

INITIAL STUDY

**FOR THE
CITY OF BIG BEAR LAKE
DEPARTMENT OF WATER AND POWER
WOLF RESERVOIR AND BOOSTER
REPLACEMENT PROJECT**

Prepared for:

**City of Big Bear Lake,
Department of Water and Power**
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TABLE OF CONTENTS

Abbreviations and Acronyms iv

Introduction..... 1

Environmental Factors Potentially Affected 4

Determination 5

Evaluation of Environmental Impacts..... 6

 I. Aesthetics 8

 II. Agricultural and Forestry Resources 10

 III. Air Quality 12

 IV. Biological Resources 24

 V. Cultural Resources 27

 VI. Energy..... 30

 VII. Geology and Soils..... 31

 VIII. Greenhouse Gas Emissions 34

 IX. Hazards and Hazardous Materials 37

 X. Hydrology and Water Quality..... 40

 XI. Land Use and Planning 45

 XII. Mineral Resources 45

 XIII. Noise 46

 XIV. Population and Housing..... 48

 XV. Public Services 49

 XVI. Recreation..... 50

 XVII. Transportation..... 51

 XVIII. Tribal Cultural Resources 53

 XIX. Utilities and Service Systems 54

 XX. Wildfire 55

 XXI. Mandatory Findings of Significance..... 57

Summary of Mitigation Measures 59

References..... 63

APPENDICES

- Appendix 1 – Air Quality / GHG Analyses
- Appendix 2 – BRA / JD
- Appendix 3 – Cultural Resources

FIGURES (located at end of document)

Figure 1	Regional Location Map
Figure 2	Site Location Map
Figure 3	Site Location Map (Aerial)
Figure 4	Site Plan
Figure II-1	Farmland Map
Figure VII-1	Alquist-Priolo Study Zones / Fault Activity
Figure VII-2	USGS Fault Activity Map of California
Figure VII-3	Liquefaction & Landslides
Figure IX-1	GeoTracker
Figure IX-2	Mountain Area Emergency Routes – Area 2
Figure IX-3	Very High Fire Hazard Severity Zones
Figure X-1	Flood Hazards Map
Figure X-2	Dam & Basin Hazards
Figure XII-1	Mineral Resource Zones
Figure XIII-1	Delineated Noise Contours for the Airport

TABLES

Table III-1	Ambient Air Quality Standards	13
Table III-2	Health Effects of Major Criteria Pollutants.....	15
Table III-3	Air Quality Monitoring Summary (2018-2021).....	16
Table III-4	Comparison of Emissions by Major Source Category from 2012 AQMP.....	18
Table III-5	Daily Emissions Thresholds	19
Table III-6	Reservoir Construction Activity Equipment Fleet	20
Table III-7	Construction Activity Emissions Maximum Daily Emissions	21
Table III-8	LST and Project Emissions	23
Table VIII-1	Construction Emissions	36

LIST OF ABBREVIATIONS AND ACROYNMS

AAQS	Ambient Air Quality Standards
AB	Assembly Bill
amsl	above mean sea level
APE	Area of Potential Effect
APN	Assessor Parcel Number
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
AWWA	American Water Works Association
BBLDWP	Big Bear Lake Department of Water and Power
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	Best Management Practices
BRA	Biological Resources Assessment
BVES	Bear Valley Electric Service
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAR	California Climate Action Registry
CDFW	California Department of Fish & Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
C-G	Commercial space
CNEL	Community Noise Equivalent Level
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DTSC	Department of Toxic and Substance Control
DWP	Department of Water and Power
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FGC	Fish & Game Code
FIRM	Flood Insurance Rate Map
GCC	Global Climate Change
GHG	Greenhouse Gas
GSAs	Groundwater Sustainability Agencies
GSPs	Groundwater Sustainability Plans
IS/MND	Initial Study / Mitigated Negative Declaration

JD	Jurisdictional Delineation
kips	kilo-pounds
LRA	Local Responsibility Area
LSTs	Localized Significance Thresholds
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MCLs	maximum contaminant levels
MM	Mitigation Measure
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OS	Open Space
OSHA	Occupational Safety and Health Administration
PEIR	Program Environmental Impact Report
plf	per linear foot
P-R	Park spaces
R-PC	single-family residential
RWQCB	Regional Water Quality Control Board
SBBM	San Bernardino Base Meridian
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SWPPP	Storm Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TCR	Tribal Cultural Resource
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish & Wildlife Services
UWMP	Urban Water Management Plan
VdB	velocity in decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WOTUS	Waters of the United States
WTP	Wastewater Treatment Plant
WQMP	Water Quality Management Plan

ENVIRONMENTAL CHECKLIST

INTRODUCTION

1. Project Title: Wolf Reservoir & Booster Replacement Project
2. Lead Agency Name: City of Big Bear Lake, Department of Water and Power
Address: 41972 Garstin Drive
Big Bear Lake, CA 92315
3. Contact Person: Mr. Reginald A. Lamson, General Manager
Phone Number: 760-559-8172
Email: RLamson@bbdwp.com
4. Background: The City of Big Bear Lake Department of Water and Power (Department or DWP) owns and operates water facilities that produce, treat, store, and deliver drinking water to its customers located in the City of Big Bear Lake and surrounding unincorporated areas. The Department also operates a network of water pipelines, reservoirs, and pumping facilities to deliver this treated drinking water to its customers. The Department proposes to develop a replacement reservoir at the existing DWP Wolf Reservoir site as well as replacement of the pump station located at the site. This Initial Study describes the proposed project and evaluates the potential environmental impacts from its implementation, construction and operation.
5. Project Location: The existing 100,000-gallon Wolf Reservoir site is located on the northeast corner of the intersection of Wolf Road and Coyote Court in the City of Big Bear Lake. The project site encompasses approximately 20,000 square feet (sf) or about 0.45 acre. The site is located on the Moonridge 7.5' USGS Topographic Quadrangle Map in Section 26, Township 2 North, Range 1 East, SBBM. Specific geodetic location is Latitude 34°14'0.78" North, and Longitude 116°50'51.90" West. Figure 1 shows the regional location and Figure 2 shows site location on the USGS topographic map.
6. Existing Conditions: The Wolf Reservoir site is located in the Moonridge area of the City of Big Bear Lake as shown on Figure 2. This site encompasses one lot located within the residential community of Moonridge. The existing onsite water infrastructure consists of a 100,000-gallon steel potable water storage reservoir and an existing pump station (wooden enclosure) with supporting pipeline connections to the Department's potable water distribution system. These facilities are located at an elevation of 7,415 feet above mean sea level (amsl). An aerial view of the site (Figure 3) shows it is located near Wolf Road and the site is graded with a few landscape trees shielding the view of the reservoir from Wolf Road to the south. The site is surrounded by residences and residential lots and is located to the northeast of Sand Canyon Creek. Figure 4 shows the site plan for the new reservoir and pump station.

7. Project Sponsor Name: City of Big Bear Lake Department of Water and Power
Address: 41972 Garstin Drive
P.O. Box 1929
Big Bear Lake, California 92315
8. General Plan Designation: Single-Family Residential
9. Zoning: Single-Family Residential
10. Project Description

The Project consists of the installation and operation of a new 612,000-gallon water storage reservoir tank that will replace the existing 100,000-gallon (24' high, 24' diameter) Wolf Reservoir. The project also includes replacing the existing pump station at the project site with a concrete block building and a metal roof. Figure 4 shows the site plan for the new reservoir and pump station and provides an illustration of the proposed location of the new steel tank that will be approximately 36 feet in height and 58 feet in diameter. The project site will be graded and lowered about 8.5 feet to a base elevation of 7,406.66 feet amsl. The high-water line will be at an elevation of approximately 7,437.66 feet amsl. Additionally, the portion of the existing access road located within the project site will be improved. The new welded steel tank will maintain about four feet of freeboard to protect the reservoir from sloshing damage during an earthquake. Also, the steel I-beam roof rafters will be constructed on the exterior of the roof to provide additional protection during an earthquake from sloshing damage.

The proposed foundation system will be a reinforced concrete ring wall foundation system. The maximum safe soil bearing pressure for dead pulse live loads will be 4,000 pounds per square foot (PSF). Associated site improvements will consist of new inlet/outlet piping, and drainpipes, installing a side outlet universal joint, new site pavement improvements, block walls and/or chain-link fencing as needed to control potential trespass. These activities are discussed in detail below and are depicted in the site plan provided as Figure 4, Site Plan

The Project site presently contains the following facilities:

Physical Components

- a. One 100,000-gallon welded steel storage reservoir,
- b. Piping,
- c. Pump station and exterior wood structure,
- d. Pavement, and
- e. Electronic-control equipment.

Construction

Construction of the new Wolf Reservoir is proposed to begin in early-2024 and be completed over a 12-month period. The existing facilities will be demolished and properly recycled and disposed of. The site will be graded to final elevation and approximately 3,600 cubic yards (CY) of soil will be removed and disposed of or made available as fill locally. The new reservoir will be a welded carbon steel storage reservoir and will operate in conjunction with the existing Shuff Reservoir located at approximately the same elevation. The pump station improvements include replacing the end suction pumps with vertical turbine, submersible pumps, replacing the electrical and control equipment, and constructing a concrete block enclosure with a metal roof.

As noted, the new tank will be designed in accordance with the latest California Building Code (CBC), the Occupational Safety and Health Administration (OSHA), American Concrete Institute (ACI), Division of the State Architect (DSA) requirements, and American Water Works Association (AWWA's) design standards. AWWA's design standards require that reservoirs be operated at the high-water level below their maximum physical height in order to prevent roof damage which may be caused by a "sloshing wave" during a seismic event.

Major land uses surrounding the project site, beyond the OS designation includes single-family residential (R-PC) to the west and east, park space (P-R), and commercial space (C-G).

11. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

Before the Department connects the new reservoir with the distribution system that provides water service to the local community, an amendment to Department's domestic water supply permit will be required from the State Division of Drinking Water. No other permits are known to be required for this project. Because State responsible or trustee agencies have been identified for this project, the Department will implement a 30-day review period for this Initial Study and the proposed Mitigated Negative Declaration (IS/MND).

12. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

Tribal Consultation is completed. The Yuhaaviatam of San Manuel Nation has provided recommended mitigation measures for both the Cultural Resources and Tribal Cultural Resources sections of this Initial Study which have been incorporated.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

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" as indicated by the checklist on the following pages.

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input checked="" type="checkbox"/> Energy |
| <input checked="" 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 checked="" type="checkbox"/> Noise | <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input checked="" 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 |

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

<input type="checkbox"/>	The proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	The proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	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.
<input type="checkbox"/>	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 or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION , including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Tom Dodson & Associates
Prepared by


Lead Agency (signature)

March 2024
Date

3-5-24
Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

- 1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
 - a) the significance criteria or threshold, if any, used to evaluate each question; and
 - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
I. AESTHETICS: Except as provided in Public Resources Code Section 21099, would the project:				
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 or 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"/>

SUBSTANTIATION

a. *Less Than Significant Impact* – Adverse impacts to scenic vistas can occur in one of two ways. First, an area itself may contain existing scenic vistas that would be altered by new development. The project site currently contains an existing reservoir; construction of a replacement reservoir will not impact any scenic vistas within the site itself, which is surrounded by urban features, including single-family residences and paved roadways (Wolf Road and Coyote Court). The site is located within the suburban residential portion of the City of Big Bear Lake and adjacent County residential area in Big Bear. The site itself doesn't contain any important scenic vistas which could be impacted by implementing the proposed new 0.612 MG. The existing reservoir is approximately 24-feet high 24-feet in diameter. The site will be lowered approximately 8.5 feet and the new reservoir will be 36-feet high and 58-feet in diameter. It will be a larger reservoir, but will still be integrated into the existing disturbed site.

A scenic vista impact can also occur when a scenic vista can be viewed from the project area or immediate vicinity and a proposed development may interfere with the view to a scenic vista. The proposed reservoir will be located at an existing reservoir site where views are already limited by the adjacent residences and the surrounding forest. There are no major scenic views in any direction at the project area. Therefore, given that the replacement reservoir at this location would be located on the same site as the existing reservoir, the installation of a replacement reservoir at this location is not anticipated to substantially impact scenic vistas to residents or visitors within the project area. Thus, implementation of the proposed new reservoir is not expected to cause any substantial adverse effects on any important scenic vistas. This potential impact is considered a less than significant adverse aesthetic impact. No mitigation is required.

b. *Less Than Significant With Mitigated Incorporated* – The proposed Project Site currently hosts an existing reservoir, and therefore the construction of a replacement reservoir at this location is consistent with the existing use and visual setting of the existing site. There are several trees on the project site and the installation of a larger reservoir will require removal of some trees in order to install the proposed replacement reservoir. Given that the proposed Project will require removal of some onsite trees, however, removal of trees at this Site could be considered an adverse impact. However, mitigation is provided below to ensure that the Department provides replacement trees for all trees removed as part of the project.

AES-1 Where the removal of trees is required to develop the new reservoir, the Department shall replace all trees removed at a 1:1 ratio.

Rock outcroppings, historic buildings, or other scenic resources do not occur on site, especially given that the Site is occupied by an existing reservoir and other water system support facilities. Consequently, impacts to scenic resources on Site are considered less than significant with the implementation of mitigation measure (MM) **AES-1**.

- c. *Less Than Significant Impact* – The proposed Project Site is located in a relatively urbanized area surrounded by single-family residences and local roads. Refer to Figure 3. The Site has a limited range in elevation and consists of trees and vegetation, as well as the existing paved access roads that surround the existing reservoir site. The site is located in an area that contains existing water facilities and the construction of the new reservoir would be visually consistent with the existing landscape and visual setting at the site. The new reservoir will be located approximately 8.5 feet below the existing site elevation based on the proposed grading. As such, the height of the new reservoir would not create a substantially greater visual footprint than that which presently exists, which is shorter than a two-story house. Furthermore, the proposed Project is an infrastructure project, and such projects as the proposed replacement reservoir are considered land use/zone independent. Therefore, the proposed installation of a larger replacement reservoir and associated Project Site improvements would not have a significant potential to conflict with applicable zoning or other regulations governing scenic quality. Impacts under this issue are considered less than significant, and no mitigation is required.

- d. *Less Than Significant Impact* – The existing reservoir utilizes lighting for security purposes. New lighting intended for security, and to enable potential night-time operations and maintenance activities, as required in the future, can be installed to better minimize light and glare on adjacent residences. The construction activities are limited to daylight hours unless an emergency occurs, and the amount of security lighting needed during construction will be limited. Therefore, given that the proposed Project would not create a new permanent source of light, the proposed Project is not anticipated to introduce a significant new source of light and glare into the project area relative to the existing Site. No significant new impacts are anticipated to occur under this issue and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<p>II. 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 Dept. 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:</p>				
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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

- a. *No Impact* – The proposed project will be developed within an area consisting of native Western pine habitat and suburban residential use, and does not contain any agricultural uses. Neither the project footprint nor the surrounding area are designated for agricultural use; no agricultural activities exist in the project area; and there is no potential for impact to any agricultural uses or values as a result of project implementation. According to the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, no prime farmland, unique farmland, or farmland of state importance exists within the vicinity of the proposed project (Figure II-1). No adverse impact to any agricultural resources would occur from implementing the proposed project. No mitigation is required.

- b. *No Impact* – There are no agricultural uses currently within the boundaries of the Project Site or adjacent to it. The site is zoned low density residential in the City of Big Bear Lake. Therefore, no potential exists for a conflict between the proposed project and agricultural zoning or Williamson Act contracts within the project area. No mitigation is required.
- c. *Less Than Significant Impact* – The proposed project is located on a site that already functions as a water supply facility. The site does contain trees, but due to the existing disturbance and use of the site, the proposed project will not “convert” the site from use as a timber harvest area. Further, the City has not designated the site for timberland resource use. Therefore, the continued use of this site for water infrastructure purposes is not forecast to have a significant adverse impact on timber/timberland resources. No mitigation is required.
- d. *Less Than Significant Impact* – Please refer to the discussion under issue II(c), above. The proposed project is located on a site that was historically removed from functioning as forest land and although this water infrastructure site contains a few trees of varying sizes, its continued use for water infrastructure will not result in loss or conversion of forest land. Impacts under this issue are considered less than significant.
- e. *Less Than Significant Impact* – The project site and surrounding area are designated low density residential use and do not support agricultural or forest uses that have been designated by the City. However, as stated above, while the City has not designated the site for timberland or forest resource uses, and the land use designation and actual land uses at the site will not change. Given the above, the proposed project would have a less than significant potential to 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.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
III. 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:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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"/>

SUBSTANTIATION: The following information utilized in this section was obtained from the technical study “Air Quality and GHG Impact Analyses, Wolf Reservoir and Booster Pump Replacement Project, Big Bear Lake, California” prepared by Gerrick Environmental dated March 22, 2023, and provided as Appendix 1 to this document.

Background

Climate

The project area is in the San Bernardino Mountains. The area is characterized by an alpine climate, with substantial winter precipitation in the form of winter snow because of its high elevation. Snowfall, as measured at lake level, averages 61.8 inches each year (although upwards of 100 inches can accumulate on the forested ridges bordering the lake, above 8,000 feet). Snow has fallen in every month except July and August. There are normally 16.5 days each year with measurable snow (0.1 inch or more).

On average, the Bear Valley area receives approximately 24 inches of precipitation per year, with a sharp transition between the western edge of the Valley at the dam and the eastern edge at Baldwin Lake. Historical precipitation consists of both rainfall and snowfall. Within the Big Bear watershed, the precipitation varies with location. At the dam, Big Bear Lake receives about 36 inches of precipitation per year, and about 14 inches at the east end of the Valley.

Daily minimum temperatures in the summer are from 60°F to 70°F. Temperatures in the winter average approximately 35°F to 40°F. According to the National Weather Service, the warmest month at Big Bear is July, when the average high is 80.7 F and the average low is 47.1F. The coolest month is January, with an average high of 47.1°F and an average low of 20.7°F. There is an average of 1.2 days each year with highs of 90°F or higher. The highest temperature recorded at Big Bear was 94°F last recorded on July 15, 1998. The record lowest temperature was -25°F on January 29, 1979.

Air Quality Standards

Existing air quality is measured at established Southern California Air Quality Management District (SCAQMD) air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table III-1.

Because the State of California had established Ambient Air Quality Standards (AAQS) several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table III-1. Sources and health effects of various pollutants are discussed in Table III-2.

**Table III-1
 AMBIENT AIR QUALITY STANDARDS**

Pollutant	Average Time	California Standards ¹		National Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃) ⁸	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)		
Respirable Particulate Matter (PM ₁₀) ⁹	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		–		
Fine Particulate Matter (PM _{2.5}) ⁹	24 Hour	–	–	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	12.0 µg/m ³	15.0 µg/m ³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		–	–	
Nitrogen Dioxide (NO ₂) ¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard	
Sulfur Dioxide (SO ₂) ¹¹	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	–	Ultraviolet Flourescence; Spectrophotometry (Paraosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m ³)	
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for certain areas) ¹¹	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas) ¹¹	–	
Lead ^{8,12,13}	30-Day Average	1.5 µg/m ³	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m ³ (for certain areas) ¹²	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Avg	–		0.15 µg/m ³		
Visibility Reducing Particles ¹⁴	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No Federal Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ¹²	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

Source: California Air Resources Board 5/4/16

Footnotes:

- 1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- 2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year, with a 24-hour average concentration above $150 \mu\text{g}/\text{m}^3$, is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
- 3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- 4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
- 5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
- 6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- 7 Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
- 8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
- 9 On December 14, 2012, the national PM2.5 primary standard was lowered from $15 \mu\text{g}/\text{m}^3$ to $12.0 \mu\text{g}/\text{m}^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at $35 \mu\text{g}/\text{m}^3$, as was the annual secondary standard of $15 \mu\text{g}/\text{m}^3$. The existing 24-hour PM10 standards (primary and secondary) of $150 \mu\text{g}/\text{m}^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
- 10 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- 11 On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
- 12 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- 13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ($1.5 \mu\text{g}/\text{m}^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- 14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

