 52)** – *Per Public Resources Code § 21080.3.1, subs. (b), (d), (e) and 21080.3.2*

☐ **General Plan (SB 18)** - *Per Government Code § 65352.3.*

#### **Local Action Type:**

\_\_\_ **General Plan** \_\_\_ **General Plan Element** \_\_\_ **General Plan Amendment**

\_\_\_ **Specific Plan** \_\_\_ **Specific Plan Amendment** \_\_\_ **Pre-planning Outreach Activity**

#### Required Information

**Project Title:** 3409 DGS Phase V

**Local Government/Lead Agency:** Department of General Services

**Contact Person:** Sarah Mace

**Street Address:** 8801 Folsom Blvd. Suite 275

**City:** Sacramento **Zip:** 95826

**Phone:** 916-235-9381 **Fax:**

**Email:** [smace@aspeneg.com](mailto:smace@aspeneg.com)

#### **Specific Area Subject to Proposed Action**

**County:** See cover letter. **City/Community:**

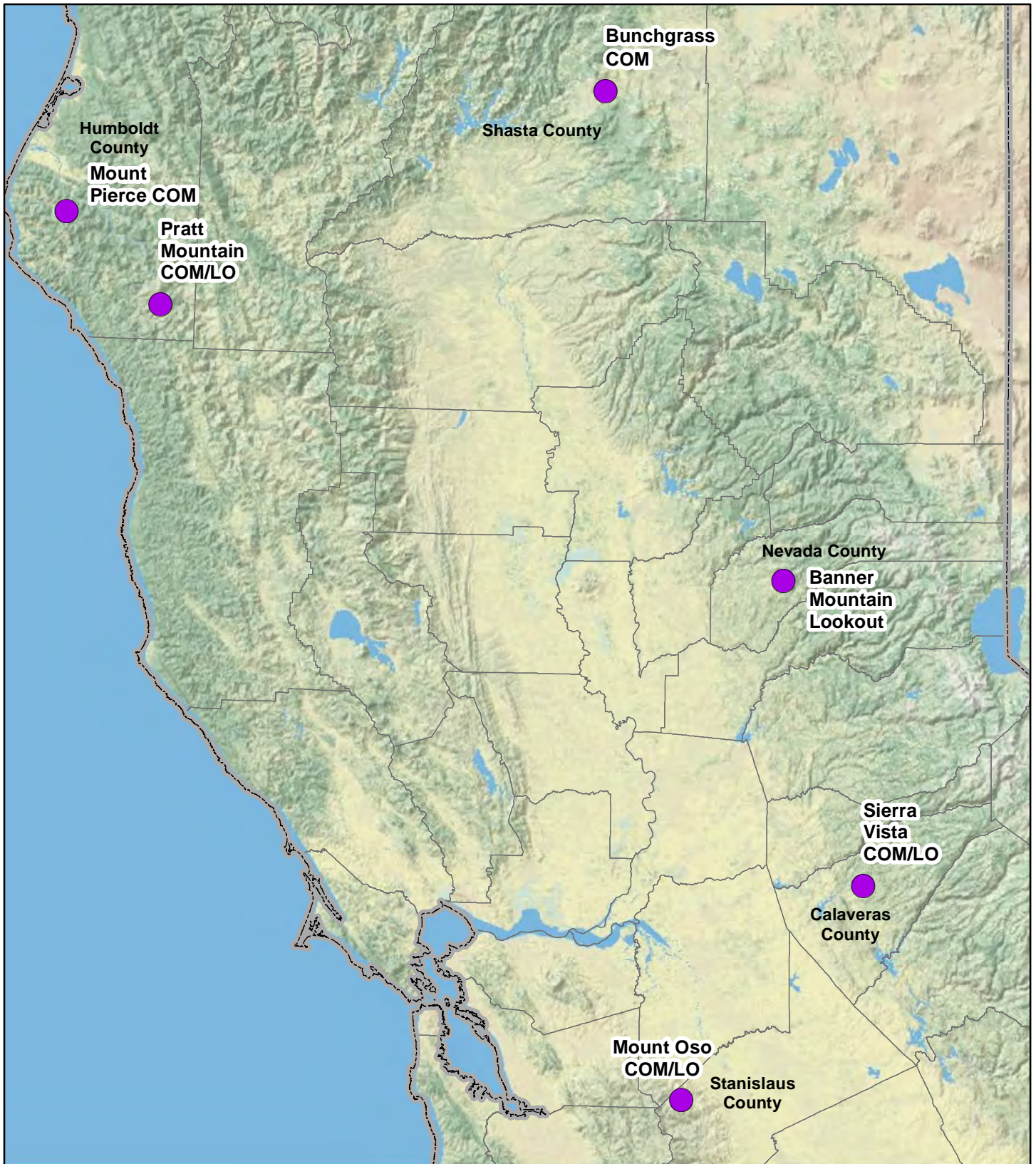
**Project Description:** See cover letter.

#### Additional Request

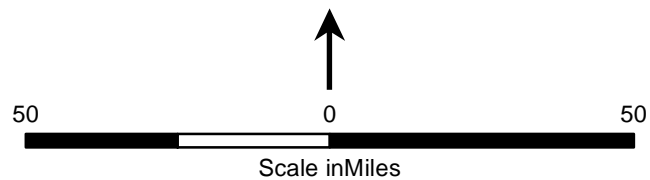
☒ **Sacred Lands File Search - Required Information:**

**USGS Quadrangle Name(s):** Chalk Mountain, Scotia, Harris, Chicago Park, Calaveritas, and Solyo

**Township:** See cover letter **Range:** **Section(s):**



**Department of General Services Phase V CalFire Communications Facilities Replacement Project**

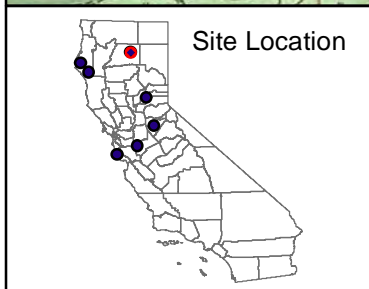
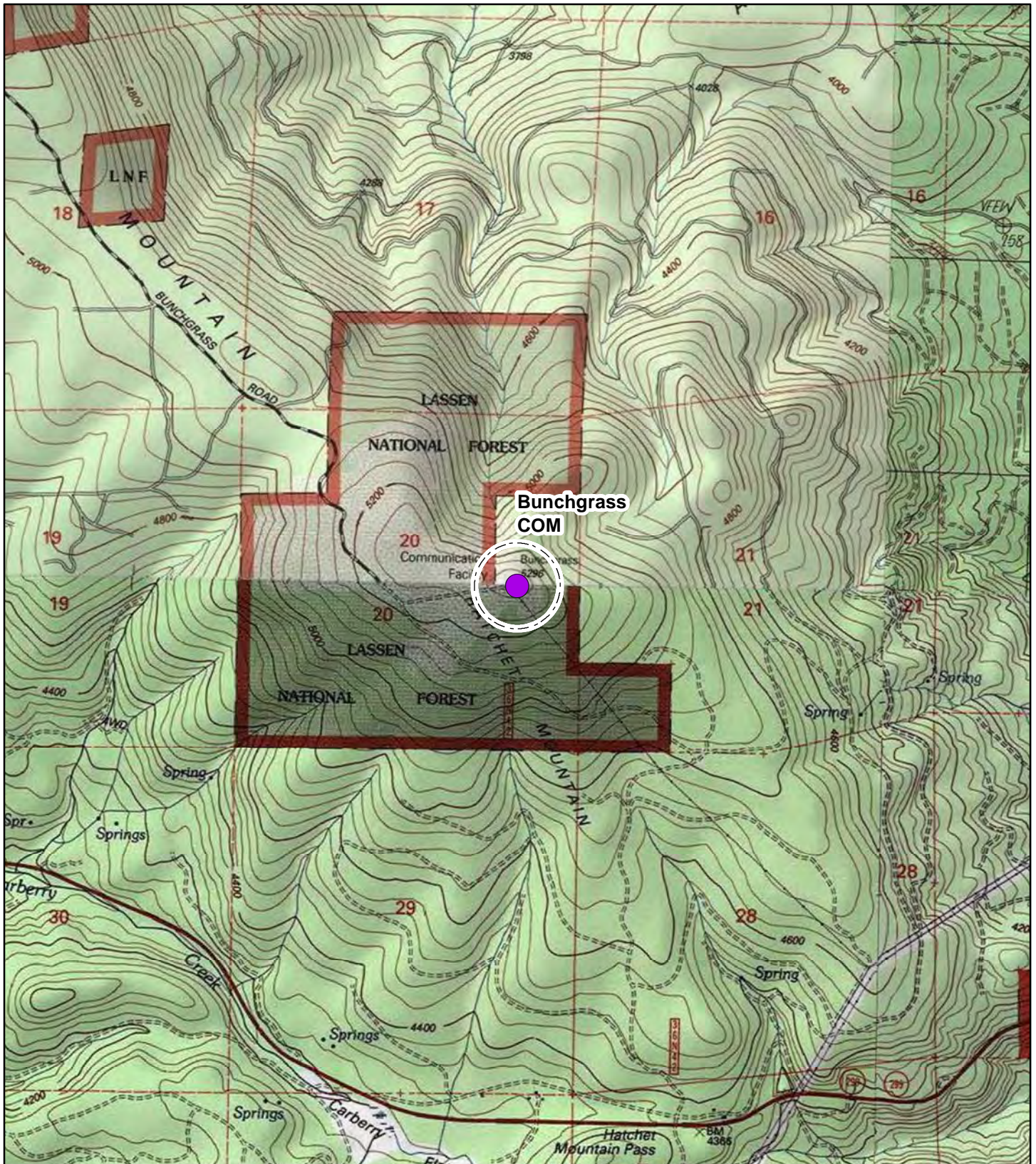


**Legend**

- Project Site Location

Overview Map





# Department of General Services Phase V CalFire Communications Facilities Replacement Project Bunchgrass

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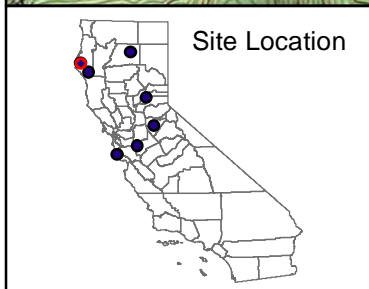
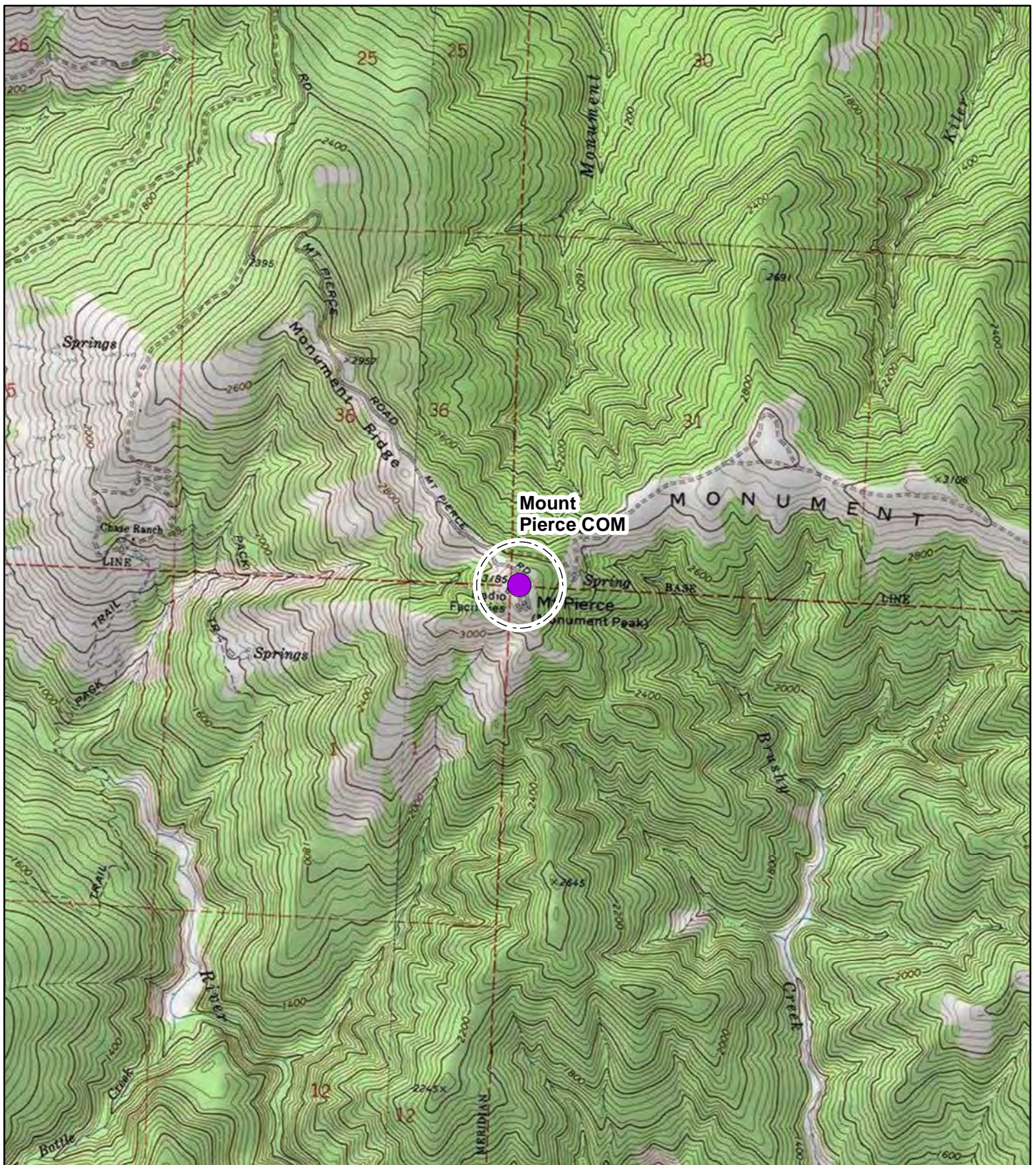
Scale: 1:24,000  
Chalk Mountain CA USGS 7.5' quadrangle

## Legend

- Project Site Location
- Search Area (1/8 mile buffer)