**Table III-2
 HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS**

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	<ul style="list-style-type: none"> Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. Natural events, such as decomposition of organic matter. 	<ul style="list-style-type: none"> Reduced tolerance for exercise. Impairment of mental function. Impairment of fetal development. Death at high levels of exposure. Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO ₂)	<ul style="list-style-type: none"> Motor vehicle exhaust. High temperature stationary combustion. Atmospheric reactions. 	<ul style="list-style-type: none"> Aggravation of respiratory illness. Reduced visibility. Reduced plant growth. Formation of acid rain.
Ozone (O ₃)	<ul style="list-style-type: none"> Atmospheric reaction of organic gases with nitrogen oxides in sunlight. 	<ul style="list-style-type: none"> Aggravation of respiratory and cardiovascular diseases. Irritation of eyes. Impairment of cardiopulmonary function. Plant leaf injury.
Lead (Pb)	<ul style="list-style-type: none"> Contaminated soil. 	<ul style="list-style-type: none"> Impairment of blood function and nerve construction. Behavioral and hearing problems in children.
Fine Particulate Matter (PM-10)	<ul style="list-style-type: none"> Stationary combustion of solid fuels. Construction activities. Industrial processes. Atmospheric chemical reactions. 	<ul style="list-style-type: none"> Reduced lung function. Aggravation of the effects of gaseous pollutants. Aggravation of respiratory and cardio respiratory diseases. Increased cough and chest discomfort. Soiling. Reduced visibility.
Fine Particulate Matter (PM-2.5)	<ul style="list-style-type: none"> Fuel combustion in motor vehicles, equipment, and industrial sources. Residential and agricultural burning. Industrial processes. Also, formed from photochemical reactions of other pollutants, including NO_x, sulfur oxides, and organics. 	<ul style="list-style-type: none"> Increases respiratory disease. Lung damage. Cancer and premature death. Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO ₂)	<ul style="list-style-type: none"> Combustion of sulfur-containing fossil fuels. Smelting of sulfur-bearing metal ores. Industrial processes. 	<ul style="list-style-type: none"> Aggravation of respiratory diseases (asthma, emphysema). Reduced lung function. Irritation of eyes. Reduced visibility. Plant injury. Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002

Baseline Air Quality

Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the SCAQMD. The data resource in closest proximity to the project site is the Big Bear City Monitoring Station. However, this station only monitors small particulates (PM-2.5). The closest available data for ozone and large particulates (PM-10) is the Crestline Monitoring Station. Data for carbon monoxide and nitrogen oxide were obtained from the San Bernardino 4th Street Monitoring Station. Summary data compiled from these resources is provided in Table III-3. Findings are summarized below.

Photochemical smog (ozone) levels frequently exceed ozone standards at Crestline. The 8-hour state ozone standard has been exceeded an average of 30 percent of all days in the past four years near the

project site while the 1-hour state standard has been violated an average of 17 percent of all days. While ozone levels are still high, they are much lower than 10 to 20 years ago.

Measurements of carbon monoxide have shown very low baseline levels in comparison to the most stringent one- and eight-hour standards.

Respirable dust (PM-10) levels very rarely exceed the state or federal standard PM-10 standard. There have only been four violations in the last four years of measurement days for state PM-10. A substantial fraction of PM-10 is comprised of small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). However, PM-2.5 readings rarely exceed the federal 24-hour PM-2.5 ambient standard and there have had no violations within the previous four years.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table III-3
AIR QUALITY MONITORING SUMMARY (2018-2021)
(Number of Days Standards Were Exceeded, and
Maximum Levels During Such Violations)
(Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant/Standard	2018	2019	2020	2021
Ozone				
1-Hour > 0.09 ppm (S)	57	53	69	65
8-Hour > 0.07 ppm (S)	113	99	118	110
8- Hour > 0.075 ppm (F)	91	79	97	91
Max. 1-Hour Conc. (ppm)	0.142	0.129	0.159	0.148
Max. 8-Hour Conc. (ppm)	0.125	0.112	0.139	0.120
Carbon Monoxide				
8- Hour > 9. ppm (S,F)	0	0	0	0
Max 8-hour Conc. (ppm)	2.0	1.2	1.4	1.6
Nitrogen Dioxide				
1-Hour > 0.18 ppm (S)	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.055	0.056	0.054	0.050
Respirable Particulates (PM-10)				
24-hour > 50 µg/m ³ (S)	1/59	0/54	1/40	0/59
24-hour > 150 µg/m ³ (F)	0/59	0/54	0/40	0/59
Max. 24-Hr. Conc. (µg/m ³)	78.	38.	51.	33.
Fine Particulates (PM-2.5)				
24-Hour > 35 µg/m ³ (F)	0/54	0/46	0/58	0/59
Max. 24-Hr. Conc. (µg/m ³)	17.3	31.0	24.3	24.5

Source: South Coast Air Quality Management District.
 Crestline Monitoring Station for Ozone and PM-10.
 San Bernardino 4th Street Monitoring Station for CO and NO₂.
 Big Bear City Monitoring Station for PM-2.5.
 data: WWW.ARB.CA.GOV/ADAM/

Air Quality Planning

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air “blueprint” in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date was to “slip” from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary “bump-up” from a “severe non-attainment” area to an “extreme non-attainment” designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on “black-box” measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from “severe-17” to “extreme.” This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM-2.5 control regulations that had not yet been approved or implemented. It was expected that several rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the one-hour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8-hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated at regular intervals. The 2012 AQMP was adopted in early 2013. An updated 2016 AQMP was adopted by the SCAQMD Board in March 2017. The 2016 AQMD demonstrated the emissions reductions shown in Table III-4 compared to the 2012 AQMP.

**Table III-4
 COMPARISON OF EMISSIONS BY MAJOR SOURCE CATEGORY FROM 2012 AQMP**

Pollutant	Stationary Sources	Mobile Sources
VOC	-12%	-3%
NOx	-13%	-1%
SOx	-34%	-23%
PM2.5	-9%	-7%

*Source 2016 AQMP

SCAQMD has initiated the development of the 2022 AQMP to address the attainment of the 2015 8-hour ozone standard (70 ppb) for South Coast Air Basin and Coachella Valley which will focus on attaining the 70 ppb 8-hour ozone National Ambient Air Quality Standard (NAAQS) by 2037. On-road vehicles and off-road mobile sources represent the largest categories of NOx emissions. Accomplishment of attainment goals requires an approximate 70% reduction in NOx emissions. Large scale transition to zero emission technologies is a key strategy. To this end, Governor Executive Order N-79-20 requires 100 percent EV sales by 2035 for automobiles and short haul drayage trucks. A full transition to EV buses and heavy-duty long-haul trucks is required by 2045.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water infrastructure projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

Standards of Significance

Appendix G of the California CEQA Guidelines offers the following four tests of air quality impact significance. A project would have a potentially significant impact if it:

- a. Conflicts with or obstructs implementation of the applicable air quality plan.
- b. Results in a cumulatively considerable net increase of any criteria pollutants for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- c. Exposes sensitive receptors to substantial pollutant concentrations.
- d. Results in other emissions (such as those leading to odors) adversely affecting a substantial number of people

Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer

models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any emission thresholds in Table III-5 are recommended by the SCAQMD to be considered significant under CEQA guidelines.

**Table III-5
 DAILY EMISSIONS THRESHOLDS**

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
Sox	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Additional Indicators

The SCAQMD CEQA Handbook identifies various secondary significance criteria related to toxic, hazardous or odorous air contaminants. Such pollutants may be associated with demolition of existing structures if they contain asbestos, lead-based paint, or other hazardous building materials. Prior to demolition detailed surveys will be conducted to ascertain the possible presence of asbestos, lead-based paint, etc. If any such materials are present, they will be remediated using mandatory procedures specified by Rule 1403-Asbestos Emissions from Demolition and Renovation Activities SCAQMD and state air toxics agencies. The surveys for asbestos and lead will be required by the Department, therefore no mitigation is needed to address this issue.

Impact Analysis

- a. *Less Than Significant Impact* – Projects such as the proposed development of a new 0.603 MG water storage reservoir do not directly relate to the AQMP in that there are no specific air quality programs or regulations governing general infrastructure development. This makes sense since, once installed, reservoirs do not generate new emissions. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use are the primary yardsticks by which impact significance of planned growth is determined. Based on the analysis of the County’s General Plan Land Use Element and the City of Big Bear Lake General Plan, the proposed Project is consistent with the adopted General Plans. Furthermore, water production facilities are zone and land use independent because they are needed to support all types of development. Thus, the proposed Project is consistent with regional planning forecasts maintained by SCAG regional plans. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less than significant only because of consistency with regional growth projections. Air quality impact significance for the proposed Project has therefore been analyzed on a project-specific basis. As the analysis of project-related emissions provided below indicates, the proposed Project will not cause or be exposed to significant air pollution, and is, therefore, consistent with the applicable air quality plan. Consistent with the AQMP, mitigation measures will be implemented to minimize fugitive dust and ozone precursor emissions.

- b. *Less Than Significant With Mitigation Incorporated* – Air pollution emissions associated with the proposed Project would occur over both a short and long-term time period. Short-term emissions include fugitive dust from construction activities (i.e., site prep, demolition, grading and exhaust emissions, and reservoir installation emissions) at the site. Long-term emissions generated by future operation of the proposed reservoir are negligible as minimal additional energy is anticipated to be required.

Construction Emissions

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The project site encompasses approximately 20,000 sf or about 0.45 acre. The project entails several components. First, the existing 100,000-gallon reservoir will be demolished and will be replaced by a new 612,000-gallon water storage reservoir tank. Second, the project includes replacing the existing pump station at the project site with a new pump station that will include a concrete block building and a metal roof. Finally new piping will be required to provide supporting pipeline connections to the existing potable water distribution system. Construction is anticipated to start in early-2024 and take approximately 12 months, but for ease of calculations it was assumed all construction would occur in year 2024. Existing facilities will be demolished and disposed of. The site will be graded and approximately 3,600 cy of soil will be removed to achieve the proper reservoir elevation.

Construction was modeled in CalEEMod2020.4.0 using the following construction equipment and schedule shown in Table III-6.

**Table III-6
 RESERVOIR CONSTRUCTION ACTIVITY EQUIPMENT FLEET**

Phase Name and Duration	Equipment
Demolition (1 month)	1 Concrete Saw
	1 Drain Pump
	1 Dozer
	2 Loader/Backhoes
Grading (2 weeks) 2,000 CY earthworks export	1 Dozer
	1 Excavator
	1 Grader
New Tank Construction (10 months)	1 Crane/Hoe Ram
	2 Concrete Pumps
	2 Loader/Backhoes
	1 Generator Set
	2 Welders
	1 Stress Tower
Piping (1 month)	2 Trenchers
	2 Forklifts
	1 Welder

PUMP STATION DEMO AND CONSTRUCTION

Phase Name and Duration	Equipment
Excavation/Demo 3 weeks	1 Forklift
	1 Masonry Saw
	2 Loader/Backhoes
Building Construction 5 weeks	1 Mixer
	1 Pump
	2 Air Compressors
Equipping and Piping 5 weeks	1 Crane
	1 Loader/Backhoe
	1 Forklift
	1 Welder

Utilizing this indicated equipment fleet and durations shown in Table III-6, the following worst-case daily construction emissions are calculated by CalEEMod and are listed in Table III-7.

**Table III-7
 CONSTRUCTION ACTIVITY EMISSIONS
 MAXIMUM DAILY EMISSIONS (pounds/day)**

Maximal Construction Emissions	ROG	NOx	CO	SO ₂	PM-10	PM-2.5
Reservoir	2.57	25.48	23.05	0.05	3.16	2.01
Pump Station	0.60	4.90	8.14	0.01	0.03	0.02
Maximum Daily Emissions	2.57	25.48	23.05	0.05	3.16	2.01
SCAQMD Thresholds	75	100	550	150	150	55

*Assumes SCAQMD Rule 403 Fugitive Dust applied.

As shown in Table III-7, even in the unlikely event both activities overlapped, peak daily emissions would be substantially less than their respective significance thresholds.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24-hour per day, 365 days per year, 70-year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a 9-, 30-, or 70-year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure. If asbestos or lead paint are discovered at the site, removal and disposal will follow existing regulations.

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air basin and proximity of residential uses. Recommended measures include:

AQ-1 Fugitive Dust Construction

- **Apply soil stabilizers or moisten inactive areas.**
- **Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).**
- **Cover all stock piles with tarps at the end of each day or as needed.**
- **Provide water spray during loading and unloading of earthen materials.**
- **Minimize in-out traffic from construction zone**

- **Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard**
- **Sweep streets daily if visible soil material is carried out from the construction site**

Similarly, ozone precursor emissions (ROG and NO_x) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

AQ-2 Exhaust Emissions Control

- **Utilize well-tuned off-road construction equipment.**
- **Establish a preference for contractors using Tier 3 or better rated heavy equipment.**
- **Enforce 5-minute idling limits for both on-road trucks and off-road equipment.**

With implementation of these two measures, project-related construction emissions will be minimized consistent with AQMD requirements.

Operational Emissions

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping water to the new Wolf Reservoir, as it is at present. Electricity consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

- c. *Less Than Significant Impact* – The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed Project, the primary source of possible LST impact would occur during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours, such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NO_x), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables are available for 25, 50-, 100-, 200- and 500-meter source-receptor distances. Major land use surrounding the site is: single-family residential.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. LST pollutant screening level concentration data is currently published for 1-, 2- and 5-acre sites for varying distances. For this project, the most stringent thresholds for a 1-acre site were applied.

The following thresholds and emissions in Table III-8 are therefore determined (pounds per day):

**Table III-8
 LST AND PROJECT EMISSIONS (pounds/day)**

LST 1 acre/25 meters E San Bernardino Mountains	CO	NOx	PM-10	PM-2.5
LST Threshold	775	118	4	4
Max On-Site Emissions				
Reservoir	16	14	2	1
Pump Station	8	5	0.2	0.2

LSTs were compared to the maximum daily construction activities. As seen in Table III-8, with active dust suppression, emissions meet the LST for construction thresholds. LST impacts are less-than-significant.

- d. *Less Than Significant Impact* – Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The proposed Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. The proposed Project’s operations (pumping and storage) are an essentially closed system with negligible odor potential. Odors will be briefly detectable during application of the interior epoxy coating and outdoor paint application on the reservoir shell during construction. Good painting practice (low wind speeds, high efficiency sprayers, and full plastic containment) will minimize odor or overspray and paint transport. Furthermore, the proposed Project would be required to comply with SCAQMD Rule 1113, which requires the use of only “Low-Volatile Organic Compounds (VOC)” paints. Thus, through the required compliance with SCAQMD Rule 1113, impacts under this issue are considered less than significant. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IV. BIOLOGICAL RESOURCES: Would the project:				
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 checked="" type="checkbox"/>	<input 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"/>

SUBSTANTIATION: The following information utilized in this section was obtained from the technical study “City of Big Bear Lake Department of Water and Power Wolf Reservoir & Boosters Replacement Project Biological Resources Assessment/Jurisdictional Delineation Report” prepared by Jacobs dated April 2023, and provided as Appendix 2 to this document.

- a. *Less Than Significant With Mitigation Incorporated* – A Biological Resources Assessment-Jurisdictional Delineation survey was conducted by Jacobs in June 2022 to identify potential habitat for special status plant and wildlife species within the Project Area. No special status species, including any state and/or federally listed threatened or endangered species, were observed within the Project Area during the reconnaissance-level assessment survey, which included 100% visual coverage of the Project site. The Project Area does not contain any sensitive habitats, including any USFWS designated Critical Habitat for federally listed species, and the Project will not result in any loss or adverse modification of Critical Habitat. However, there is potentially suitable habitat in nearby undeveloped areas for two sensitive species including the State-listed as threatened southern rubber boa and San Bernardino flying squirrel. Furthermore, the San Bernardino flying squirrel has been documented in residential areas similar to the adjacent properties. Based on the potential for the site to support the boa and flying squirrel, the following precautionary mitigation measures shall be implemented:

- BIO-1** *A pre-construction southern rubber boa survey is recommended that would consist of 100% visual coverage of the entire Project Area, including an approximately 100-foot buffer area around the 0.26-acre Project site. The survey should be conducted during the appropriate time of year (i.e., spring/early summer), when air temperatures reach between 60° and 70°F (15° to 21° Celsius), and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for southern rubber boa.*
- BIO-2** *If focused presence/absence surveys are negative for southern rubber boa presence, it is recommended that rubber boa exclusion fence (e.g., silt fence) be installed around the perimeter of the proposed Project footprint, prior to commencement of any Project-related ground disturbing activities. All construction activities should be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in adjacent habitat.*
- BIO-3** *A qualified biologist who is familiar with southern rubber boa and their habits should be on site during all ground disturbing activities to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (i.e., rotting logs/stumps, duff layer). The biological monitor should visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.*
- BIO-4** *If southern rubber boa is found during pre-construction presence/absence surveys or during construction activities, all Project activities shall be halted, CDFW shall be contacted, and a CESA Incidental Take Permit shall be obtained from CDFW prior to reinitiating Project activities.*
- BIO-5** *To ensure the Project does not adversely affect San Bernardino flying squirrel, it is recommended that a pre-construction survey be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.*
- BIO-6** *If suitable San Bernardino flying squirrel cavity nesting sites are detected within the Project site, then coordination with the CDFW would be necessary to determine appropriate minimization and mitigation measures to offset Project related impacts to this species.*
- BIO-7** *To minimize potential impacts to nocturnal species due to light pollution, project-related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect these species from direct night lighting. Shielding shall be incorporated in Project design to ensure ambient lighting in adjacent areas is minimized.*

With implementation of these measures potentially significant impacts to the species of concern can be reduced to a less than significant impact.

- b. *No Impact* – Based on the site survey, the project site does not contain riparian habitat or any other sensitive natural community/habitat. Therefore, the proposed project has no potential to adversely impact such habitat. No mitigation is required.
- c. *No Impact* – Based on the site survey, the project site does not contain wetlands, including protected wetlands. Therefore, the proposed project has no potential to adversely impact such habitat. No mitigation is required.

- d. *Less Than Significant With Mitigation Incorporated* – The project site is small and is not identified as a wildlife movement corridor. However, the project site may support nesting birds during nesting season and the following mitigation measures shall be implemented to reduce potential impacts to nests functioning as bird nurseries.

BIO-8 *Vegetation removal, including any tree removal or pruning, and structure demolitions should be conducted outside of the typical bird nesting season (between September 1st and March 1st. Otherwise, to avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre construction nesting bird surveys prior to Project related disturbance to suitable nesting areas to identify any active nests. The nesting bird surveys should consist of a minimum of five (5) consecutive survey days and should include an additional three (3) consecutive nights of survey for SPOW and other nocturnal species. Nocturnal spotted owl surveys should be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds), and should include a spot calling survey component that would utilize California spotted owl call playback at predetermined fixed calling points.*

BIO-9 *If no active nests are found, no further action would be required. If an active nest is found, the biologist should set appropriate no work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. The nest(s) and buffer zones should be field checked weekly by a qualified biological monitor. The approved no work buffer zone should be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.*

With implementation of these measures potentially significant impacts to the species of concern can be reduced to a less than significant impact.

- e. *Less Than Significant Impact* – The Wolf Reservoir project site does contain a few trees that may either be removed or pruned. The number of trees on the site that may be affected is limited and no significant conflict with local policies or ordinances is forecast to occur. No mitigation is required.
- f. *No Impact* – Based on the BRA for the proposed project, there are no conservation plans that affect the project site. Therefore, the proposed project has no potential to conflict with such plans. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
V. CULTURAL RESOURCES: Would the project:				
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 formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION: The information provided below is abstracted from a cultural resources technical study: “Historical/Archaeological Resources Survey Report Wolf Reservoir and Booster Pump Replacement Project, Assessor’s Parcel Number 0310-731-04 Big Bear Lake Area, San Bernardino County, California” prepared by CRM TECH dated August 3, 2023. This report is provided as Appendix 3 of this document.