Map 1 of 6





# **Department of General Services Phase V CalFire Communications Facilities Replacement Project Mount Pierce**

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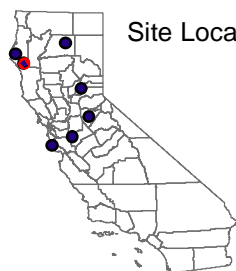
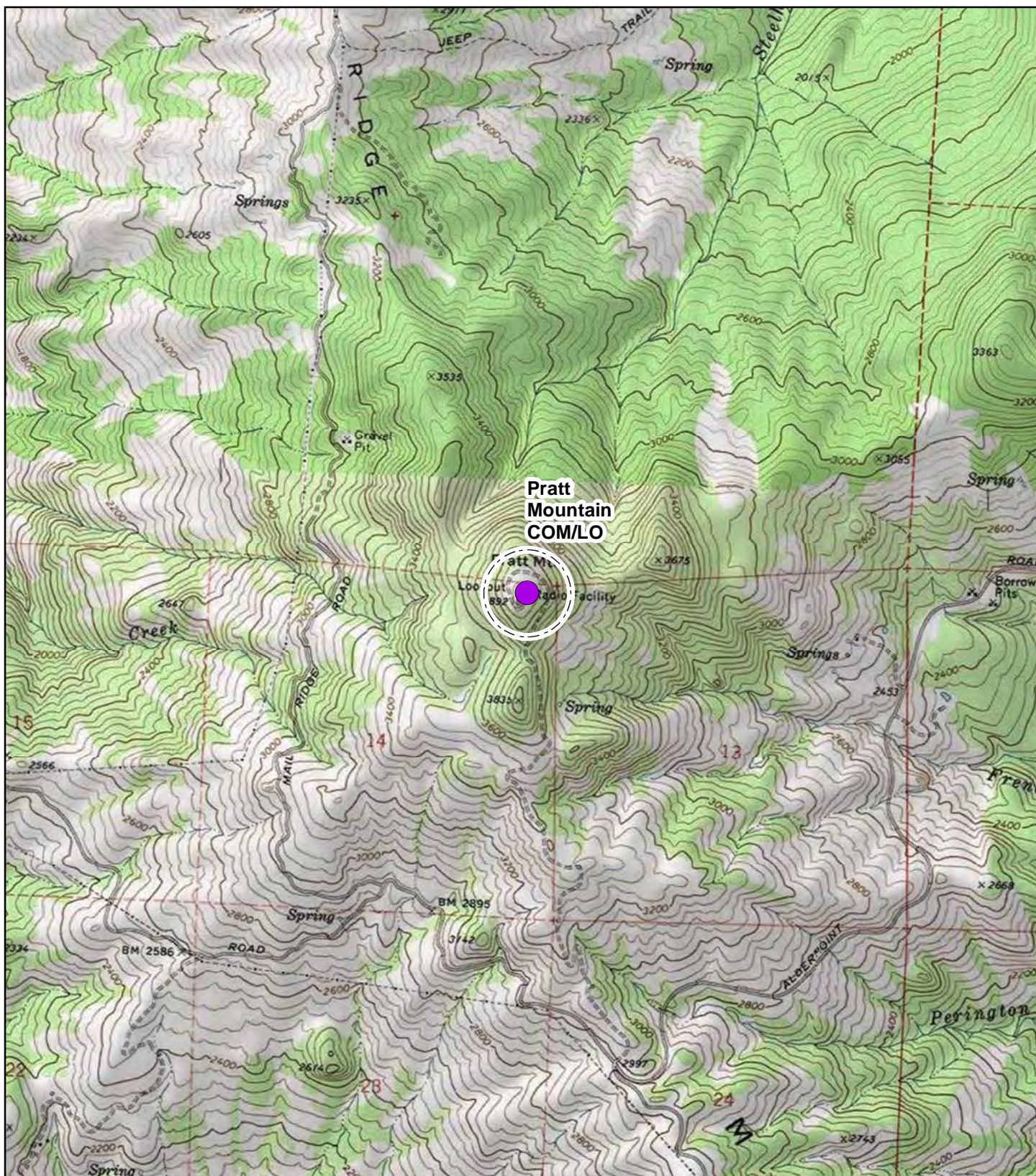
Scale: 1:24,000  
Scotia CA USGS 7.5' quadrangle



## **Legend**

- Project Site Location
- Search Area (1/8 mile buffer)







## Site Location

**Department of General Services Phase V CalFire  
Communications Facilities Replacement Project  
Pratt Mountain**

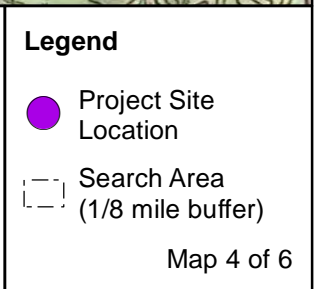
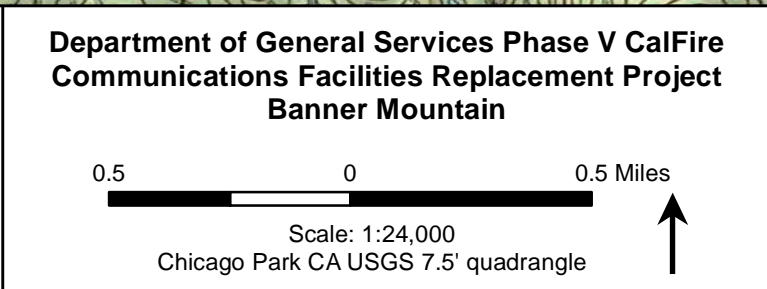
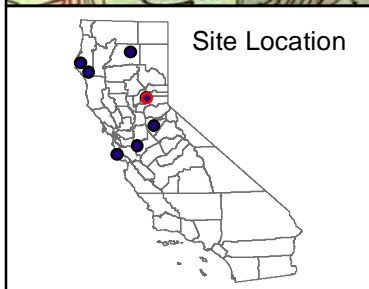
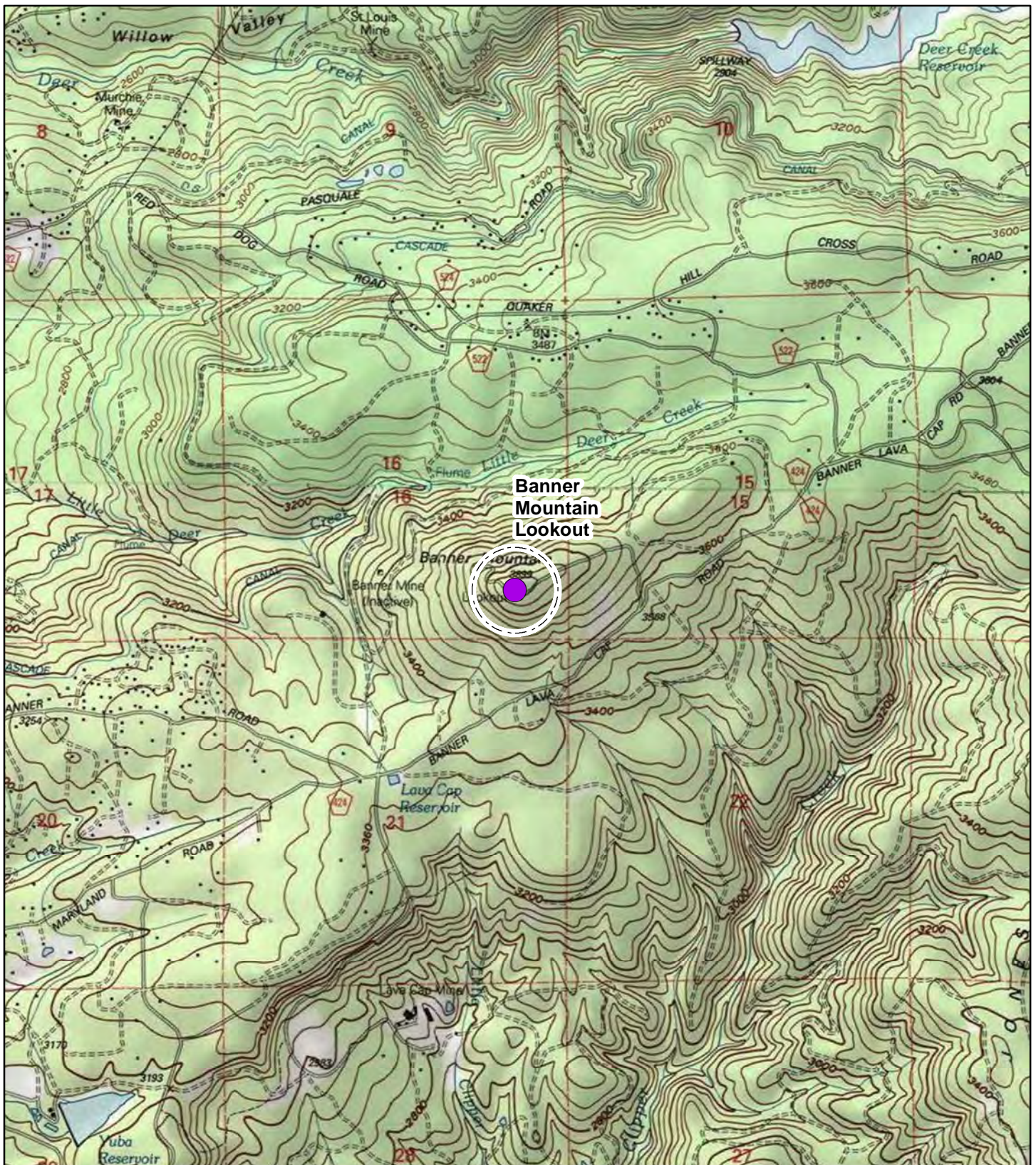


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Harris CA USGS 7.5' quadrangle

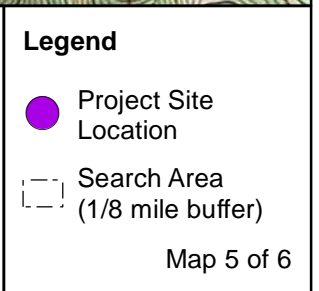
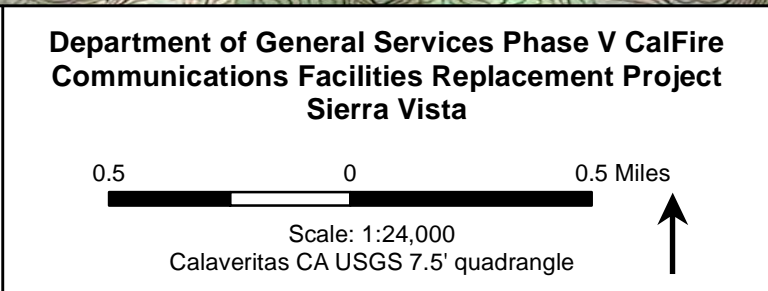
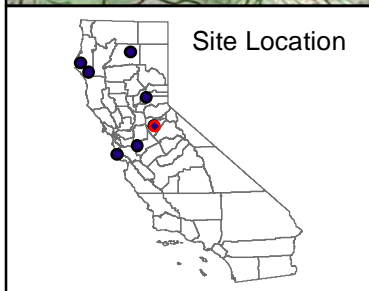
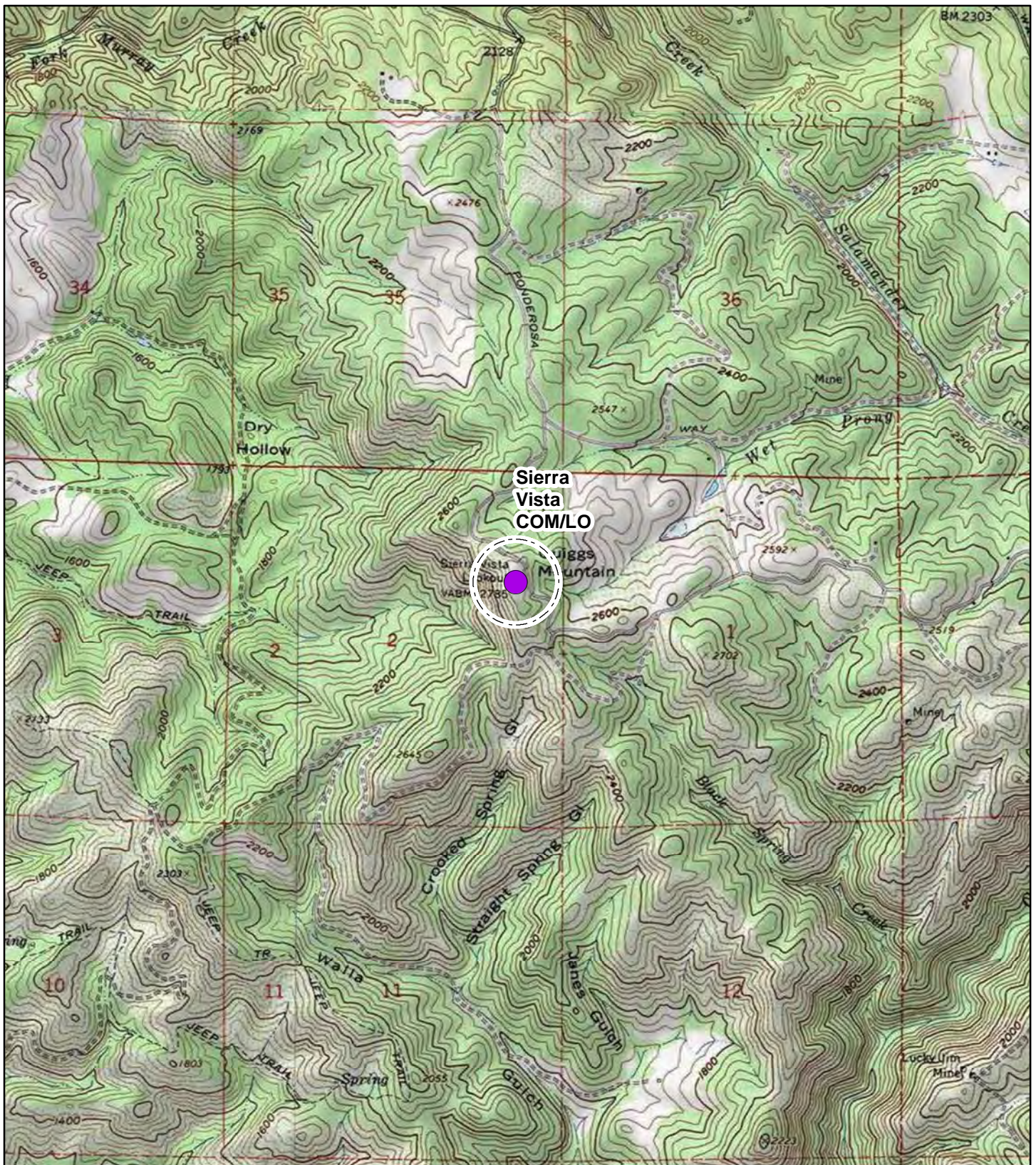
### Legend

-  Project Site Location  
 Search Area (1/8 mile buffer)

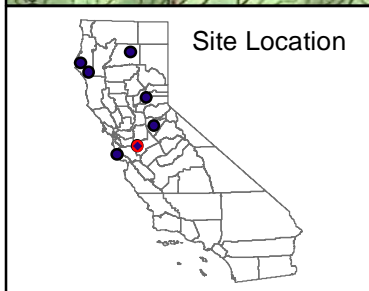














**Department of General Services Phase V CalFire  
Communications Facilities Replacement Project  
Mount Oso**

0.5 0 0.5 Miles

Scale: 1:24,000  
Solyo CA USGS 7.5' quadrangle



**Legend**

-  Project Site Location
-  Search Area (1/8 mile buffer)

Map 6 of 6



**NATIVE AMERICAN HERITAGE COMMISSION**

Environmental and Cultural Department  
1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691  
(916) 373-3710  
(916) 373-5471 FAX



May 29, 2018

Sarah Mace  
Aspen

Sent by Email: smace@aspeneg.com

Re: 3409 DGS Phase V, Humboldt, Siskiyou, Nevada, Calaveras, Stanislaus Counties

Dear Ms. Mace,

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent of the referenced codes is to avoid and or mitigate impacts to tribal cultural resources, as defined, in the California Environmental Quality Act (CEQA).

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding or mitigating impacts to tribal cultural resources:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC also believes that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the Area of Potential Effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
  - A listing of any and all known cultural resources that have already been recorded or are adjacent to the APE, such as known archaeological sites;
  - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;

- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
  - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:
    - Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.
  3. The results of the Sacred Lands File (SFL) check conducted through the Native American Heritage Commission had a positive result. For more information about this/these site(s), please contact the Pit River Tribe.
  4. Any ethnographic studies conducted for any area including all or part of the potential APE; and
  5. Any geotechnical reports regarding all or part of the potential APE.

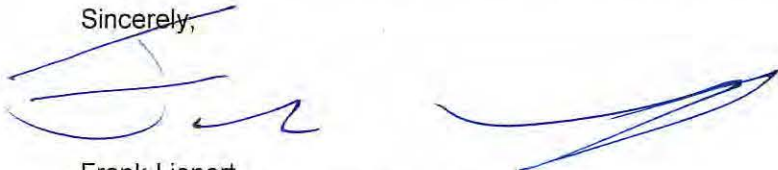
Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive. A negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we are able to assure that our consultation list remains current.

If you have any questions, please contact me at my email address: [frank.lienert@nahc.ca.gov](mailto:frank.lienert@nahc.ca.gov).

Sincerely,

A handwritten signature in blue ink, consisting of a stylized 'F' followed by a cursive 'Lienert'.

Frank Lienert  
Associate Governmental Program Analyst

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This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.1, 21080.3.1, and 21080.3.2 for  
**3409 DGS Phase V, Humboldt, Siskiyou, Nevada, Calaveras, Stanislaus Counties**



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**3409 DGS Phase V, Humboldt, Siskiyou, Nevada, Calaveras, Stanislaus Counties**

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Miwok

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## **Appendix F**

### **Measurement and Evaluation of MPE Levels at Banner Mountain**




---

**M E M O R A N D U M**

---

**Date:** January 9, 2019

**To:** Wally Roberts  
Senior Telecommunications Engineer  
Natural Resources Agencies Engineering Unit

**From:** Robert Bjorklund  
Senior Telecommunications Engineer  
Special Projects Unit 

**Subject:** **SP-11705, DUM-DUM 177113SP01**  
**Measurement and Evaluation of MPE Levels at Banner Mountain**

---

The Special Projects Unit (SPU) has performed Maximum Permissible Exposure (MPE) measurements and completed a safety evaluation for the Banner Mountain CDF radio site.

As currently configured, all MPE measurements are within FCC MPE safety limits for both Occupational/Controlled exposure and General Population/Uncontrolled exposure.

Additional details are provided below.

MPE Measurements and Conclusions:

**Overview**

In December 2018, the Special Projects Unit (SPU) performed RF field strength measurements at the Banner Mountain radio site and lookout tower. These measurements were made at the request of the OES-PSC CDF (Natural Resources Agencies) Engineering Unit to determine the level of RF exposure to personnel within the site perimeter and also to the public who may be in areas surrounding the radio facility at this site.

**Standards and Regulations**

CDF must comply with FCC regulations limiting human exposure to RF radiation<sup>1</sup>. By complying with these regulations, CDF would also satisfy Cal-OSHA requirements<sup>2</sup>.

---

<sup>1</sup> "Occupational/Controlled" and "General Population/Uncontrolled" exposure limits are specified in FCC OET Bulletin 65, Supplement C, Appendix A, "FCC Exposure Criteria (Field Strength, Power Density and SAR)."

<sup>2</sup> U.S. Department of Labor OSHA Standard 1910.97 (advisory only) and California Code of Regulations Title 8, Section 5085 (Cal-OSHA, regulatory) limits are both 10mW/cm<sup>2</sup> in occupational environments, twice that allowed under the FCC regulations

## Site Description

The Banner Mountain site contains two dedicated radio facilities, and one CDF lookout tower. Each radio facility consists of a radio vault and a tower which are used by various state agencies as well as private radio and cellular providers. The site, including the radio facilities and lookout tower, is surrounded by a fenced and locked gate, therefore only Occupational/Controlled personnel have access to the site. As a result, the site must comply with FCC's guidelines for Occupational/Controlled exposure.



Figure 1: Radio Site Aerial View

## Tests

On arrival at the site, SPU engineers identified areas that could be occupied by personnel that could potentially expose them to strong RF fields. Most of these were at various locations on the lookout tower, especially at the top level where a fire lookout might spend several hours per day. Multiple measurements were made in each area with an RF level measurement probe and the levels were recorded. Figures 2 and 3 show the measurements made across the site and on the lookout tower. As shown in Figure 2, all measurements are less than 1.35% of the maximum threshold for Occupational/Controlled exposure. For General Population/Uncontrolled exposure, all measurements are less than 7% of the maximum threshold.

## Results

All areas measured pass safety guidelines. All measurements were well under the FCC's Maximum Exposure (MPE) levels for Occupational/Controlled exposure as well as General Population/Uncontrolled exposure.

## Equipment Used

A Narda Safety Test Solutions model NBM-550 Broadband Field Meter with model EA 5091 probe was used. This probe is designed and calibrated to measure the total combined RF Field strength from all operating transmitters at a location, and gives the results as a percentage of the Maximum Permissible Exposure (MPE) allowed under the FCC limits.





Narda NBM-550 handheld meter



Narda EA 5091 FCC shaped probe

## Measurement Techniques

Spatially-averaged measurements were made as required<sup>3</sup> in multiple locations within each area that could be occupied by personnel, including within the tower cab itself. Attempts were made to locate and measure the highest levels found within each area, as well as several sample levels in various other locations in each area, as shown in Figure 2.

The site RF levels did not time-vary significantly during the course of the measurements, indicating that the site RF field levels are primarily from transmitters operating continuously, such as cellular, PCS, microwave, trunking, etc.

## Measurement Locations and Results

The following diagrams illustrate the layout of the radio site at Banner Mountain site and the area defined for measurement purposes. Measurements were made on the CDF lookout tower, inside the tower's cabin, around the towers as well as inside and around the radio vaults. Because the entire area is fenced and gated, the general public does not have access to the site. As such, the threshold for Occupational/Controlled exposure was applied to all MPE measurements.

While at the site, we tested RF exposure of continuous transmission compared to no transmission on the lookout tower. Since fire lookout personnel will occupy the lookout tower for a significant number of hours per day, the continuously transmitted RF level was a valuable measurement to ensure that personnel aren't exposed to high RF fields. For this portion of the measurements, we transmitted on the low band CHP Blue radio and compared these spatially-averaged RF levels those of no transmission. These values can be seen in Figure 3.

No measurements were made on any of the other towers.

---

<sup>3</sup> From FCC OET Bulletin 65 Section 1: "A fundamental aspect of the exposure guidelines is that they apply to power densities or the squares of the electric and magnetic field strengths that are spatially averaged over the body dimensions. Spatially averaged RF field levels most accurately relate to estimating the whole-body averaged SAR that will result from the exposure and the MPEs specified in Table 1 of Appendix A are based on this concept."



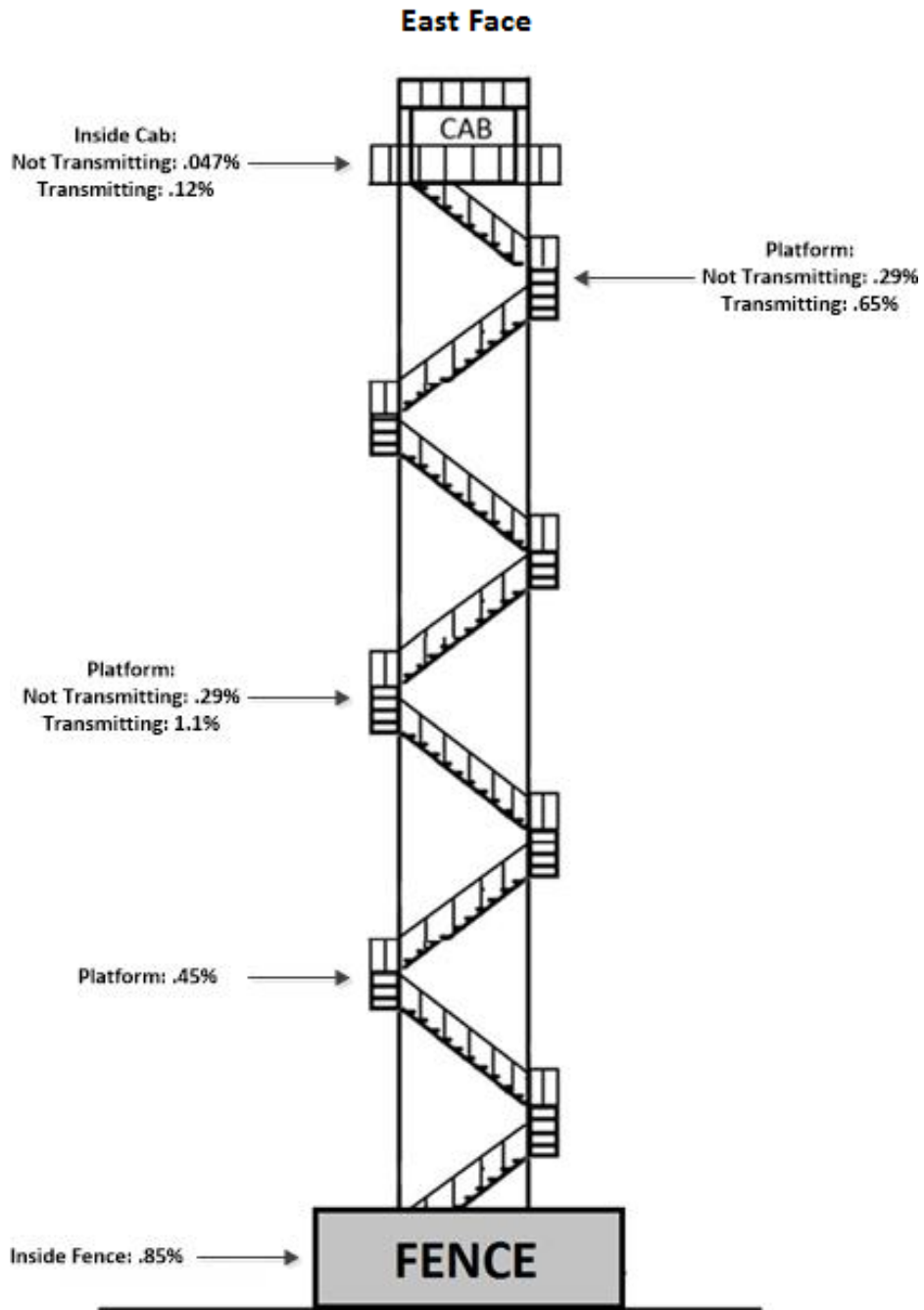


Figure 3: Maximum Measured Spatially-Averaged Levels by Location on the Lookout Tower.

These percentages are of the allowable level for Occupational/Controlled exposure.

Unless otherwise noted, these values represent not transmitted.

**Transmitting** – RF Level Measurement for Transmitting on CHP Blue Radio

**Not Transmitting** – RF Level Measurement for Not Transmitting on CHP Blue Radio

**Conclusion**

All areas measured showed RF levels below the FCC MPE limits for Occupational/Controlled and General Population/Uncontrolled Exposure areas.

If you have any questions, please contact Robert Bjorklund at (916) 657-9766.

# **Appendix G**

## **Geologic Hazards Report**





# Geologic Hazards

Banner Mountain Telecommunications  
Replacement  
Nevada County, CA

Department of General Services





November 7, 2018

Aubree French  
Department of General Services, Real Estate Services Division  
Project Management and Development Branch  
707 Third Street, 4<sup>th</sup> Floor  
Sacramento, California 95605

**RE: Geologic Hazards, Banner Mountain Telecommunications Replacement  
Nevada County, California**

Dear Ms. French,

GHD Inc (GHD) is pleased to present the attached report containing the results of our geological hazards evaluation for the proposed Calfire Phase V Telecommunications Replacement project at Banner Mountain in Nevada County, California. It is our understanding that the proposed project consists of the construction of a 120-foot telecommunications tower. Existing vault structures and electrical infrastructure will remain and be reused.

The accompanying report, along with the Geotechnical Investigation Report to be submitted under separate cover, presents our findings, conclusions developed from our geologic hazards evaluation.

On the basis of our evaluation, the site is suitable, from a geologic hazards perspective, to receive the planned improvements provided the recommendations included in this report are adhered to. If you have any questions regarding the information contained in this report, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,  
GHD

David B. Jermstad, P.G., C.E.G.  
Certified Engineering Geologist



Christopher D. Trumbull, P.E., G.E., D.GE  
Senior Geotechnical Engineer



cc: Tom Burkhardt, P.E., S.E.



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Appendix C	Seismic Refraction
Appendix D	Geotechnical Laboratory Test Results
Appendix E	Slope Stability
Appendix F	Site Specific Ground Motions



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# 1. Introduction

This report presents the findings and conclusions developed from our geologic hazards study for the Banner Mountain Telecommunications Replacement project. The investigation was conducted in accordance with the Agreement with Department of General Services dated October 27, 2017. GHD has also prepared a Geotechnical Investigation Report for the project that has been submitted under separate cover (GHD 2018) that includes detailed geotechnical recommendations for the proposed project.

## 1.1 Project Description

The Banner Mountain Telecommunications Tower site is located east of Nevada City, California in Nevada County, as shown on Figure A-1, Vicinity Map (39.246 latitude, -120.966 longitude). The existing tower is at capacity and will not allow further expansion of services. To implement planned expansion of the site, a new 120-foot tall tower is being proposed to be constructed directly east of the existing tower. The existing vault structure and power infrastructure will remain and be incorporated into the planned improvements. The locations of the existing facilities are shown on Figure A-2, Exploration Map.

## 1.2 Purpose and Scope of Work

The purpose of this investigation was to evaluate the geologic hazards potentially impacting the proposed improvements based on California Geologic Survey (CGS) and Department of State Architect guidelines. The main objectives of the study were to characterize the subsurface materials, analyze potential geologic and seismic hazards, develop recommendations and criteria, and document the findings, conclusions, and recommendations in this report.

The scope of the geologic hazards study included the following tasks:

- A review of Chapter 18A of the 2016 California Building Code (CBC)
- A review of published geologic maps and California Geological Survey (CGS) Seismic Hazard Zonation Program (SHZP) data to determine if the project site is in a Seismic Hazard Zone
- A field exploration program consisting of one exploratory boring drilled to a maximum depth of approximately 49 feet below ground surface (bgs) and one seismic refraction line within the site to characterize the subsurface conditions
- Seismic hazards analyses to develop geotechnical recommendations for the proposed project, in conformance with the following:
  - California Geological Survey - Note 48 (CGS, 2013)
  - Special Publication 118, Recommended Criteria for Delineating Seismic Hazard Zones in California (CGS, 1992)
  - Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California (CGS, 2008)



- IR A-4, Geologic Hazard Report Requirements (California Department of General Services, Division of the State Architect, 2009)

## 2. Field Exploration and Laboratory Testing

### 2.1 Field Exploration

One boring was drilled on February 14, 2018 at the approximate location shown on Figure A-2, Exploration Map. The borings were located in the field based on measured distances from existing features and aerial maps. The boring was drilled to a maximum depth of 49 feet bgs under the supervision of GHD technical personnel utilizing a truck-mounted CME-75 drill rig equipped with an automatic hammer with a weight of 140 pounds and a drop of 30 inches in combination with rock coring equipment.

The number of blows required for each 6-inch increment of drive were recorded and the cumulative blow count for the 12 inches of drive (following the first 6 inches of “seating” drive), or fraction thereof where resistance was encountered, is presented in the logs of borings. The blow counts presented in the logs are uncorrected and shown as they were recorded in the field. Both the samples and drill cuttings were visually classified in the field based on the Unified Soil Classification System (USCS) in general accordance with ASTM D2488.