Background

Between April and August 2023 CRM TECH performed a cultural resources study on an approximately 0.45-acre parcel in the unincorporated community of Moonridge, San Bernardino County, California. The subject property of the study, Assessor Parcel Number 0310-731-04, is the site of the City of Big Bear Lake, Department of Water and Power’s Wolf Reservoir, located at the northeast corner of Wolf Road and Coyote Court, near the Big Bear Lake city limits, in the northeast quarter of Section 26, T2N R1E, San Bernardino Baseline and Meridian.

This study is part of the environmental review process for the proposed replacement of the existing 100,000-gallon Wolf Reservoir and associated pumphouse with a 612,000-gallon water tank and new booster pump station. The study is required by the U.S. Bureau of Reclamation (USBR) and the City of Big Bear Lake Department of Water and Power (BBLDWP), as the federal and local lead agencies for the undertaking, in compliance with Section 106 of the National Historic Preservation Act and the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the USBR and the BBLDWP with the necessary information and analysis to determine whether the undertaking would have an effect on any “historic properties,” as defined by 36 CFR 800.16(l), or “historical resources” as defined by Calif. PRC §5020.1(j), that may exist in or near the Area of Potential Effects (APE). In order to identify such resources, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological research, contacted Native American representatives, and carried out an intensive-level field survey.

Throughout the course of the study, the only feature of prehistoric or historical origin found in the APE was the existing Wolf Reservoir itself, which was installed at this location in 1963. Since it meets the generally established 50-years age threshold for potential “historic properties” or “historical resources,” Wolf Reservoir was recorded into the California Historical Resources Inventory and designated temporarily as Site 4005-1H, pending assignment of a permanent identification number. It does not, however, appear to meet any of the criteria for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not qualify as a “historic property” under Section 106 provisions or a “historical resource” under CEQA.

No other cultural resources were encountered in or near the APE during this study, and the subsurface sediments in the APE appear to be relatively low in sensitivity for potentially significant archaeological

deposits of prehistoric origin. Based on these findings, CRM TECH recommends to the USBR and the BBLDWP a conclusion that no "historic properties" or "historical resources" will be affected by the undertaking. No further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the undertaking, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

a&b. *Less Than Significant With Mitigation Incorporated* – CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

Per the above discussion and definition, no archaeological sites or isolates were recorded within the project boundaries; thus, none of them requires further consideration during this study. In light of this information and pursuant to PRC §21084.1, the following conclusions have been reached for the project:

- No historical resources or archaeological resources within or adjacent to the project area have any potential to be disturbed as they are not within the proposed area in which the facilities will be constructed and developed, and thus, the project as it is currently proposed will not cause a substantial adverse change to any known historical resources.
- No further cultural resources investigation is necessary for the proposed project unless construction plans undergo such changes as to include areas not covered by this study.

However, since demolition and earth moving activities are required, the following mitigation measure will ensure that impacts to any buried cultural materials that may be discovered during earth moving activities is less than significant:

CUL-1 Should any cultural resources, including human remains, be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with the City's onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

CUL-2 If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.

CUL-3 If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

With the above mitigation incorporation, the potential for impacts to cultural resources will be reduced to a less than significant level. No additional mitigation is required.

- c. *Less Than Significant Impact* – As noted in the discussion above, no available information suggests that human remains may occur within the Area of Potential Effect (APE) and the potential for such an occurrence is considered very low. Human remains discovered during the project will need to be treated in accordance with the provisions of HSC §7050.5 and PRC §5097.98, which is mandatory. State law (Section 7050.5 of the Health and Safety Code) as well as local laws requires that the Police Department, County Sheriff and Coroner’s Office receive notification if human remains are encountered. Compliance with these laws is considered adequate mitigation for potential impacts, and as such the potential for impact to discovery and treatment of human remains would be less than significant level. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VI. ENERGY: Would the project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

a&b. *Less Than Significant With Mitigation Incorporated* – During construction, the proposed project will utilize construction equipment that is CARB approved, minimizing emissions generated and electricity required to the extent feasible (as outlined under Section III, Air Quality, above). As stated in Section III, Air Quality, the construction of the proposed Wolf Reservoir and Pump Station Project would require mitigation measures to minimize air emissions impacts from construction equipment use (refer to MM **AIR-2**). These mitigation measures also apply to energy resources as they require equipment not in use for 5 minutes to be turned off, and for electrical construction equipment to be used where available. These measures would prevent a significant impact during construction due to wasteful, inefficient, or unnecessary consumption of energy resources, and would also conform to the CARB regulations regarding energy efficiency.

The proposed project consists of the installation of a replacement reservoir and pump station at the existing Wolf Reservoir site in the City of Big Bear Lake. Energy consumption encompasses many different activities. For example, construction can include the following activities: delivery of equipment and material to a site from some location (note it also requires energy to manufacture the equipment and material); employee trips to work, possibly offsite for lunch (or a visit by a catering truck); travel home, and occasionally leaving a site for an appointment or checking another job; use of equipment onsite (electric or fuel); and as in this case demolition and disposal of construction waste. To minimize energy costs of construction debris management, mitigation has been established to require diversion of all material capable of being recycled from the landfill. Energy consumption by equipment will be reduced by requiring shutdowns when equipment is not in use after five minutes and ensuring equipment is being operated within proper operating parameters (tune-ups) to minimize emissions and fuel consumption. These requirements are consistent with State and regional rules and regulations. Under the construction scenario outlined above, the proposed project will not result in wasteful, inefficient, or unnecessary energy consumption during construction.

The proposed project site is supplied power by Bear Valley Electric Service (BVES) through the power distribution system located adjacent to the reservoir site. BVES will be able to supply sufficient electricity, as it currently does, because the proposed use will rely on electricity for transport of water and limited security lighting only. The project site will not require natural gas to operate. Compliance with regulatory requirements for operational energy use and construction energy use would not be wasteful or unnecessary use of energy. Under both the operational and construction scenarios for the proposed project, with implementation of MM **AQ-2**, the proposed project will not result in wasteful, inefficient, or unnecessary energy consumption that could result in a significant adverse impact to energy issues based on compliance with the State laws, regulations and guidelines.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VII. GEOLOGY AND SOILS: Would the project:				
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 checked="" type="checkbox"/>	<input type="checkbox"/>
(ii) Strong seismic ground shaking?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>

SUBSTANTIATION

a. i. Ground Rupture

Less Than Significant Impact – The project site is located within the City of Big Bear Lake within the Mountain Region of the County of San Bernardino to the southeast of Big Bear Lake. California as a whole is a seismically active state, though the proposed project site is not located on a fault or within a designated fault zone. According to the recently updated Fault Activity Map of California prepared for the County’s updated General Plan (Figure VII-1), the proposed project is not located within a delineated Alquist-Priolo fault zone or other active fault zone. The project site is located in general proximity to several fault zones, as delineated on Figure VII-2, which depicts the Fault Activity Map of California prepared by the California Geologic Survey; however, the proposed project is located outside of the boundaries of the delineated fault zones, and as such is not anticipated to be within a site that would experience ground rupture as a result of seismic activity. Furthermore, based on the project site’s location outside of a delineated fault zone, the risk for ground rupture at the site location

is low; therefore, it is not likely that future visitors to the new reservoir and pump station will be subject to seismic hazards from rupture of a known earthquake fault. Therefore, any impacts under this issue are considered less than significant; no mitigation is required.

ii. Strong Seismic Ground Shaking

Less Than Significant Impact – As stated in the discussion above, several faults run through the area in the vicinity proposed project (the North Frontal Fault and San Andreas Fault), and as with much of southern California, the proposed Wolf water storage and pumping facilities will be subject to strong seismic ground shaking impacts should any major earthquakes occur in the future. Due to the proximity of the active faults located in the vicinity of the project site, the project site and area can be exposed to significant ground shaking during major earthquakes on nearby regional faults. However, in this instance the reservoir is being designed with ground shaking considered. This is because the facilities will not support human occupancy; and will not support substantial human presence/use. The structure onsite will be required to comply with all applicable seismic design standards contained in 2019 California Building Code (CBC), including Section 1613 Earthquake Loads. Compliance with the CBC will ensure that structural integrity of this single structure will be maintained in the event of an earthquake. Therefore, impacts associated with strong ground shaking will be less than significant without mitigation.

iii. Seismic-Related Ground Failure Including Liquefaction

Less Than Significant Impact – According to the San Bernardino Countywide Plan Liquefaction and Landslides map provided as Figure VII-3, the project site consists of land that has not been identified as being subject to liquefaction susceptibility. The project site contains shallow soil and bedrock that will not support a high potential for liquefaction. Therefore, given that the proposed project does not propose any habitable structures, it is anticipated that the it will have a less than significant potential to be susceptible to seismic-related ground failure, including liquefaction.

iv. Landslides

Less Than Significant Impact – According to the City of Big Bear Lake Environmental Hazards Element, Landslide Map, Exhibit EH-2, the project site consists of land that has a general susceptibility to land slide hazards. The proposed project site would be graded and compacted to establish a proper foundation for the facilities, and with no proposed habitable structures, no potential events have been identified that would result in adverse effects from landslides or that would cause landslides that could expose people or structures to such an event as a result of project implementation. Therefore, no significant impacts under this issue are anticipated, and no mitigation is required.

- b. *Less Than Significant With Mitigation Incorporated* – The potential for soil erosion or loss of topsoil is anticipated to be marginally possible at the site during ground disturbance associated with construction. The project site currently contains both a small reservoir and the existing pump station with a few trees and shrubs. City grading standards, best management practices; possibly a Storm Water Pollution Prevention Plan (SWPPP), and Water Quality Management Plan (WQMP) are required to control the potential significant erosion hazards which could degrade downstream water quality through transport of sediment off the site. The topography of the site slopes gently from the site to the roadway. During project construction when soils are exposed, temporary soil erosion may occur, which could be exacerbated by rainfall or snow melt. Project grading would be managed through the preparation and implementation of a SWPPP or equivalent erosion control plan, and will be required to implement best management practices to achieve concurrent water quality controls after construction is completed and the parking activities are in operation. The following mitigation measures or equivalent best management practices (BMPs) shall be implemented to address these issues:

GEO-1 Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of stored backfill material. Where covering is not possible, measures such as the use of straw bales or sand bags shall be used to capture and hold eroded

material on the project site for future cleanup such that erosion does not occur.