The standardized  $N_{60}$  value is also presented and is calculated based on field blow counts and coefficients for hammer energy correction to normalize the automatic hammer blow count to the energy of the original SPT rope and cathead hammer (approximately 60%), borehole diameter to normalize the blow count for the diameter of the borehole, sampler type to account for the type of sampler and the presence of liners, and rod length to normalize the blow count to a standard length of 33 feet.

Subsurface conditions encountered are summarized in Section 3.3. Logs of the borings were prepared based on the field logging, visual examination of the soil samples in the laboratory, and the results of laboratory testing. The soil boring key and the logs of borings are presented in Appendix B.

### 2.2 Seismic Refraction

Two seismic refraction lines were originally attempted concurrent with the field investigation but due to issues with the data obtained from Seismic Refraction Line 1, it was not included in this report. The location of Seismic Refraction Line 2 is shown on Figure A-2. The seismic refraction line was acquired using a 12-channel seismograph with geophones spaced at 10-foot intervals to provide adequate detail of the subsurface refractors. The energy source consisted of an impact tool (16-pound sledge hammer). Shot points were positioned midpoint between each geophone along the length of the line and approximately 10 feet outside the first and last geophones.

Seismic refraction has its limitations and is best utilized when combined with other methods, such as geotechnical borings and geological observations. In order to verify the data collected during the survey, the results were compared with subsurface data obtained from Boring B-1. A seismic



velocity cross-section was generated for the seismic refraction line to delineate changes in seismic velocities and is presented in Appendix C.

### 2.3 Geotechnical Laboratory Testing

Laboratory testing was conducted on disturbed soil samples recovered during the site investigation. Tests conducted include the following:

- Standard Test Method for Particle-Size Analysis of Soils (ASTM D422)
- Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Standard Test Methods for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures (ASTM D7012)
- Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens (ASTM D7263)
- Method of Testing Soils and Waters for Sulfate Content (CTM 417)
- Method of Testing Soils and Waters for Chloride Content (CTM 422)
- Method for Determining Field and Laboratory Resistivity and pH Measurements for Soil and Water (CTM 643)
- Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil (ASTM G200)
- Sulfate Reducing Bacteria (AWWA C105/A25.5)

Laboratory test results are presented in Appendix D.

## 3. Geologic and Subsurface Conditions

### 3.1 Site Conditions

The Banner Mountain site is characterized by level- to shallow-slopes in the immediate project area with flanking hillslopes inclining down approximately 14 to 18 degrees with the exception of the northeast-facing slope that inclines more shallowly at approximately 5 degrees. The site is at an approximate elevation of 3,900 feet above mean-sea level (MSL). Access to the site is via Banner Mountain Lookout Road, approximately 7 miles from the town of Grass Valley. The immediate area is clear of vegetation; however, the surrounding area is densely covered with mature coniferous trees and low-lying brush. Ground cover at the site consisted of fine aggregate material.

Existing features at the site included a communications tower, propane tank, and several smaller structures housing generators and other equipment. The tower was founded on cylindrical concrete footings and the remaining structures appeared to be founded on raised concrete slab foundations. Large boulders and rocks were exposed at the surface throughout the site.



### 3.2 Aerial Photo Review

Aerial photos taken between 1939 and 2012 were reviewed to document the historic conditions of the site. Based on these aerial photos, the first distinct access road to the top of Banner Mountain occurred between 1962 and 1975. Telecommunication facilities may have been constructed between 1987 and 1998 as two buildings are visible within the property boundary. No discernable improvements may have been made to the site after 1998 but cannot be discerned by historical imagery.

### 3.3 Geologic Setting

The site is located within the Sierra Nevada geomorphic province, a geologic block with a steep-eastern and long-western slope that gently grades down to the western Great Valley. Geographically, the Sierra Nevada Range extends approximately 400 miles long and 80 miles wide in a north-south band along the eastern portion of California. Nevada County is characterized by two geomorphic terrains; the western third includes the low-lying Sacramento Valley transitioning to rolling foothills and the higher mountains to the east whereas the eastern two-thirds includes steep terrain and exposed Sierra Nevada granitic rock.

On a regional scale, the site is mapped within Triassic to late Jurassic metamorphic rocks consisting primarily of slate and metamorphosed greywacke with minor conglomerate, chert, slate, limestone, and pyroclastic rocks (Jennings, 1977 updated 2010), as shown in Figure A-3, Regional Geologic Map. The Chico quadrangle geologic map (CGS, 1992) shows the site within Paleozoic and Mesozoic metavolcanic rocks comprised of mafic to felsic flows, tuffs, breccias, and volcanoclastic rocks.

### 3.4 Subsurface Conditions

The results of the field exploration and laboratory analysis indicate the subsurface materials generally consisted of medium dense to very dense clayey sand to a depth of 15 feet bgs underlain by very strong metasediment bedrock to the maximum depth explored of 49 feet. An apparent boulder was encountered at a depth of approximately 8 feet bgs. Detailed descriptions of the subsurface materials encountered are presented in the logs of borings in Appendix B and two geologic cross-sections are shown in Figure A-5, Geologic Cross-Sections.

### 3.5 Active Faulting and Coseismic Deformation across Site

The project site is not mapped within an Alquist-Priolo Earthquake Fault Zone, thus fault trenches were not required. A map showing known faults and historic earthquakes is included in Figure A-6, Regional Faults and Earthquakes.

The nearest active fault with historic movement is the Cleveland Hill fault, located approximately 29 miles to the northwest. Surface fault rupture along the Cleveland Hill fault occurred coincident with the 1975 M5.7 Oroville earthquake. Fault plane solutions indicate that this is a western dipping, north-trending normal fault. Additional historic and Holocene faults are located approximately 43 miles to the northeast along the Dog Valley and Polaris faults. The nearest late quaternary fault is



the Giant Gap fault, located approximately 9 miles to the east. This fault is part of the foothill fault system and the Melones fault zone.

The site is located in an area generally characterized as having low seismicity; strong ground shaking is not expected. Using the United States Geological Survey (USGS) Seismic Design Maps website considering the site location, ASCE 7-10 provisions, risk category IV (essential facility), and Type B site classification (rock), the Peak Ground Acceleration (PGA) is 0.244 g for the maximum credible earthquake (MCE).

## 4. Geologic Hazards

### 4.1 Geologic Hazard Zones

#### 4.1.1 Liquefaction

CGS does not map the project site within a liquefaction hazard zone. Therefore, site specific liquefaction analyses are not required.

#### 4.1.2 Landslides

CGS does not map the project site within a liquefaction or landslide hazard zone. The General Plan (Nevada County, 1991) notes that the central portion of the county has as higher susceptibility for slope movement, however, most of the County's soils lack the characteristics that would contribute to landslide susceptibility. Previous areas within the county that were hydraulically mined are extremely prone to landslide hazards.

The local geology of the project site consists of volcanic rock, but does not note any evidence of landslide movement. In addition, the topography of the site is relatively flat. Dense clayey sand overlying bedrock was encountered in the subsurface exploration. Therefore, site specific liquefaction and landslide investigation and analysis was not required.

### 4.2 Geologic Considerations

#### 4.2.1 Groundwater

Groundwater was not encountered during the field investigation. The depth of groundwater is expected to vary over time due to seasonal variations and other factors such as changes to site drainage.

#### 4.2.2 Excavation

All excavations should be performed in accordance with CAL/OSHA standards. Stability of all excavations should be contractually specified as solely the responsibility of the contractor and is excluded from our work.





#### 4.2.3 Foundation Support and Settlement

The exploratory borings indicate that excavations at the site should expose clayey sand overlying very strong metasedimentary rock. This material will be adequate for supporting a slab foundation provided it is prepared as recommended in the GHD Geotechnical Investigation Report for the site.

#### 4.3 Liquefaction/Seismic Settlement Analysis

Seismic liquefaction occurs when excess pore pressures are generated in loose, saturated, generally cohesionless soil during earthquake shaking, causing the soil to experience a partial to complete loss of shear strength. Such a loss of shear strength can result in settlement and/or horizontal movement (lateral spreading) of the soil mass.

Based on the lack of groundwater and shallow bedrock encountered in the borings, the risk of liquefaction is considered to be low; therefore, a site-specific liquefaction investigation is not required.

#### 4.4 Densification

Seismic densification typically occurs in relatively loose, uniformly-graded sandy soils above the groundwater table due to strong ground shaking. Based on the shallow bedrock encountered in the borings, the risk of seismic densification for native soils is judged to be low.

#### 4.5 Slope Failure/Slope Stability Analysis

The proposed tower is located on a level surface with no slopes observed during the field investigation. Therefore, a detailed slope stability analysis is not applicable.

#### 4.6 Expansive Soils

Expansive soils are defined as soils that undergo large volume changes (shrink or swell) due to variations in moisture content. Such volume changes may cause damaging settlement and/or heave of foundations, slabs-on-grade, pavements, etc. No evidence of expansive soil was discovered during the subsurface exploration for this project.

#### 4.7 Corrosion

A soils corrosivity analysis was performed to assist in estimating and mitigating the deterioration of buried ferrous metals and concrete. Corrosion testing was performed on a sample from Boring B-1 and the results are summarized in Table 4.1. Detailed laboratory results are included in Appendix D.



Table 4.1 Soil Corrosion Results

Sample No.	Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Water Soluble Sulfates (ppm)	Water Soluble Chlorides (ppm)	Redox Potential (mV)	Points
1-3	4	6	6,430	8.3	4.3	(+) 256	4.5

#### 4.7.1 Corrosion Potential for Ferrous Pipes

To evaluate the potential for external corrosion potential on ferrous metals from soil, the 10-point system in C105/A21.5 (ANSI/AWWA 1999) was used, which resulted in 4.5 points for the sample analyzed. The long life of historical unprotected pipe in soil with less than 10 points indicates a noncorrosive environment (AWWA 2005).

#### 4.7.2 Corrosion Potential for Reinforced Concrete

According to ACI 318, a sulfate concentration less than 1,000 parts per million is considered “not applicable.” Reinforced concrete exposed to elevated levels of water soluble chlorides should be designed to minimize potential intrusion of chloride ions to the reinforcing steel per ACI 318; this is not anticipated to be an issue for the current project.

#### 4.7.3 Summary of Results

The provided corrosion test results are only an indicator of potential soil corrosivity for the sample tested at the selected depth interval. It is possible that corrosion potential can vary by sample location and depth. Based on the results of the tested samples, the soil may be generally characterized as noncorrosive. A detailed analysis of the corrosion test results was not included in the scope of services and is, therefore, not included in this report.

### 4.8 Conditional Geologic Assessment

#### 4.8.1 Hazardous Materials

No evidence of hazardous material was observed during the site investigations nor during review of historical images. GHD did not receive or review any hazardous material report that may exist for the site.

#### 4.8.2 Volcanic Eruption

Volcanic eruption, a significant geologic hazard, is caused when magma, gases, or steam break through the earth's surface. The nearest known active or potentially active volcanic field, the Clear Lake Volcanic Field, is approximately 133 miles north of the project site with most recent activity approximately 10,000 years ago. Due to the distance to the Clear Lake Volcanic Field, the volcanic eruption threat is considered low.



#### 4.8.3 Flooding

The site is not mapped by the Federal Emergency Management Agency's (FEMA's) National Flood Hazard Map as an area of minimal riverine flood hazard (FEMA, 2016). The nearest mapped flood hazard is creek flooding approximately 4 miles to the west.

#### 4.8.4 Tsunami and Seiche Inundation

Tsunamis and seiches are destructive long-period waves. Tsunamis are generated by the sudden displacement of a large volume of water typically caused by underwater earthquakes and landslides (both aerial and sub-aerial) but can be caused by volcanic eruptions and meteors. Seiches are typically generated by strong winds and rapid changes in atmospheric pressure.

The project site is approximately at 3,896 feet elevation and is mapped by CGS (CGS Information Warehouse: Tsunami) as being outside a tsunami inundation area. No lakes are in the site vicinity indicating no seiche hazards are present.

#### 4.8.5 Radon-222 Gas

The U.S. Environmental Protection Agency (EPA) considers "uraniferous" or "high uranium values" concentrations above 4 picocuries per liter (pCi/L) or 2.5 parts per million (ppm) of equivalent uranium (eU) for indoor radon conditions.

The EPA Map of Radon Zones for California indicate that Nevada County is within Zone 2- a county with predicted average indoor radon screening levels from 2 to 4 pCi/L (U.S. Environmental Protection Agency, 2018). Given the geologic site conditions and the EPA mapped zone, the risk of elevated levels of radon gas is moderate.

#### 4.8.6 Naturally Occurring Asbestos

The USGS Open-File Report (OFR) 2011-1188 (Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California) identified and mapped reported natural occurrences of asbestos in California based on geologic literature (USGS OFR 1188, 2011). According to OFR 2011-1188, Nevada County includes the presence of ultramafic rocks or serpentinite- areas in which naturally occurring asbestos is likely to occur.

According to the report titled "A General Location Guide for Ultramafic Rocks in California - Areas More likely to Contain Naturally Occurring Asbestos" (California Department of Conservation Division of Mines and Geology, 2000), the project site is not mapped within an area where naturally occurring asbestos is likely to occur.

#### 4.8.7 Hydrocollapse

Hydrocollapse, the collapse of soil, is possible in rapidly deposited alluvial materials, debris slides, and aeolian deposits in arid climates. Due to shallow bedrock encountered in the borings, subsurface materials, the potential for hydrocollapse is negligible.



#### 4.8.8 Regional Subsidence

Regional subsidence, the loss of surface elevation, is generally caused by the excessive removal of subsurface water by pumping in fine-grained sedimentary deposits. Given that the site is located at a hilltop location, the relatively shallow depth of bedrock encountered during the field investigation, and the lack of groundwater at the time of exploration, the potential for local land subsidence is considered to be negligible.

#### 4.8.9 Clays and Cyclic Softening

Due to the granular nature of the soil and the lack of groundwater encountered during the field investigation, the potential risk for cyclic softening of fine grained materials is considered to be negligible.

## 5. Conclusions and Recommendations

The site is suitable for the proposed improvements provided the recommendations presented herein and in the Geotechnical Investigation Report are incorporated into the design and construction of the project.

### 5.1 Seismology and Calculation of Earthquake Ground Motion

#### 5.1.1 Evaluation of Historical Seismicity

A search was performed using the United States Geological Survey (USGS) online Advanced National Seismic System Comprehensive Catalog. The search was performed for historical earthquakes in the catalog within a 62.1-mile (100 kilometer) radius of the site between January 1, 1900 and September 20, 2018. The search resulted in 1,661 earthquakes of magnitude 2.5 or greater that have been documented within the search area.

The closest earthquake epicenter (37.143 latitude, -122.315 longitude) was located approximately 1.8 miles from the project site. This event occurred on March 24, 1974, had a magnitude of 3.1 and a depth of 13.77 miles.

The largest earthquake on record occurred on April 18, 1906 and had a magnitude of 7.9 and a depth of 11.7 miles. The epicenter (37.750 latitude, -122.550 longitude) was approximately 43 miles from the project site.

The largest earthquake with intensity records occurred on October 1, 1989 with an epicenter at 37.036 latitude, -121.880 longitude (a distance of 24 miles from the project site), a magnitude of 6.9 and a depth of 17.2 miles. Santa Cruz County reported a Modified Mercalli Intensity of VII - VIII (7-9) for the event. According to CGS Note 32, a Modified Mercalli Intensity of VII is describes as "Everybody runs outdoors. Damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars."



### 5.1.2 Seismic Design

The seismic design criteria for the site listed in the table below were developed in accordance with ASCE 7-10 based on the subsurface information obtained from the geotechnical investigation and the USGS Seismic Design Maps website. This site is categorized as an essential facility (i.e., risk category IV) and classified as “rock” (i.e., Site Class B).

Table 5.1 Seismic Design Criteria

Parameter	Recommended Value	Reference (ASCE 7-10)
Site Class	B	Table 20.3-1
Risk Category	IV	Table 1.5-1
Mapped MCE spectral response at short period ( $S_S$ )	0.639 g	Figure 22-1
Mapped MCE spectral response at 1 sec period ( $S_1$ )	0.244 g	Figure 22-2
Site coefficient ( $F_a$ )	1.0	Table 11.4-1
Site coefficient ( $F_v$ )	1.0	Table 11.4-2
MCE spectral response acceleration for short period ( $S_{MS}$ )	0.639 g	Equation 11.4-1
MCE spectral response acceleration for 1 sec period ( $S_{M1}$ )	0.244 g	Equation 11.4-2
Design Spectral Acceleration for short period ( $S_{DS}$ )	0.426 g	Equation 11.4-3
Design Spectral Acceleration for 1 sec period ( $S_{D1}$ )	0.163 g	Equation 11.4-4
Mapped Peak Ground Acceleration	0.244 g	Figure 22-7
Site coefficient ( $F_{PGA}$ )	1.0	Table 11.8-1
Mapped Risk Coefficient at 0.2s ( $C_{RS}$ )	0.999	Figure 22-17
Mapped Risk Coefficient at 1s ( $C_{R1}$ )	1.052	Figure 22-18

### 5.1 Plan Review and Construction Observation

GHD geotechnical staff should review the project plans and specifications during the construction document phase to evaluate if they are consistent with the recommendations presented herein. The conclusions and recommendations contained in this report are contingent upon GHD being retained to provide intermittent observation and appropriate field and laboratory testing during site preparation to evaluate if the subsurface conditions are as anticipated. If the subsurface conditions are observed to be different from those described in this report, GHD should be notified immediately so that the changed conditions can be evaluated and our recommendations revised, if appropriate. The recommendations in this report are contingent upon prompt notification and review of changed conditions.

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## 7. Limitations

This Geologic Hazards Report ("Report"):

- Has been prepared by GHD for the Department of General Services (DGS) under the professional supervision of those senior staff whose seals and signatures appear herein
- May only be used and relied on by DGS, which is responsible to ensure that all relevant parties to the project, including designers, contractors, subcontractors, etc., are made aware of this report in its entirety
- Must not be copied to, used by, or relied on by any person other than DGS without the prior written consent of GHD
- May only be used for the purpose of engineering design of the proposed structures at the project site described in this report (and must not be used for any other purpose)

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than DGS arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report:

- In regard to site exploration and testing:



- Site exploration and testing characterizes subsurface conditions only at the locations where the explorations or tests are performed; actual subsurface conditions between explorations may be different than those described in this report. Variations of subsurface conditions from those analyzed or characterized in this report are not uncommon and may become evident during construction. In addition, changes in the condition of the site can occur over time as a result of either natural processes (such as earthquakes, flooding, or changes in ground water levels) or human activity (such as construction adjacent to the site, dumping of fill, or excavating). If changes to the site's surface or subsurface conditions occur since the performance of the field work described in this report, or if differing subsurface conditions are encountered, we should be contacted immediately to evaluate the differing conditions to assess if the opinions, conclusions, and recommendations provided in this report are still applicable or should be amended.
- In regard to limitations:
  - Our scope of services was limited to the proposed work described in this report, and did not address other items or areas.
  - The geotechnical investigation upon which this report is based was conducted for the proposed structures at the project site described in this report. The conclusions and recommendations contained in this report are not valid for other structures and/or project sites. If the proposed project is modified or relocated, or if the subsurface conditions found during construction differ from those described in this report, GHD should be provided the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations need revision.
- Did not include evaluation or investigation of the presence or absence of wetlands
- Did not include a geotechnical investigation
- Did not include a hazardous material investigation

GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect. There is no warranty, either expressed or implied. GHD accepts no liability regarding completeness or accuracy of the information presented and/or provided to us, or any conclusions and decisions which may be made by the client or others regarding the subject site/project. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observations of construction.

Subject to the paragraphs in this section of the Report, the interpretations of data, findings, conclusions, recommendations and professional opinions in this Report are based on the information reviewed, site conditions encountered, and samples collected during our field exploration and were developed in accordance with generally accepted geotechnical and geologic engineering principles and practices and as prescribed by the client. This Report is considered valid for the proposed project for a period of two years from the report date provided that the site conditions and development plans remain unchanged. With the passage of time, changes in the



conditions of a property can occur due to natural processes or the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Depending on the magnitude of any changes, GHD may require that additional studies (at additional cost) be performed and that an updated report be issued. Additional studies may disclose information which may significantly modify the findings of this report. GHD will retain untested samples collected during our field investigation for a period not to exceed 60 days unless other arrangements are made with the client. After a period of two years from the report date, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions and any recommendations.



# Appendix A

## Figures





## Appendix B

### Logs of Borings



## Appendix C

### Seismic Refraction



## Appendix D

# Geotechnical Laboratory Test Results



## about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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# **Appendix H**

## **Draft Geotechnical Investigation**





# Geotechnical Investigation

Banner Mountain Telecommunications  
Replacement  
Nevada County, CA

Department of General Services

## Draft for Review

This document is in draft form. A final version of this document may differ from this draft. As such, the contents of this draft document shall not be relied upon. GHD disclaims any responsibility or liability arising from decisions made based on this draft document.

11136839.20 | November 2018





November 26, 2018

Aubree French  
Department of General Services, Real Estate Services Division  
Project Management and Development Branch  
707 Third Street, 4<sup>th</sup> Floor  
Sacramento, California 95605

**RE: Geotechnical Investigation, Banner Mountain Telecommunications Replacement, Nevada County, California**

Dear Ms. French,

GHD Inc (GHD) is pleased to present the attached report containing the results of our geotechnical investigation for the proposed Calfire Phase V Telecommunications Replacement project at Banner Mountain in Nevada County, California. It is our understanding that the proposed project consists of the construction of a 120-foot-tall telecommunications tower. Existing vault structures and electrical infrastructure will remain and be reused.

The accompanying report presents our findings, conclusions, and recommendations developed from our geotechnical investigation. Contained in the report are geotechnical design criteria and recommendations for design and construction of the proposed improvements. The results of the subsurface exploration and laboratory testing programs, which form the basis of our recommendations, are also included in the report. On the basis of our investigation, the site is suitable, from a geotechnical perspective, to receive the planned improvements provided the recommendations presented in the report are incorporated into the design and construction of the project.

If you have any questions regarding the information contained in this report, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,  
GHD

Anthony Quintrall, P.E.  
Senior Project Engineer

Christopher D. Trumbull, P.E., G.E., DG.E  
Senior Geotechnical Engineer



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Appendix D	Geotechnical Laboratory Test Results



## **Distribution**

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# 1. Introduction

This report presents the findings, conclusions and recommendations developed from a geotechnical engineering investigation for the Calfire Phase V Telecommunications Replacement project at Banner Mountain. The investigation was conducted in accordance with Agreement Number 2130 between GHD Inc. (GHD) and the Department of General Services, Real Estate Services Division, Project Management & Development Branch, dated October 24, 2017. A geologic hazards report, under separate cover, was also prepared by GHD for this site.

## 1.1 Project Description

The Banner Mountain Telecommunications Tower site is located east of Nevada City, California in Nevada County, as shown on Figure A-1, Vicinity Map (39.246 latitude, -120.966 longitude). The existing tower is at capacity and will not allow further expansion of services. To implement planned expansion of the site, a new 120-foot-tall tower is being proposed to be constructed directly east of the existing tower. The existing vault structure and power infrastructure will remain and be incorporated into the planned improvements. The locations of the existing facilities are shown on Figure A-2, Exploration Map.

## 1.2 Purpose and Scope of Work

The purpose of this study was to evaluate the suitability of the project site, from a geotechnical perspective, for the proposed improvements. The main objectives of the investigation were to characterize the subsurface materials, perform engineering analyses, develop geotechnical recommendations and criteria, and document our findings, conclusions, and recommendations in this report.

The scope of the geotechnical investigation included the following tasks:

- A review of published geologic and geotechnical material pertaining to the site vicinity
- A field exploration program consisting of one exploratory boring drilled to a maximum depth of approximately 49 feet below ground surface (bgs) and one seismic refraction line within the site to characterize the subsurface conditions
- Geotechnical laboratory testing on select soil samples collected from the borings
- Engineering analyses to develop geotechnical design criteria and recommendations for the proposed project
- Preparation of this report



## **2. Field Exploration and Laboratory Testing**

### **2.1 Field Exploration**

One boring was drilled on February 14, 2018 at the approximate location shown on Figure A-2. The boring was located in the field based on measured distances from existing features and aerial maps. The boring was drilled to a maximum depth of 49 feet bgs under the supervision of GHD technical personnel utilizing a truck-mounted CME-75 drill rig equipped with an automatic hammer with a weight of 140 pounds and a drop of 30 inches in combination with rock coring equipment. Coring was started at a depth of 8 feet bgs.

The number of blows required for each 6-inch increment of drive were recorded and the cumulative blow count for the 12 inches of drive (following the first 6 inches of "seating" drive), or fraction thereof where resistance was encountered, is presented in the logs of borings. The blow counts presented in the logs are uncorrected and shown as they were recorded in the field. Both the samples and drill cuttings were visually classified in the field based on the Unified Soil Classification System (USCS) in general accordance with ASTM D2488.

The standardized  $N_{60}$  value is also presented and is calculated based on field blow counts and coefficients for hammer energy correction to normalize the automatic hammer blow count to the energy of the original SPT rope and cathead hammer (approximately 60%), borehole diameter to normalize the blow count for the diameter of the borehole, sampler type to account for the type of sampler and the presence of liners, and rod length to normalize the blow count to a standard length of 33 feet.

Subsurface conditions encountered are summarized in Section 3.3. A log of the boring was prepared based on the field logging, visual examination of the soil samples, and the results of laboratory testing in general accordance with ASTM D2487. The soil boring key, rock description key, and the boring log are presented in Appendix B.

### **2.2 Seismic Refraction**

Two seismic refraction lines were originally attempted concurrent with the field investigation but due to issues with the data obtained from Seismic Refraction Line 1, it was not included in this report. The location of Seismic Refraction Line 2 is shown on Figure A-2. The seismic refraction line was acquired using a 12-channel seismograph with geophones spaced at 10-foot intervals to provide adequate detail of the subsurface refractors. The energy source consisted of an impact tool (16-pound sledge hammer). Shot points were positioned midpoint between each geophone along the length of the line and approximately 5 feet outside the first and last geophones.

Seismic refraction has its limitations and is best utilized when combined with other methods, such as geotechnical borings and geological observations. In order to verify the data collected during the survey, the results were compared with subsurface data obtained from Boring B-1. A seismic velocity cross-section was generated for the seismic refraction line to delineate changes in seismic velocities and is presented in Appendix C.



## **2.3 Geotechnical Laboratory Testing**

Laboratory testing was conducted on disturbed soil samples recovered during the site investigation. Tests conducted include the following:

- Standard Test Method for Particle-Size Analysis of Soils (ASTM D422)
- Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Standard Test Methods for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures (ASTM D7012)
- Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens (ASTM D7263)
- Method of Testing Soils and Waters for Sulfate Content (CTM 417)
- Method of Testing Soils and Waters for Chloride Content (CTM 422)
- Method for Determining Field and Laboratory Resistivity and pH Measurements for Soil and Water (CTM 643)
- Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil (ASTM G200)
- Sulfate Reducing Bacteria (AWWA C105/A25.5)

Laboratory test results are presented in Appendix D.

# **3. Geologic and Subsurface Conditions**

## **3.1 Site Conditions**

At the time of the exploration, the immediate project site had approximately 7 feet of relief from the north to the south and was relatively level from the east to the west. The side slopes of Banner Mountain were approximately 3 to 4 horizontal to 1 vertical. A gravel access road was located on the east side of the facility and the site was lined by chain link fence and large mature trees. Existing features at the site included a communications tower, propane tank, and several smaller structures housing generators and other equipment. The tower was founded on cylindrical concrete footings, and the remaining structures appeared to be founded on raised concrete slab foundations. Large boulders and rocks were exposed at the surface throughout the site.

## **3.2 General Geology and Faulting**

The site is located on the Sierra Nevada geomorphic province and is mapped as Triassic to late Jurassic metamorphic rocks consisting primarily of slate and metamorphosed greywacke with minor conglomerate, chert, slate, limestone, and pyroclastic rocks (Jennings, 1977 updated 2010). Local geologic maps identify Miocene to Pliocene metavolcanic rocks (Saucedo and Wagner, 1992).



The nearest active fault displaying historic (Holocene) movement is the North Tahoe Fault zone, located approximately 52 miles to the east. The site is classified as being in an area of low seismicity and is not in an Alquist-Priolo Earthquake Fault Zone.

### **3.3 Subsurface Conditions**

The results of the field exploration and laboratory analysis indicate the subsurface materials generally consisted of medium dense to very dense clayey sand to a depth of 15 feet bgs underlain by very strong metasediment bedrock to the maximum depth explored of 49 feet. An apparent boulder was encountered at a depth of approximately 8 feet bgs. Detailed descriptions of the subsurface materials encountered are presented in the boring log in Appendix B.

Groundwater was not encountered during the field investigation. The depth of groundwater is expected to vary over time due to seasonal variations and other factors such as changes to site drainage

## **4. Conclusions**

On the basis of this investigation, the site is suitable, from a geotechnical perspective, to receive the planned improvements provided the recommendations presented in the report are incorporated into the design and construction of the project.

### **4.1 Excavatability**

Hard rock was encountered at a depth of 15 feet bgs. Hard rock may be non-rippable and excavation with non-conventional methods may be required (e.g. blasting, larger excavation equipment).

### **4.2 Ground Shaking**

The site is located in an area generally characterized as having low seismicity; strong ground shaking shouldn't be expected during seismic events. Using the United States Geological Survey (USGS) Seismic Design Maps website considering the site location, ASCE 7-10 provisions, and Type B soils (rock), the Peak Ground Acceleration (PGA) is 0.24 g for the maximum credible earthquake (MCE).

### **4.3 Corrosion**

A soils corrosivity analysis was performed to assist in estimating and mitigating the deterioration of buried ferrous metals and concrete. If soils are found to be corrosive, a corrosion engineer should be consulted. Corrosion testing was performed on a sample from Boring B-1 and the results are summarized in Table 4.1. Detailed laboratory results are included in Appendix D.



**Table 4.1 Soil Corrosion Results**

Sample No.	Depth (ft)	pH	Minimum Resistivity (ohm-cm)	Water Soluble Sulfates (ppm)	Water Soluble Chlorides (ppm)	Redox Potential (mV)	Points
B1-3	4	6.00	6,430	8.3	4.3	(+) 256	1

#### **4.3.1 Corrosion Potential for Ferrous Pipes**

To evaluate the potential for external corrosion potential on ferrous metals from soil, the 10-point system in C105/A21.5 (ANSI/AWWA 1999) was used, which resulted in 1 point for the sample analyzed. The long life of historical unprotected pipe in soil with less than 10 points indicates a noncorrosive environment (AWWA 2005) to ferrous metals.