GEO-2 All exposed, disturbed soil (trenches, stored backfill, etc.) shall be sprayed with water or soil binders twice a day, or more frequently if fugitive dust is observed migrating from the site within which the project is being constructed.

With implementation of the above mitigation measures, implementation of the SWPPP and associated BMPs, any impacts under this issue are considered less than significant.

- c. *Less Than Significant Impact* – The project site is underlain by shallow soils and granitic bedrock. The proposed development will include grading, removal or trimming of trees and possible removal of rock. Due to the presence of bedrock near the surface onsite, there is no potential for subsidence at the site. Also, without any habitable structures on the site, the potential that any unstable soil or geology could have a significant adverse impact does not exist.
- d. *No Impact* – The proposed project is located on a ridge with coarse residual soils that evolved from granitic bedrock, which does outcrop within the general area. The soils are not expansive and since no habitable structures will be constructed onsite, there is no potential to create a substantial direct or indirect risk to human life or property.
- e. *No Impact* – The proposed project will not install a restroom. Therefore, no adverse impact can occur at the site due to any soil constraints associated with installation of septic tanks or alternative wastewater disposal systems. No impacts are anticipated. No mitigation is required.
- f. *No Impact* – The San Bernardino Countywide Plan indicates that the proposed project area is located in a low sensitivity area for paleontological resources because it is located on igneous bedrock. Previously unknown and unrecorded paleontological resources have a very low potential to be exposed during ground disturbing activities. No mitigation is required at this site.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VIII. GREENHOUSE GAS EMISSIONS: Would the project:				
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 an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION: The following information utilized in this section was obtained from the technical study “Air Quality and GHG Impact Analyses, Wolf Reservoir and Booster Replacement Project, Big Bear Lake, California” prepared by Gerrick Environmental dated March 22, 2023, and provided as Appendix 1 to this document.

Background

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth’s atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statutes and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California’s reputation as a “national and international leader on energy conservation and environmental stewardship.” It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate “early action” control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California’s GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e., company owned) and indirect sources (i.e., not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Thresholds of Significance

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative, or based on performance standards. CEQA guidelines allow the lead agency to “select the model or methodology it considers most appropriate.” The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions must then be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) CO₂ equivalent/year. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of 3,000 MT CO₂e for all land use projects. This 3,000 MT/year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

a&b. *Less Than Significant Impact* – During project construction, the CalEEMod2020.4.0 computer model predicts that the construction activities will generate the annual CO₂e emissions identified in Table VIII-1.

The project is assumed to be constructed over a 12-month period. During project construction, the CalEEMod2020.4.0 computer model predicts that the construction activities will generate the annual CO₂e emissions identified in Table VIII-1.

**Table VIII-1
CONSTRUCTION EMISSIONS (Metric Tons CO_{2e})**

2024	CO_{2e}
Reservoir	306.5
Pump Station	30.5
Total	323.5
Amortized	11.2

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less-than-significant.

In March 2014, the San Bernardino Associated Governments and Participating San Bernardino County Cities Partnership (Partnership) created a final draft of the San Bernardino County Regional Greenhouse Gas Reduction Plan (Reduction Plan) for each of the 25 jurisdictional Partner Cities in the County. The plan was recently updated in March of 2021. The Reduction Plan was created in accordance with AB 32, which established a greenhouse gas limit for the state of California. The Reduction Plan seeks to create an inventory of GHG gases and develop jurisdiction specific GHG reduction measures and baseline information that could be used by the Partnership Cities of San Bernardino County, including the County itself.

Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the Reduction Plan would have a less than significant impact on climate change. The project will generate minimal GHG emissions as shown in Table VIII-1. There are really no measures directly applicable to this water infrastructure improvement project. The only emissions will be during construction and these emissions are minimal. Therefore, consistency with the Reduction Plan would result in a less than significant impact with respect to GHG emissions.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IX. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

- a. *No Impact* – The proposed project does not include activities that would need/require the routine transport, use, or disposal of hazardous materials. Therefore, the project has no potential to create a hazard to the public related to this activity.
- b. *Less Than Significant With Mitigation Incorporated* – The proposed project may 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 during construction. The proposed project will replace an existing reservoir with a new reservoir and upgrade and install a new pump station that will require some use of heavy equipment. During construction there is a potential for accidental release of petroleum products in sufficient quantity to pose a significant hazard to people and the environment. The following mitigation measure will be incorporated into the Storm Water Pollution Prevent Plan (SWPPP) or erosion control plan prepared for the project and implementation of this measure can reduce this potential hazard to a less than significant level.

HAZ-1 All accidental spills or discharge of hazardous material during construction activities shall be reported to the Certified Unified Program Agency and shall be remediated in compliance with applicable federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into the Stormwater Pollution Prevention Plan (SWPPP or Erosion Control Plan) prepared for this project. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.

During operation, no storage or use of hazardous materials is anticipated, other than the fuel in vehicles using the parking lot. With compliance with mandatory regulations, and preparation and implementation of MM HAZ-1, identified above, hazardous material impacts related to construction activities would be less than significant.

- c. *Less Than Significant Impact* – The project site is not located within one-quarter mile of any public school. The project is adjacent to forested open land and residences. The proposed project is not anticipated to emit hazardous emissions as discussed under issue IX(a&b), above, as it is a project that would develop water system facilities with minimal use of hazardous substances to replace an existing reservoir and pump station and no handling of acute hazardous materials. Based on this information, implementation of the project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Impacts under this issue are considered less than significant. No mitigation is required.
- d. *No Impact* – The project site has been previously developed and contains an existing reservoir and pump station. The proposed development will include mass grading of the reservoir site to provide level surfaces upon which to install the new reservoir. The project will not be located on a site that is included on a list of hazardous materials sites that are currently under remediation. According to the California State Water Board's GeoTracker website (consistent with Government Code Section 65962.5), which provides information regarding Leaking Underground Storage Tanks (LUST) and Department of Toxic Substance Control (DTSC) cleanup sites, there are no open LUST, DTSC, or other clean-up sites within close proximity of the project site. Therefore, there is no potential for the project to be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, thereby creating a significant hazard to the public or the environment. Project construction and operation of the site to continue functioning as essential water infrastructure has no potential to create a significant hazard to the population or to the environment from its implementation under this issue. No mitigation is required.
- e. *Less Than Significant Impact* – The project site is located a few miles south of the Big Bear Airport (Airport). According to the Big Bear City Airport Comprehensive Land Use Plan¹, the project is located totally outside of the any overlay hazard area associated with the Airport. Given that the proposed project is located outside of any Airport influence area, and that the proposed project does not contain habitable structures, the potential for the project to result in a safety hazard for people residing or working in the project area is negligible. Therefore, construction and operation of the project at this location would result in less than significant potential safety hazard for people residing or working in the project area as a result of proximity to a public airport or private airstrip. No mitigation is required.
- f. *Less Than Significant With Mitigation Incorporated* – The proposed project has a minimal potential to interfere with an adopted emergency response plan or emergency evacuation plan. The nearest emergency evacuation route project site is State Highway 18/Big Bear Boulevard which has been delineated as such on the San Bernardino County Mountain Area Emergency Route: Area 2 map

¹ San Bernardino County Planning Department, Airport Comprehensive Land Use Plan, Big Bear City Airport. <http://www.sbcounty.gov/Uploads/lus/Airports/BigBear.pdf> (accessed 4-12-23)

provided as Figure IX-2. The proposed project will be constructed entirely within the boundaries of the project site, with minimal improvements to the site frontage and road entrance to the site.

As such, the proposed project should not experience substantial conflicts with surrounding traffic. However, with the implementation of MMs **TRAN-1** and **TRAN-2** identified in the Transportation Section of this document, there is a less than significant potential for the development of the project to physically interfere with any adopted emergency response plans, or evacuation plans.

- g. *Less Than Significant Impact* – The proposed project could not expose people or vehicles to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The proposed project area is in an area susceptible to wildland fires, and is located within a delineated Very High Fire Hazard Severity Zone (VHFHSZ) in a Local Responsibility Area (LRA); the majority of the area surrounding Big Bear Lake and Baldwin Lake are located within a VHFHSZ, as shown on Figure IX-3, the Countywide Plan Policy Map of Fire Hazard Severity Zones. The project is also located within the County Fire Safety Overlay. The proposed project is required to, and will incorporate the most current fire protection designs to support the Department's water delivery system, including an adequate water supply for fire flow and fighting purposes. However, the potential for loss of life is considered to be low for the following reasons: The proposed new reservoir will store a larger amount of water which can be used to fight fires and, the project would not include any habitable structure, thus minimizing wildfire human risks at the site. Given the type of project proposed—reservoir and pump station—exposure to wildfire would have a limited potential to substantially damage human or man-made equipment (vehicles) as they could be removed from the area prior to or during a wildfire. As a result, the potential for loss of life and structures is considered to be a less than significant impact without mitigation.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
X. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater 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 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 onsite or offsite?	<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 onsite 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

a. *Less Than Significant With Mitigation Incorporated* – The proposed project is located within the planning area of the Santa Ana Regional Water Quality Control Board (RWQCB). The project site contains features similar to much of the Big Bear area including the western pine plant community. The project would be supplied with water by the City of Big Bear Lake, Department of Water and Power (DWP). Water is supplied to customers by pumping groundwater from local aquifers to meet customer demand and transporting it to reservoirs for storage and use. No sewer connection will be required as the project site will not provide restrooms at the project site.