#### **4.3.2 Corrosion Potential for Reinforced Concrete**

According to ACI 318, a sulfate concentration less than 1,000 parts per million is considered “not applicable.” Reinforced concrete exposed to elevated levels of water soluble chlorides should be designed to minimize potential intrusion of chloride ions to the reinforcing steel per ACI 318; this is not anticipated to be an issue for the current project.

#### **4.3.3 Summary of Results**

The provided corrosion test results are only an indicator of potential soil corrosivity for the sample tested at the selected depth interval. It is possible that corrosion potential can vary by sample location and depth. Based on the results of the tested samples, the soil may be generally characterized as noncorrosive to ferrous metals and concrete. A detailed analysis of the corrosion test results was not included in the scope of services and is, therefore, not included in this report.

### **4.4 Expansion Potential**

Expansive soils are defined as soils that undergo large volume changes (shrink or swell) due to variations in moisture content. Such volume changes may cause damaging settlement and/or heave of foundations, slabs-on-grade, pavements, etc.; however, no evidence of expansive soils was discovered during the subsurface exploration for this project. Should any expansive soils be encountered during construction, GHD should be contacted to further assess the potential for damage.

### **4.5 Liquefaction**

Liquefaction occurs when excess pore pressures are generated in loose, saturated, generally cohesionless soil (sand, gravel, and some silts) during earthquake shaking, causing the soil to experience a partial to complete loss of shear strength. Such a loss of shear strength can result in settlement and/or horizontal movement (lateral spreading) of the soil mass. Based on the soils encountered in the field, the lack of groundwater in the upper 50 feet, and low seismicity, the probability of liquefaction for the project is estimated to be low.





## **5. Recommendations**

### **5.1 Earthwork**

#### **5.1.1 Excavatability**

If excavation or drilling greater than 15 feet bgs is planned, more resistant materials could be encountered that would require additional effort, including hammering, blasting, or coring.

#### **5.1.2 Site Preparation**

Site preparation should include stripping of surface vegetation, including the root zone, in open field areas. Any fill material or any existing improvements (foundations, utilities, etc.) that are found in areas where foundations are proposed should be removed and replaced with engineered fill, placed and compacted as recommended in this report. Voids or depressions created by the removal of buried objects should be cleaned of all loose soil and debris and backfilled with engineered fill, placed and compacted as described below.

#### **5.1.3 General Subgrade Preparation**

To provide uniform support for the proposed improvements, the subgrade in all areas to receive structural improvements, including engineered fill and retaining structures, should be scarified to a depth of at least 8 inches, moisture conditioned as necessary, and compacted as engineered fill. Any soft or loose subgrade should be excavated to firm, native material and replaced with engineered fill. Upon completion of subgrade preparation, engineered fill should be placed as described below.

#### **5.1.4 Engineered Fill**

Engineered fill should consist of a homogenous mixture of soil and rock free of vegetation, organic material, rubbish, and/or rubble. Highly plastic or organic soils should not be used for engineered fill but may be placed in landscape areas. It is anticipated that most of the soil generated from onsite excavations should be suitable for use as engineered fill.

Imported materials to be used as engineered fill should meet the specifications listed in the table below. GHD should be provided test results and observe and approve import fill submittals in writing prior to the material being brought on site.



**Table 5.1 Import Fill Specifications**

Atterberg Limits (ASTM D4318)	Particle Size (ASTM C136 or D422)
PI < 15 LL < 40	100% passing the 6-inch sieve minimum of 85% passing the 2½ inch sieve maximum of 30% passing the #200 sieve

### **5.1.5 Compaction**

Engineered fill should be moisture conditioned as necessary, placed in horizontal loose lifts not exceeding 8 inches in thickness, and compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D1557 for fills less than 5 feet in thickness. For fills thicker than 5 feet, fill should be compacted to 95 percent of the maximum dry density as determined by ASTM D1557. Placement of fill material should be verified by a GHD representative on a continuous basis. Nuclear density testing should be performed at a frequency of one per 5,000 cubic yards for mass fill and one per every 300 feet for linear backfill.

### **5.1.6 Trench Backfill and Pipe Bedding**

Trench backfill should meet the engineered fill specifications detailed in Table 5.1. Trench backfill should be placed in lifts not exceeding 12 inches in thickness and compacted to 95 percent of ASTM D1557 by mechanical means only (no jetting). Pipe bedding should conform to the pipe manufacturer's or Civil Engineer's recommendations. Trench backfill should be tested every lift at a frequency of 300 linear feet per lift.

### **5.1.7 Temporary Slopes/Shoring**

Temporary slopes and shoring should conform to OSHA standards. Shored excavations should be constructed from the top down in cuts not exceeding 5 vertical feet in depth. Excavation of subsequent cuts should not be performed until shoring of the adjacent upper cut has been completed. Protection of workers and adjacent structures, shoring design, and the stability of all temporary slopes and open cut excavations should be contractually established as solely the responsibility of the contractor.

Foundation excavations for new structures may be near existing foundations. In order to minimize impacts on the existing facilities during excavation, it is recommended that trenching be located outside an imaginary 2:1 (H:V) plane from the base of the existing foundation in firm native undisturbed soil. In the event that this recommendation is not practical, the designer should incorporate trench shoring or structural improvements such as sheet piling to protect the existing adjacent foundations. Trench support shall be designed by a Professional Engineer registered in the State of California and shall consider adjacent surcharge.



## **5.2 Foundations**

### **5.2.1 Shallow Foundations**

#### **5.2.1.1 Bearing Capacity**

The proposed telecommunication tower may be supported on a mat foundation with a minimum depth of 3 feet bgs. The foundation should be designed using allowable bearing capacities of 2,400 pounds per square foot (psf) for dead loads and 3,600 psf for dead plus live loads (an ultimate bearing capacity of 7,200 psf). The allowable bearing capacity can be increased by one-third for all loads including wind and seismic provided the requirements of the CBC are met. The total settlement is anticipated to be less than ½ inch, with differential settlement of ¼ inch over 20 feet.

#### **5.2.1.2 Passive Resistance**

Passive earth resistance or passive earth pressure is the amount of resistance provided by the soil in response to a movement of a structure resulting in a compressive force upon the soil. A passive earth pressure of 400 pounds per cubic foot (pcf) should be used if the upper foot of soils is ignored. A friction coefficient of 0.4 is recommended. If the structure is poured against neatly excavated soil without the use of forms, both the friction coefficient and the passive resistance may be used in design. Passive earth pressures provided herein assume that the zone of interest is above the groundwater table and on a relatively level surface. If a structure is above a 2:1 slope projected from the bottom of the footing, the passive pressure will be translated to the structure.

#### **5.2.1.3 Modulus of Subgrade Reaction**

The modulus of subgrade reaction of 200 pounds per cubic inch may be used for the foundation design.

#### **5.2.1.4 Foundation Excavation Observation**

GHD geotechnical staff should observe the foundations excavations prior to placing reinforcing steel or concrete to verify that the structures are founded on the appropriate materials.

### **5.2.2 Deep Foundations**

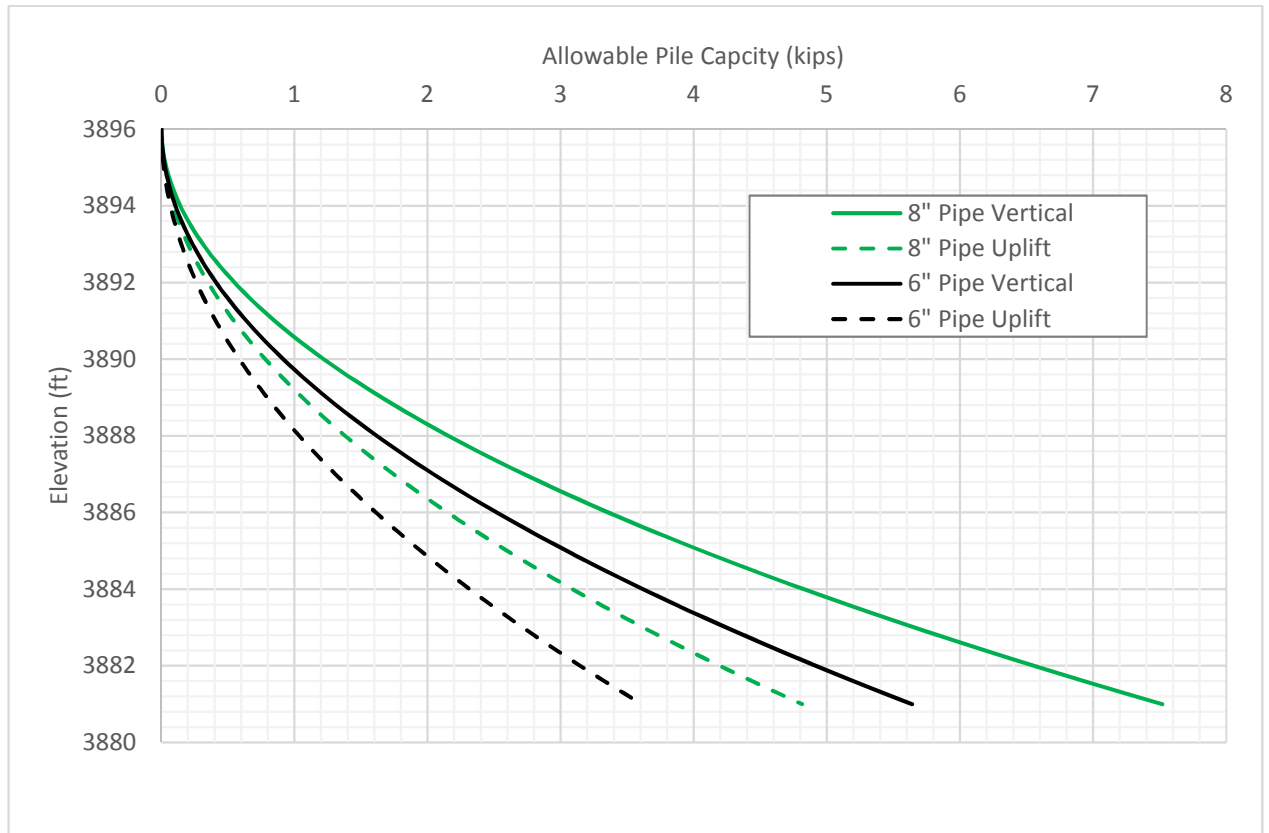
The proposed tower may alternatively be supported on a deep foundation system. The following sections provide axial pile capacity recommendations and lateral pile analysis parameters.

#### **5.2.2.1 Axial Pile Capacity**

The allowable vertical capacity of 6- and 8-inch pipe piles is presented below for dead and live loads. A one-third increase of the values on the chart may be used for all loads including wind and seismic. To avoid a reduction in vertical capacity from group effects, the piles should be spaced no closer than three pile diameters apart, center to center. Hard rock was encountered at a depth of 15 feet bgs which would likely preclude the use of driven pipe piles beyond this depth.



**Figure 5.1 Axial Pile Capacity**



#### 5.2.2.2 Lateral Pile Analysis

Soil parameters for lateral analysis are presented in Table 5.2. The idealized soil profile for lateral analysis is based on the available subsurface information and is applicable to a maximum depth of 15 feet bgs, where bedrock was encountered.

**Table 5.2 LPILE Material Parameters**

Top Elevation (ft)	Material Type	Cohesion (psf)	Phi (degrees)	Total Unit Weight (pcf)	k (pci)	E <sub>50</sub>	L-Pile Soil Model
3,896	Clayey Sand	0	34	120	225	-	Sand (Reese)
3,881	Top of Rock						

#### 5.2.3 Foundation Observation

GHD geotechnical staff should observe the excavation for shallow foundations prior to placing reinforcing steel or concrete to verify that the structures are founded on the appropriate materials. GHD geotechnical staff should observe the installation of deep foundations to verify the piles are installed per the recommendations contained in this report.



### 5.3 Seismic Design

The seismic design criteria for the site listed in the table below were developed in accordance with ASCE 7-10 based on the subsurface information obtained from the geotechnical investigation and the USGS Seismic Design Maps website.

**Table 5.3 Seismic Design Criteria**

Parameter	Recommended Value	Reference (ASCE 7-10)
Site Class	B	Table 20.3-1
Mapped MCE spectral response at short period ( $S_s$ )	0.639 g	Figure 22-1
Mapped MCE spectral response at 1 sec period ( $S_1$ )	0.244 g	Figure 22-2
Site coefficient ( $F_a$ )	1.0	Table 11.4-1
Site coefficient ( $F_v$ )	1.0	Table 11.4-2
MCE spectral response acceleration for short period ( $S_{MS}$ )	0.639 g	Equation 11.4-1
MCE spectral response acceleration for 1 sec period ( $S_{M1}$ )	0.244 g	Equation 11.4-2
Design Spectral Acceleration for short period ( $S_{DS}$ )	0.426 g	Equation 11.4-3
Design Spectral Acceleration for 1 sec period ( $S_{D1}$ )	0.163 g	Equation 11.4-4
Mapped Peak Ground Acceleration	0.244 g	Figure 22-7
Site coefficient ( $F_{PGA}$ )	1.0	Table 11.8-1
Mapped Risk Coefficient at 0.2s ( $C_{RS}$ )	0.999	Figure 22-17
Mapped Risk Coefficient at 1s ( $C_{R1}$ )	1.052	Figure 22-18

### 5.4 Access Road Recommendations

Aggregate surface roads could be proposed to provide access to and around the proposed improvements. Considering the materials encountered in the field exploration and laboratory index testing, an R-Value of 30 was selected. Using methodology presented by the California Department of Transportation (Caltrans, 2017), aggregate surfacing thicknesses were calculated for a traffic index (TI) of 4 to reflect the long term use of the road and a TI of 6 to reflect the potential for the road to be constructed prior to construction.

The inclusion of geosynthetic fabric, such as Mirafi HP270 or equivalent, beneath the aggregate surfacing would result in a reduction of the section thickness of approximately 20% (TenCate Mirafi, 2010). The minimum total thickness for the aggregate surfacing should be 6 inches.

Recommended aggregate surfacing thicknesses for both cases are summarized in Table 5.4.

**Table 5.4 Aggregate Surface Thickness Recommendations**

TI	Aggregate Thickness (inches)	Aggregate Thickness with Geosynthetic (inches)
4	10	8
6	15	13



## **5.5 Surface Drainage and Erosion Control**

Drainage around foundations, structures, and pavements should be constructed in a way such that soils near the structures or pavements do not become saturated. In general, all construction surfaces should be graded to drain to prevent water from ponding. Unpaved surfaces adjacent to foundations or pavements should be graded no flatter than 2 percent. Downspouts should be piped to deposit water at least 5 feet from foundations.

Erosion control measures should be implemented for exposed surfaces potentially subject to soil erosion. Best Management Practices to reduce erosion and transport of soil particles or turbid water into the drainage course flowing from the construction site must be employed. All conditions of existing water quality regulatory agency permits must be adhered to.

## **5.6 Plan Review and Construction Observation**

GHD geotechnical staff should review the project plans and specifications during the construction document phase to evaluate if they are consistent with the recommendations presented herein. The conclusions and recommendations contained in this report are contingent upon GHD being retained to provide intermittent observation and appropriate field and laboratory testing during site preparation to evaluate if the subsurface conditions are as anticipated. If the subsurface conditions are observed to be different from those described in this report, GHD should be notified immediately so that the changed conditions can be evaluated and our recommendations revised, if appropriate. The recommendations in this report are contingent upon prompt notification and review of changed conditions.

# **6. References**

American Society of Civil Engineers. 2010. "ASCE Standard 7-10, Minimum Design Loads for Buildings and Other Structures."

ANSI/AWWA. 1999. "C105/A21.5, American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems."

AWWA. Bonds et al. 2005. "Corrosion and Corrosion Control of Iron Pipe, AWWA Journal 97.6."

California Building Standards Commission. 2016. "2016 California Building Code, California Code of Regulations, Title 24, Part 2."

Caltrans. 2017. "Highway Design Manual, Sixth Edition - Change 11/20/2017."

FEMA. 2009. "NEHRP Recommended Seismic Provisions for New Buildings and Other Structures."

Jennings, Charles W. 1977. "Geologic Map of California: California Division of Mines and Geology, scale 1:750,000."

Jennings, Charles W. 2010. "Fault Activity Map of California and Adjacent Areas, California Geologic Survey, 1:750,000 scale."

Saucedo, G. J., and D. L. Wagner. 1960. "Geologic Map of California, Olaf P. Jenkins Edition, Westwood Sheet."





TenCate Mirafi. 2010. "Flexible Pavement Design TenCate Mirafi ® Geosynthetics." July 1.

U.S. Geologic Survey. Visited June 27, 2018. U.S. Seismic Design Maps, 2010 ASCE 7 Provisions.  
<http://earthquake.usgs.gov/designmaps/us/application.php>

## 7. Limitations

This Geotechnical Investigation ("Report"):

- Has been prepared by GHD for the Department of General Services (DGS) under the professional supervision of those senior staff whose seals and signatures appear herein
- May only be used and relied on by DGS, which is responsible to ensure that all relevant parties to the project, including designers, contractors, subcontractors, etc., are made aware of this report in its entirety
- Must not be copied to, used by, or relied on by any person other than DGS without the prior written consent of GHD
- May only be used for the purpose of engineering design of the proposed structures at the project site described in this report and must not be used for any other purpose

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than DGS arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report:

- In regard to site exploration and testing:
  - Site exploration and testing characterizes subsurface conditions only at the locations where the explorations or tests are performed; actual subsurface conditions between explorations may be different than those described in this report. Variations of subsurface conditions from those analyzed or characterized in this report are not uncommon and may become evident during construction. In addition, changes in the condition of the site can occur over time as a result of either natural processes (such as earthquakes, flooding, or changes in ground water levels) or human activity (such as construction adjacent to the site, dumping of fill, or excavating). If changes to the site's surface or subsurface conditions occur since the performance of the field work described in this report, or if differing subsurface conditions are encountered, we should be contacted immediately to evaluate the differing conditions to assess if the opinions, conclusions, and recommendations provided in this report are still applicable or should be amended.
- In regard to limitations:
  - Our scope of services was limited to the proposed work described in this report, and did not address other items or areas.



- The geotechnical investigation upon which this report is based was conducted for the proposed structures at the project site described in this report. The conclusions and recommendations contained in this report are not valid for other structures and/or project sites. If the proposed project is modified or relocated, or if the subsurface conditions found during construction differ from those described in this report, GHD should be provided the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations need revision.
- Did not include evaluation or investigation of the presence or absence of wetlands
- Did not include a hazardous material investigation
- Did not include a landslide evaluation
- Did not include a fault investigation

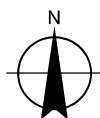
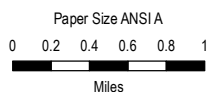
GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect. There is no warranty, either expressed or implied. GHD accepts no liability regarding completeness or accuracy of the information presented and/or provided to us, or any conclusions and decisions which may be made by the client or others regarding the subject site/project. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observations of construction.

Subject to the paragraphs in this section of the Report, the interpretations of data, findings, conclusions, recommendations and professional opinions in this Report are based on the information reviewed, site conditions encountered, and samples collected during our field exploration and were developed in accordance with generally accepted geotechnical engineering principles and practices and as prescribed by the client. This Report is considered valid for the proposed project for a period of two years from the report date provided that the site conditions and development plans remain unchanged. With the passage of time, changes in the conditions of a property can occur due to natural processes or the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Depending on the magnitude of any changes, GHD may require that additional studies (at additional cost) be performed and that an updated report be issued. Additional studies may disclose information which may significantly modify the findings of this report. GHD will retain untested samples collected during our field investigation for a period not to exceed 60 days unless other arrangements are made with the client. After a period of two years from the report date, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions and any recommendations.



# **Appendix A**

## **Figures**



Map Projection: Lambert Conformal Conic  
Horizontal Datum: NAD 1983 2011  
Grid: NAD 1983 2011 StatePlane California II FIPS 0402 Ft US



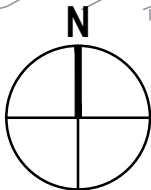
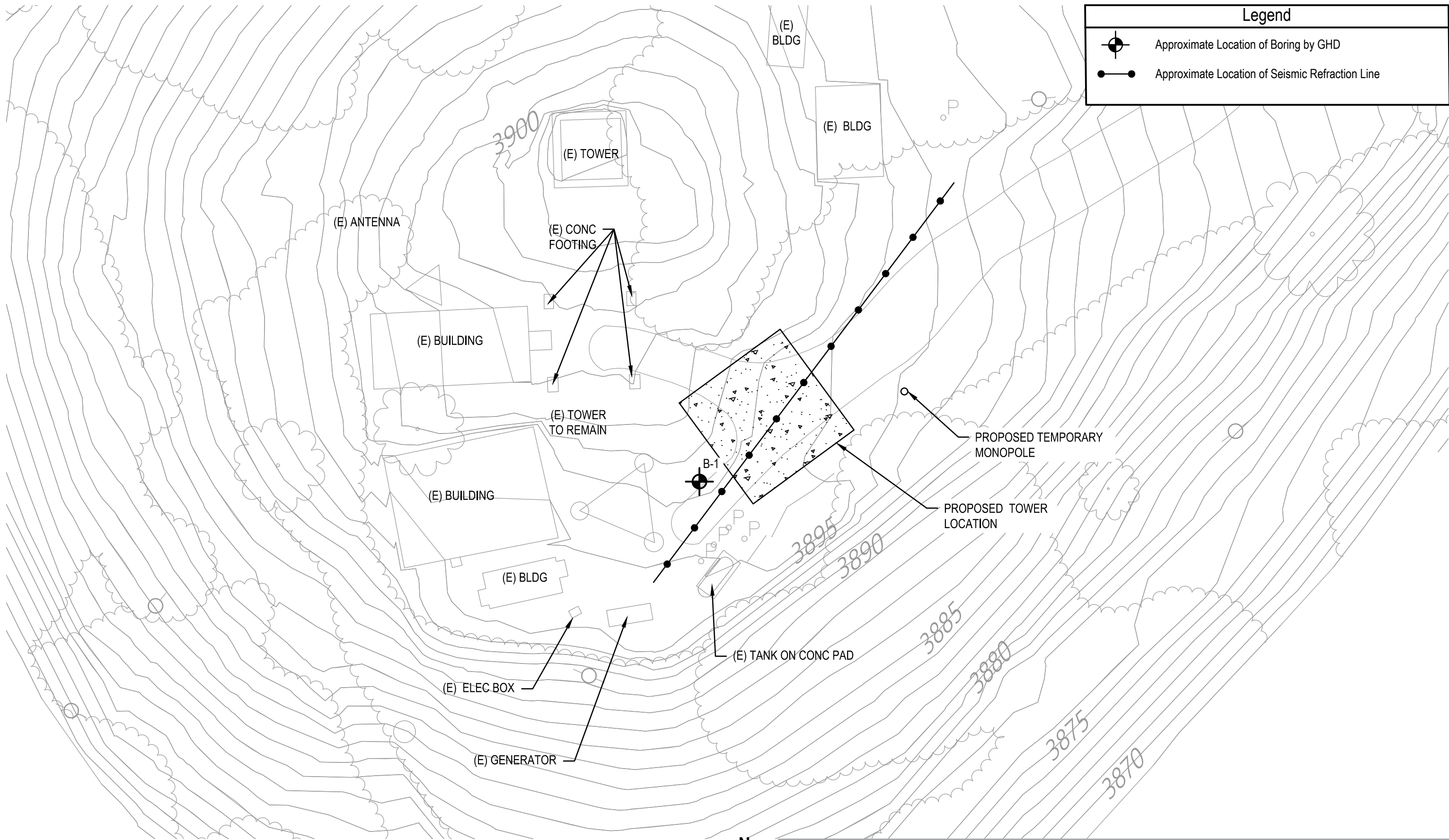
Department of General Services  
Banner Mountain Telecommunications  
Replacement  
Nevada County, California

Project No. 11136839.20  
Revision No. -  
Date 07/23/2018

**Vicinity Map**

**Figure A-1**





Department of General Services  
Banner Mountain Telecommunication  
Replacement  
Nevada County, California  
**Exploration Map**

Project No. **11136839.20**  
Report No.  
Date **09/18/2018**

**Figure A-2**



## **Appendix B**

### **Logs of Borings**


















# EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES\*

	$N_{60}^*$ (Blows/ft)	Consistency	Unconfined Compressive Strength (tons/sq ft)		$N_{60}^*$ (Blows/ft)	Relative Density
FINE GRAINED SOIL	0 - 2	Very Soft	<0.25	COARSE GRAINED SOIL	0 - 4	Very Loose
	3 - 4	Soft	0.25 - 0.50		5 - 10	Loose
	5 - 8	Medium Stiff	0.50 - 1.00		11 - 30	Medium Dense
	9 - 15	Stiff	1.00 - 2.00		31 - 50	Dense
	16 - 30	Very Stiff	2.00 - 4.00		>50	Very Dense
	>30	Hard	>4.00			

\*ASTM D 1586; number of blows of 140 pound hammer falling 30 inches to drive a 2-inch-O.D., 1.4-inch-I.D. sampler one foot.

## UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

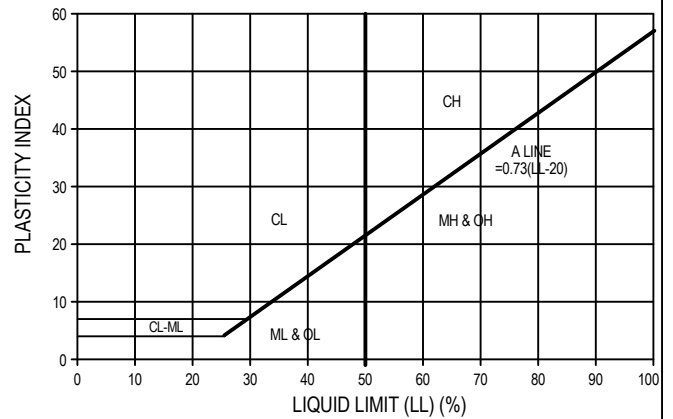
MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS	
COARSE GRAINED SOIL	GRAVEL AND GRAVELLY SOIL	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		LITTLE OR NO FINES		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		APPRECIABLE AMOUNT OF FINES		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOIL	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		LITTLE OR NO FINES		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		APPRECIABLE AMOUNT OF FINES		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOIL	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOIL				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

## PARTICLE SIZE IDENTIFICATION

U.S. Standard Sieve	200	40	10	4	3/4"	3"	12"
Silt and Clays	Sand			Gravel		Cobbles	Boulders
	fine	medium	coarse	fine	coarse		
Grain Size (mm)	0.074	0.420	2.00	4.76	19.1	76.2	305

## PLASTICITY CHART



## MOISTURE DESCRIPTION

Saturated  
Wet  
Moist  
Damp  
Dry

## SOIL DESCRIPTION FORMAT

Color, Secondary Component, PRIMARY COMPONENT (USCS), gradation plasticity, with component, trace component, consistency/relative density, moisture, source.

## SAMPLE SYMBOLS



SPT  
(1.375 I.D.)



California  
(2.0-inch I.D.)



Modified California  
(2.5-inch I.D.)



No Recovery



Shelby Tube



Rock Core

## WELL SYMBOLS



Cement Grout



Bentonite



Filter Sand



Screen in filter sand



Slough



RX (Bedrock)

## WATER LEVEL SYMBOLS



Water level at time of drilling.



Water level measured at a specified time after drilling and sampling or well completion.

## GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual. Field descriptions may have been modified to reflect results of laboratory tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations.

## ABBREVIATIONS

CD = TX-CD  
CN = Consolidation  
CR = Corrosivity  
CU = TX-CU  
DS = Direct Shear  
EI = Expansion Index  
MDD = Maximum Density

NR = No Recovery  
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Banner Mountain  
Telecommunications Replacement  
Nevada County, California

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













## Soil Boring Key

# EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES\*

	$N_{60}^*$ (Blows/ft)	Consistency	Unconfined Compressive Strength (tons/sq ft)		$N_{60}^*$ (Blows/ft)	Relative Density
FINE GRAINED SOIL	0 - 2	Very Soft	<0.25	COARSE GRAINED SOIL	0 - 4	Very Loose
	3 - 4	Soft	0.25 - 0.50		5 - 10	Loose
	5 - 8	Medium Stiff	0.50 - 1.00		11 - 30	Medium Dense
	9 - 15	Stiff	1.00 - 2.00		31 - 50	Dense
	16 - 30	Very Stiff	2.00 - 4.00		>50	Very Dense
	>30	Hard	>4.00			

\*ASTM D 1586; number of blows of 140 pound hammer falling 30 inches to drive a 2-inch-O.D., 1.4-inch-I.D. sampler one foot.

## UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

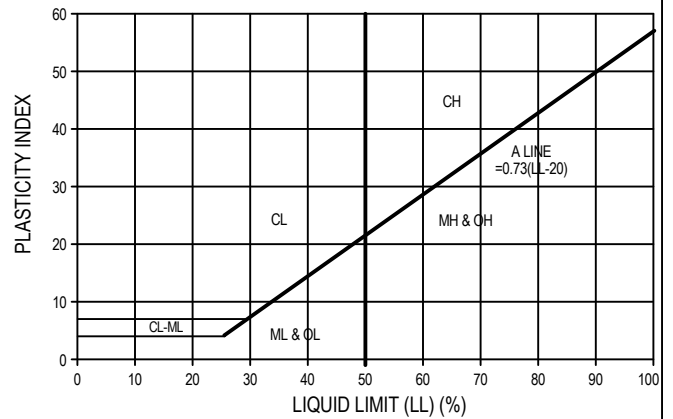
MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS	
COARSE GRAINED SOIL	GRAVEL AND GRAVELLY SOIL	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		LITTLE OR NO FINES		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		APPRECIABLE AMOUNT OF FINES		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOIL	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		LITTLE OR NO FINES		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		APPRECIABLE AMOUNT OF FINES		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOIL	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOIL				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

## PARTICLE SIZE IDENTIFICATION

U.S. Standard Sieve	200	40	10	4	3/4"	3"	12"
Sils and Clays	Sand			Gravel		Cobbles	Boulders
	fine	medium	coarse	fine	coarse		
Grain Size (mm)	0.074	0.420	2.00	4.76	19.1	76.2	305

## PLASTICITY CHART



## MOISTURE DESCRIPTION

Saturated  
Wet  
Moist  
Damp  
Dry

## SOIL DESCRIPTION FORMAT

Color, Secondary Component, PRIMARY COMPONENT (USCS), gradation plasticity, with component, trace component, consistency/relative density, moisture, source.

## SAMPLE SYMBOLS



SPT  
(1.375 I.D.)



California  
(2.0-inch I.D.)



Modified California  
(2.5-inch I.D.)