For a developed area, the only three sources of potential violation of water quality standards or waste discharge requirements are from generation of municipal wastewater, stormwater runoff, and potential discharges of pollutants, such as accidental spills. The project will not generate municipal wastewater. The County, and each City, implements National Pollutant Discharge Elimination System (NPDES) requirements for surface water discharge for all qualified projects. The project site is less than one-acre in size, therefore, it is not required to obtain coverage under the General Construction NPDES permit. Regardless, an erosion control plan with specific best management practices (BMPs) will be implemented for the project during construction. See mitigation below. To

address stormwater runoff and accidental spills within this environment both during construction and during future operations, this new project must ensure that site development implements the equivalent of a Storm Water Pollution Prevention Plan (SWPPP) to control potential sources of water pollution that could violate any standards or discharge requirements during construction. Also, a Water Quality Management Plan (WQMP) must be prepared and implemented to ensure that project-related surface runoff meets discharge requirements over the long term. The project design includes onsite stormwater capture and treatment facilities. The erosion control plan would specify the BMPs that the project would be required to implement during construction activities to ensure that all potential pollutants of concern, primarily sediment, are controlled, minimized, and/or otherwise appropriately treated prior to being discharged from the subject property as stormwater runoff. Compliance with the terms and conditions of the erosion control plan is mandatory and is judged adequate mitigation by the regulatory agencies for potential impacts to stormwater during construction activities. Implementation of the following mitigation measure will also contribute to reducing potential impacts to stormwater runoff to a less than significant level.

HYD-1 *The District shall require that the construction contractor prepare and implement an erosion control plan (Plan) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater runoff and with the intent of keeping all products of erosion from moving offsite into receiving waters. The Plan shall include a Spill Prevention and Cleanup Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented in the Plan may include but not be limited to:*

- *The use of silt fences;*
- *The use of temporary stormwater desilting or retention basins;*
- *The use of water bars to reduce the velocity of stormwater runoff;*
- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

With implementation of the mandatory stormwater management plans and their BMPs, as well as MMs **HAZ-1** and **HYD-1** above, the development of the proposed project will not cause a violation of any water quality standards or waste discharge requirements.

- b. *Less Than Significant Impact* – The project does not propose the installation of any water wells that would directly extract groundwater and the change in pervious surfaces to impervious surfaces will be minimal because the site itself is small (about 0.4 of an acre) and will include landscaped areas and surface water treatment chambers. The project is located within the Bear Valley, which lies in the northeastern portion of the Santa Ana River Watershed, and the underlying groundwater basin is the Bear Valley groundwater basin. According to the Big Bear Lake Department of Water and Power (BBLDWP) 2020 Urban Water Management Plan (UWMP), the total demand for water was about 2,332 acre-feet per year (AFY) in 2020². BBLDWP anticipates that the total demand for water within its service area will remain about the same at 2,283 AFY by 2045 AFY. The proposed project would require minimal use of water to support site landscaping within the project site. As such, the City

² City of Big Bear Lake Department of Water and Power, 2020 Urban Water Management Plan, March 2022. <https://www.bbldwp.com/ArchiveCenter/ViewFile/Item/249> (accessed 4/12/23)

estimates that the proposed project would require nominal water (less than 1 AFY) during operations, as the proposed reservoir site will be developed with minimal landscaping and water demand. BBLDWP obtains about 3,100 AFY of groundwater from the Bear Valley groundwater basin as a base supply within its service area. Therefore, though the proposed project might require a slight increase in water supply from BBLDWP, the increase of an anticipated 1 AFY is well within the planned demand for water for in 2025 (2,147) and in 2040 (2,283 AFY), given the surplus of supply (anticipated at 3,100 AFY for every year between 2025 and 2045). The anticipated water supply within BBLDWP's retail service area will be greater than the demand for water in the future, which indicates that BBLDWP has available capacity to serve the proposed project. Thus, based on the availability of water within the area—the maximum perennial yield for the Bear Valley groundwater basin has been estimated at 4,800 AFY, with approximately 3,100 AFY of that volume being available to the BBLDWP—the development of the Wolf reservoir site within the approximately 0.4-acre site is not forecast to cause a significant demand for new groundwater supplies. The potential impact under this proposed project is considered less than significant; no mitigation measures are required.

- c. (i) *Less Than Significant Impact* – The project site is currently a wholly disturbed site that is bounded on all sides by adjacent roadways. The proposed project is not anticipated to significantly change the volume of flows downstream of the project site, and would not be anticipated to change the amount of surface water in any water body in an amount that could initiate a new cycle of erosion or sedimentation downstream of the project site. This is based on the project design that captures most of the new surface runoff within the project site. The proposed project will be developed to be relatively flat in support of the foundations for the two facilities. The proposed improvements include parking space, landscaping, and support facilities. The proposed project will include drainage structures to convey the future onsite runoff to adjacent natural flowlines, or to flow dissipation structures in order to discharge non-erosive flows offsite. Regardless, given that the proposed development would include drainage improvements to accommodate the facilities proposed as part of the proposed project (reservoir and pump station), on site flows within the project site will be collected and conveyed in a controlled manner such that incremental runoff will be collected and allowed to infiltrate on site. This system will be designed to capture any increase in flows delivered in runoff from the project site or otherwise be detained on site and discharged in conformance with City requirements. The downstream drainage system will not be substantially altered and given the control of future surface runoff from the project site, the potential for downstream erosion or sedimentation will be managed to a less than significant impact level.

(ii) *Less Than Significant Impact* – The proposed project will alter the existing drainage pattern onsite but will maintain the existing offsite downstream drainage system through control of future discharges from the small site (site area is about 0.4 acre). The onsite drainage system will capture any incremental increase in runoff from the project site associated with project development. Onsite flows within the new development will be collected and conveyed in a controlled manner such that excess runoff will be collected and allowed to infiltrate on site through the provision of subsurface storm drains and new proposed stormwater chambers. The development of these drainage improvements would conform to County and City requirements and would prevent flooding onsite or offsite from occurring. Furthermore, the proposed project is required to prepare and implement a WQMP, which would identify the specific measures to manage long-term runoff and stormwater onsite. Thus, the implementation of onsite drainage improvements and compliance with the measures developed in the site WQMP, stormwater runoff will not substantially increase the rate or volume of runoff in a manner that would result in substantial flooding on- or off-site. Impacts under this issue are considered less than significant with no mitigation required.

(iii) *Less Than Significant With Mitigation Incorporated* – The proposed project will alter the site such that stormwater runoff within the site may be increased, but will maintain the existing off-site downstream drainage system through control of future discharges from the site to be equivalent to the current conditions. Refer to issues c(i) and c(ii) for more detailed information. Varying amounts of urban pollutants, such as motor oil, antifreeze, gasoline, pesticides, detergents, trash, animal wastes, and fertilizers, could be introduced into downstream stormwater within the watershed. However, the proposed project is not anticipated to generate discharges that would require pollution

controls beyond those that will be incorporated into the project design as a standard operating procedure to meet water quality management requirements from the RWQCB. As such, the project is not anticipated to result in a significant adverse impact to water quality or flow volumes downstream of the project with implementation of mitigation outlined below.

Although BMPs are mandatory for the project to comply with established pollutant discharge requirements, the following mitigation measure is designed to establish a performance standard to ensure that the degree of water quality control is adequate to ensure the project does not contribute significantly to downstream water quality degradation.

HYD-2 *The District will select best management practices and reduce future non-point source pollution in surface water runoff discharges from the site to the maximum extent practicable, both during construction and following development. The identified BMPs shall be installed in accordance with schedules contained in the Erosion Control Plan (Plan) and Water Quality Management Plan (WQMP).*

Compliance will also be ensured through fulfilling the requirements of a WQMP monitored by the City, and through the implementation of mitigation measure **HAZ-1**, which will ensure that discharge of polluted material does not occur or is remediated in the event of an accidental spill. The Plan must incorporate the BMPs that meet the performance standard established in **HYD-1** and **HYD-2** for both construction and operation stages of the project. Thus, the implementation of onsite drainage improvements and applicable requirements will ensure that that drainage and stormwater will not create or contribute runoff that would exceed the capacity of existing or planned offsite stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under this issue are considered less than significant with mitigation required.

(iv) *Less Than Significant Impact* – According to the Countywide Plan Policy Map showing Flood Hazards (Figure X-1), the proposed project is not located within a flood hazard zone. As such, development of this site is not anticipated to redirect or impede flood flow at the project site, particularly given that surface flows will be conveyed and captured by subsurface storm drains and new proposed stormwater chambers to prevent increased runoff from leaving the project site or otherwise pretreat the runoff before leaving the site to meet City requirements, which would prevent flooding onsite or offsite from occurring. Therefore, impacts under this issue are considered less than significant and no mitigation is required.

- d. *Less Than Significant Impact* – As stated under issue X(c[iv]), the proposed project is located in an area with no known flood hazard, as mapped by the City or County. Furthermore, the proposed project is mapped outside of any dam inundation area delineated by the San Bernardino Countywide Plan (Figure X-2). The proposed project is located high on a ridge south of Big Bear Lake, about one mile to the south of the Lake. The proposed project is located at an elevation that is a few hundred feet higher than Big Bear Lake. Big Bear Lake is formed by a dam. As such, any dam inundation would occur west of the dam flowing down in elevation to the Santa Ana River watershed several thousand feet below the elevation of the project site. The proposed project is not located within the seiche zone for the Lake, and is removed from the ocean by both elevation (above 7,000 feet AMSL) and a distance of 60 miles. Therefore, given that the proposed project is not located within a flood hazard, tsunami, or seiche zone, there is a less than significant potential for release of pollutants due to project inundation. No mitigation is required.
- e. *Less Than Significant Impact* – The proposed project is located within the Bear Valley Groundwater Basin, which has been designated very low priority under the Sustainable Groundwater Management Act (SGMA). The SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins and requires GSAs to adopt Groundwater Sustainability Plans (GSPs) for

crucial groundwater basins in California.³ The SGMA “requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline.”⁴ Given that the project is located within a basin that is considered very low priority, no conflict or obstruction of a water quality control plan or sustainable groundwater management plan is anticipated. As such, the project would not conflict with a sustainable groundwater management plan. Water consumption and effects in the basin indicates that the proposed project’s water demand is considered to be minimal. By controlling water quality during construction and operations through implementation of both short-term and long-term (WQMP) best management practices at the site, no potential for conflict or obstruction of the Regional Board’s water quality control plan has been identified.