No Recovery



Shelby Tube



Rock Core

## WELL SYMBOLS



Cement Grout



Bentonite



Filter Sand



Screen in filter sand



Slough



RX (Bedrock)

## WATER LEVEL SYMBOLS



Water level at time of drilling.



Water level measured at a specified time after drilling and sampling or well completion.

## GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Soil descriptions and stratum lines are interpretive, and actual changes may be gradual. Field descriptions may have been modified to reflect results of laboratory tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations.

## ABBREVIATIONS

CD = TX-CD  
CN = Consolidation  
CR = Corrosivity  
CU = TX-CU  
DS = Direct Shear  
EI = Expansion Index  
MDD = Maximum Density

NR = No Recovery  
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## Soil Boring Key



Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Type	Sample/Run No.	Blows/6"	N <sub>60</sub>	Water Content (%)	Dry Density (pcf)	% Passing No. 4 Sieve	% Passing No. 200 Sieve	Other Tests
3870	26	METASEDIMENTARY ROCK, gray, massive granular, no grain size, no texture, none foliated, fresh, very strong.		RC								UC
3868	28	Trace oxidation.										UC
3866	30											
3864	32	Strong to very strong.										
3862	34											
3860	36											
3858	38											
3856	40											
3854	42											
3852	44											
3850	46											
3848	48											
3846	50	Rock coring terminated at 49.1 feet bgs.										
3844	52											
3842	54											



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Log of Boring

B-1



## **Appendix C**

# **Seismic Refraction**

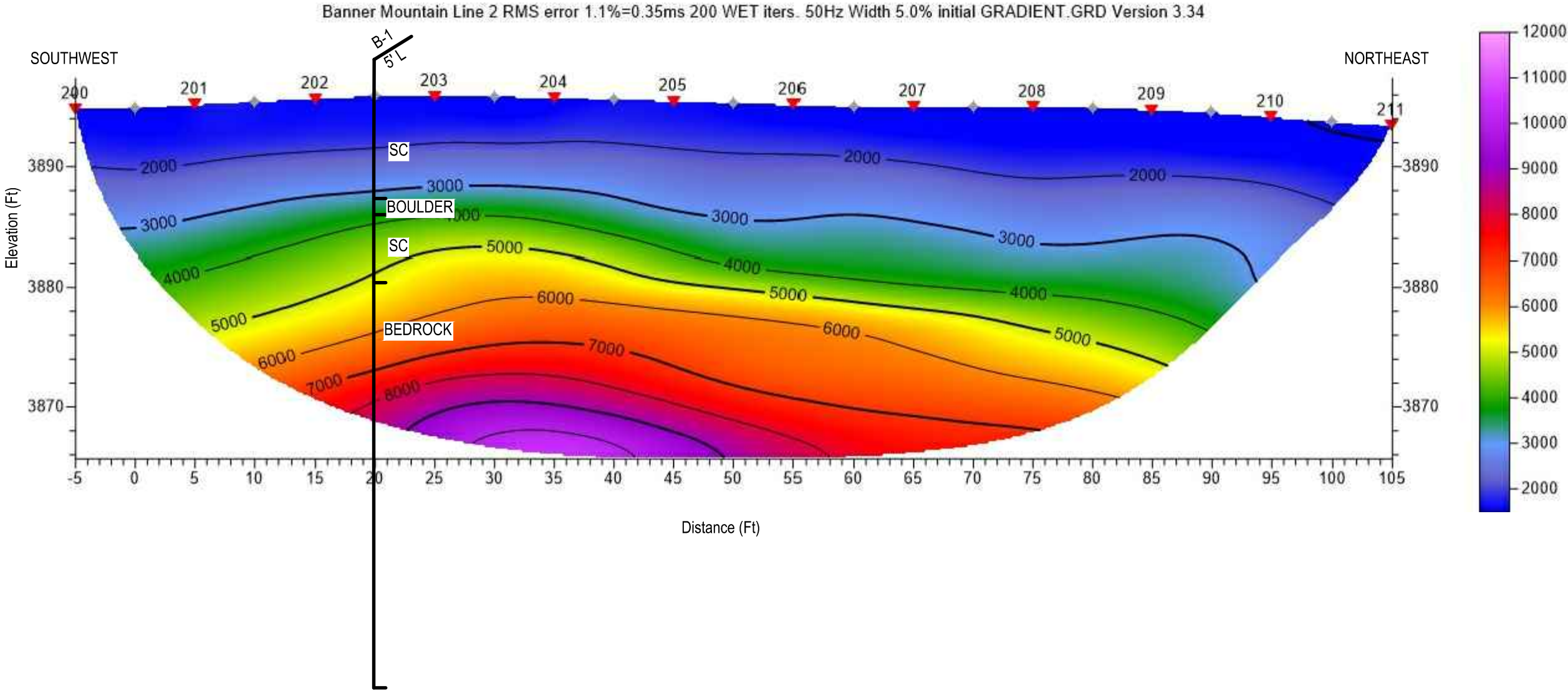
Legend

▼

Geophone Location

✦

Shot Point Location



010'20'

GHD

Department of General Services

Banner Mountain Telecommunications

Replacement

Nevada County, California

Seismic Refraction Line

Project No. 11136839.20

Report No. 0

Date 09/19/2018

Figure C-1





# **Appendix D**

## **Geotechnical Laboratory Test Results**

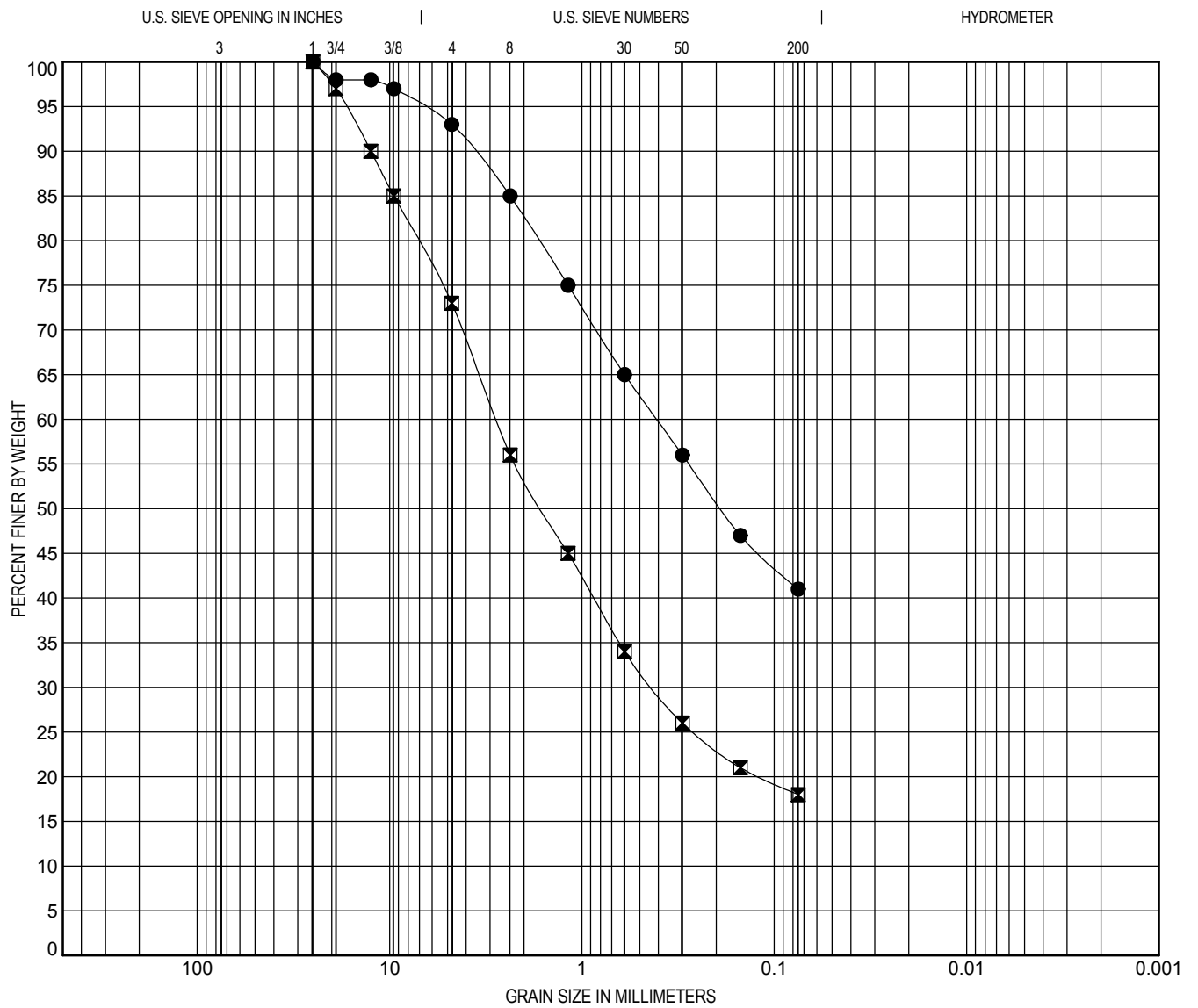
Boring ID	Depth (ft)	Description	Water Content (%)	Dry Density (pcf)	Maximum Size (mm)	%<#200 Sieve	Liquid Limit	Plastic Limit	Plasticity Index	Other Tests
B-1	4.0	Yellowish brown Clayey SAND (SC)								CR
B-1	4.5	Yellowish brown Clayey SAND (SC)	21.2	85.0	25	41				
B-1	11.4	Red yellowish Clayey SAND with Gravel (SC)			25	18				
B-1	17.2	METASEDIMENTARY Rock								UC
B-1	25.2	METASEDIMENTARY Rock								UC
B-1	40.2	METASEDIMENTARY Rock								UC



Department of General Services Banner      Project No. 11136839.20  
 Mountain Telecommunications Replacement      Revision No. 0  
 Nevada County, California      Date 11/20/2018

## Summary of Laboratory Results

D-1



# ROCK CORE COMPRESSIVE STRENGTH

<u>Core No.</u>	<u>Location</u>	<u>Diameter, in.</u>	<u>Length, in.</u>	<u>Compressive Strength, psi</u>	<u>Break Description</u>
6583	B-1 17.2'-17.7'	2.39	4.89	23030	3
6584	B-1 25.2'-25.7'	2.39	4.85	24610	3
6585	B-1 40.2'-40.7'	2.39	5.1	18450	3/5

Test Method: D-7012 Method C

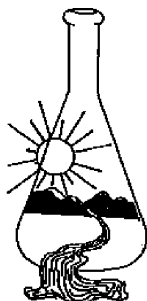
MATERIAL TYPE: Rock  
 MOISTURE CONDITION AT TESTING As received  
 REMARKS:

**PROJECT NUMBER:** 11136839 February 27, 2018

**Banner Mountain**



**GHD Inc**  
 4080 Plaza Goldorado Circle Suite B  
 Cameron Park CA 95682 T 530 677 5515  
**Geotechnical Field Office:**  
 3883 Ponderosa Road, Shingle Springs



**Sunland Analytical**  
11419 Sunrise Gold Cir.#10  
Rancho Cordova, CA 95742  
(916) 852-8557

Date Reported 05/02/18  
Date Submitted 04/26/18

To: Dave Mebratom  
GHD  
4080 Goldorado Cr #B  
Cameron Park, CA, 95682

From: Gene Oliphant, Ph.D. \ Randy Horney  
General Manager \ Lab Manager

The reported analysis was requested for the following:  
Location : 11136839-20 Site ID: 1-3  
Thank you for your business.

\* For future reference to this analysis please use SUN # 76836 - 160282

---

EVALUATION FOR SOIL CORROSION

Soil pH	6.00	
Moisture	16.14 %	
Minimum Resistivity	6.43	ohm-cm (x1000)
Chloride	4.3 ppm	0.0004 %
Sulfate-S	8.3 ppm	0.0008 %
Redox Potential	(+) 256.00	mv
Sulfate Reducing Bacteria	Presence - NEGATIVE	

**METHODS:**

pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)  
Sulfate CA DOT Test #417, Chloride CA DOT Test #422  
Redox Potential ASTM D1498m, Sulfate Reducing Bacteria AWWA C105-72



# about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

**Anthony Quintrall**

Anthony.Quintrall@ghd.com  
530.387.5707

**Christopher Trumbull**

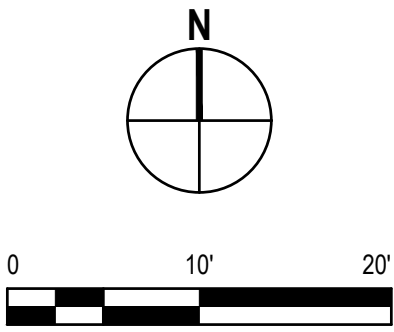
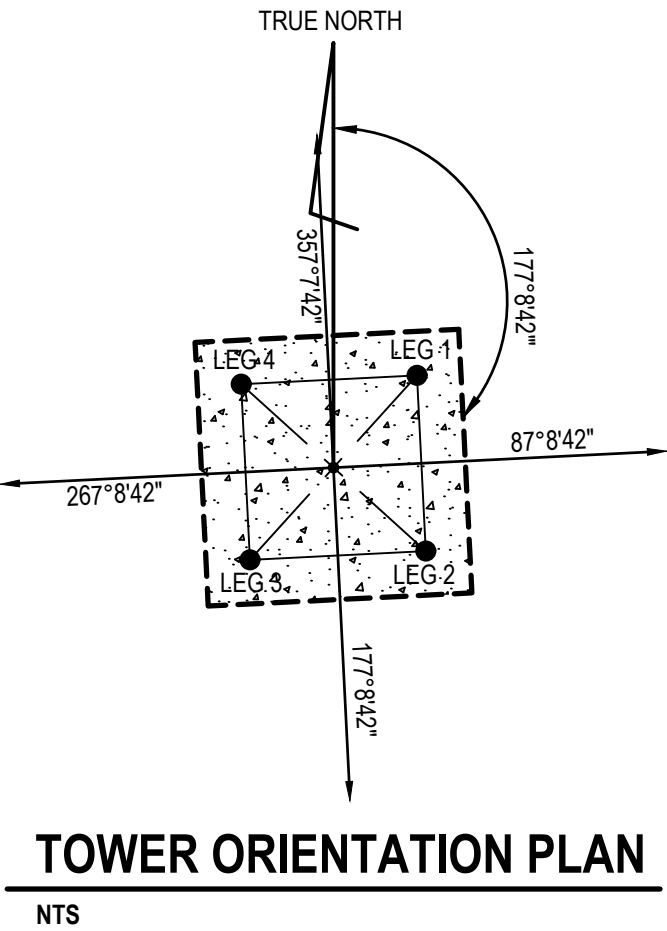
Christopher.Trumbull@ghd.com  
530.387.5683

[www.ghd.com](http://www.ghd.com)



# Appendix I

Site Plan



GHD Inc.  
4080 Plaza Goldorado Circle Suite B  
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PRELIMINARY

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Client STATE OF CALIFORNIA DEPARTMENT OF GENERAL SERVICES  
Project CAL FIRE  
TOWERS AND VAULTS  
REPLACEMENT PROJECT  
BANNER MOUNTAIN - PHASE V


No.	Issue	Drawn	Approved	Date
Drawn	PEM	Designer	PEM	
Drafting Check	TAB	Design Check	TAB	
Project Manager	TAB	Date	12/21/18	
This document shall not be used for construction unless signed and sealed for construction.		Scale	1" = 10'	
Original Size		Bar is one inch on original size sheet		
ANSI D		0 1"		

Project No.

Title

SITE AND GRADING PLAN

Sheet No.

BM-C101