³ Big Bear Area Regional Wastewater Agency, Bear Valley Basin Groundwater Sustainable Agency, 2023. <https://www.bbarwa.org/bear-valley-basin-groundwater-sustainability-agency/> (accessed 4/12/23)

⁴ California Department of Water Resources, Sustainable Groundwater Management Act (SGMA). <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management> (accessed 4/12/23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XI. LAND USE AND PLANNING: Would the project:				
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"/>

SUBSTANTIATION:

- a. *No Impact* -The Wolf Reservoir site is an existing part of the local community/neighborhood. Continued use of this 0.4-acre site for water infrastructure has no potential to create a new physical division in the established neighborhood.
- b. *No Impact* - The reservoir site is an existing part of the local community/neighborhood. No conflict with any land use plan, policy or regulation related to mitigation will result from continuing to use the existing reservoir site for updated water infrastructure.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XII. MINERAL RESOURCES: Would the project:				
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 type="checkbox"/>	<input checked="" 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"/>

SUBSTANTIATION:

- a. *No Impact* – The San Bernardino County Countywide Plan Program Environmental Impact Report (PEIR) map depicting Mineral Resource Zones indicates that the proposed project is not located within an area containing delineated mineral resources (Figure XII-1). Therefore, the development of the site is not anticipated to 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. No impacts are anticipated and no mitigation is required.
- b. *No Impact* – As stated above, the proposed project site does not contain any known mineral resources delineated by the County in its Countywide Plan (Figure XII-1), and is currently occupied by the Department’s existing the Wolf Reservoir facilities. As such, the development of the proposed project site would not result in the loss of any available locally important resource recovery site delineated on a local general plan, specific plan or other land use plan, as no such delineations of this site are known. No impacts under this issue are anticipated and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIII. NOISE: Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>

SUBSTANTIATION

Background

The existing background noise at the site reflects the operation of the pump station and reservoir filling activities and would be considered moderate to low noise generators. Traffic noise in this area will vary based on the volume of recreation visitors to Big Bear. Because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dBA (A-weighted decibel) increment be added to quiet time noise levels. The State of California has established guidelines for acceptable community noise levels that are based on the Community Noise Equivalent Level (CNEL) rating scale (a 24-hour integrated noise measurement scale). The guidelines rank noise land use compatibility in terms of "normally acceptable," "conditionally acceptable," and "clearly unacceptable" noise levels for various land use types. The State Guidelines, Land Use Compatibility for Community Noise Exposure, single-family homes are "normally acceptable" in exterior noise environments up to 60 dB CNEL and "conditionally acceptable" up to 70 dB CNEL based on this scale. Multiple family residential uses are "normally acceptable" up to 65 dB CNEL and "conditionally acceptable" up to 70 CNEL. The nearest sensitive receptors are individual single-family residences that surround the Project Site.

a. *Less Than Significant With Mitigation Incorporated –*

Short Term Construction Noise

Short-term construction noise impacts associated with the proposed project will occur during grading and reservoir and pump station construction activities at the project site. The earth-moving equipment are the noisiest type of equipment typically ranging from 82 to 85 dB at 50 feet from the source. Temporary construction noise is exempt from the City Noise Performance Standards between 7:00 a.m. and 6:00 p.m., except Sundays and Federal holidays. The proposed project would be constructed within the confines of these hours, and therefore would be in compliance with the City's Noise Performance Standards. Thus, construction of the project would result in less than significant noise impact. However, to minimize the noise generated on the site to the extent feasible, the following mitigation measures shall be implemented:

NOI-1 All construction vehicles and fixed or mobile equipment shall be equipped with operating and maintained noise control devices. Enforcement will be accomplished by random field inspections by Department personnel.

- NOI-2** *All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided adequate hearing protection devices to ensure no hearing damage will result from construction activities.*
- NOI-3** *No construction activities shall occur during the hours of 7 PM through 7 AM, Monday through Saturday; at no time shall construction activities occur on Sundays or holidays, unless a declared emergency exists.*
- NOI-4** *Equipment not in use for five minutes shall be shut off.*
- NOI-5** *Equipment shall be maintained and operated such that loads are secured from rattling or banging.*
- NOI-6** *Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.*
- NOI-7** *The Department shall post a readily visible sign identifying a phone number to contact a person responsible for responding to noise complaints from nearby residences. The goal shall be to respond to any noise complaint within 24-hours and to initiate noise controls to reduce noise originating from the site during construction.*

Operational noise is generally associated with the pump station operations. The Department has the opportunity to install new concrete brick housing for the new pump station and shall attenuate pump station noise to 50 dBA at the property line. This measure shall be incorporated into the Department's design requirements for pump station. Please note that this will result in a lower noise environment than currently exists at the project site.

- b. *Less Than Significant Impact* – Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by vibration of room surfaces is called structure borne noises. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous or transient. Vibration is often described in units of velocity (inches per second), and discussed in decibel (VdB) units in order to compress the range of numbers required to describe vibration. Vibration impacts related to human development are generally associated with activities such as train operations, some construction activities, and heavy truck movements.

The background vibration-velocity level in residential areas (from ongoing activities in a residential area such as cars driving by, etc.) is generally about 50 VdB, while the groundborne vibration directly adjacent to an industrial facility requiring movement of heavy machinery might be greater. Groundborne vibration is normally perceptible to humans at approximately 65 VdB, while 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible. Construction activity can result in varying degrees of groundborne vibration, but is generally higher when associated with pile driving and rock blasting. Other construction equipment—such as air compressors, light trucks, hydraulic loaders, etc.—generates little or no significant ground vibration. The City Development Code offers minimal guidance on Vibration.

Vibration related to construction activities will be less than significant because the project will limit construction to daylight hours. Operational vibration is anticipated to be less than significant given that the filling of a reservoir is relatively quiet and there are no large pieces of heavy machinery that would operate at or near the property line. Therefore, any vibration generated within the site is not anticipated to substantially exceed the perceptible threshold. Thus, any impacts under this issue are considered less than significant. No other mitigation is required.

- c. *No Impact* – There nearest public airport is the Big Bear City Airport, which is located approximately two miles to the northeast of the project site. According to the Big Bear City Airport Comprehensive Land Use Plan⁵, the project is not located within a safety zone requiring an aviation easement as this project is not located beneath the flight path for the airport. Additionally, the proposed project is located outside of the delineated noise contours for the Airport, as shown on Figure XIII-1. Given that the proposed project is located outside of the 65 CNEL dBA airport noise contour, the project area has a less than significant potential to expose people residing or working in the project area to excessive noise levels as a result of the site’s proximity to the airport. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIV. POPULATION AND HOUSING: Would the project:				
a) Induce substantial 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 type="checkbox"/>	<input checked="" 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"/>

SUBSTANTIATION

- a&b. *No Impact* – The proposed project is the replacement of water infrastructure at an existing reservoir and pump station site. The project site is already developed with a reservoir and pump station that will be replaced with comparable uses. There will be no loss of housing or displacement of existing residences. Because the project does not contain any habitable structures, it has no potential to induce substantial population growth within the City. The new water system infrastructure is not forecast to increase the rate of growth within the City which is forecast to remain within the supply capability of the Valley’s water supply capability. No adverse population or housing impacts will occur and no mitigation is required.

⁵ San Bernardino County Planning Department, Airport Comprehensive Land Use Plan, Big Bear City Airport. <http://www.sbcounty.gov/Uploads/lus/Airports/BigBear.pdf> (accessed 4-12-23)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XV. 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:				
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 type="checkbox"/>	<input checked="" type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SUBSTANTIATION

a-e. *Less Than Significant and No Impact* – The proposed project is the replacement of an existing reservoir and pump station at the Wolf Reservoir site in the City of Big Bear Lake. Demand for the public services summarized above is anticipated to be very low for these two water infrastructure replacements. There would be no adverse effect on schools, parks or other public facilities. In fact, by enhancing water storage these public facilities, as well as fire protection, should be enhanced by this proposed project. A steel reservoir and concrete block building for the pump station should place very little demand on fire protection resources at the site. Water infrastructure facilities can create a potential for some trespass, but this should be minimal within the existing residential neighborhood. The impact analysis indicates that its construction and operation will not result in new significant adverse impacts to the environment. Therefore, the potential impacts to these public services are considered a less than significant or nonexistent on the public services environment.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVI. RECREATION:				
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 type="checkbox"/>	<input checked="" 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"/>

SUBSTANTIATION

a&b. The proposed project is the replacement of an existing reservoir and pump station at the Wolf Reservoir site in the City of Big Bear Lake. The propose project will not adversely impact any recreation facilities. There would be no adverse effect on recreation. The impact analysis indicates that the project's construction and operation will not result in new significant adverse impacts to the recreational environment. Therefore, the potential impacts to local recreational facilities are considered to result in no impact on the recreation environment of the Valley.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVII. TRANSPORTATION: Would the project:				
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 checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

CEQA Section 15064.3, subdivision (b):

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

- a. *Less Than Significant Impact* – The proposed project is the construction of a replacement reservoir and pump station at the existing Wolf Reservoir site. Once completed, the new reservoir and pump station will receive periodic inspection visits with daily traffic being at most a few trips per week. Construction traffic is forecast to range between a maximum of 25 and 50 trips per day, including truck deliveries. Although the local roadway system consists of two-lane local roadways, adequate access exists for the estimated number of construction-related vehicles to access the site during daylight hours with minimal conflicts. A combined traffic and parking management plan (**TRAN-1**) will be prepared by the contractor and approved by the Department to local law enforcement prior to initiating construction activities at the site. Thus, implementation of the proposed project will not

conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. No mitigation is required.

- b. *No Impact* – As described above, the proposed project is designed to enhance the local water system and all trips will be conducted to support this goal. The proposed project is not forecast to increase VMT through creation of a permanent source of traffic. No impact to VMT is expected to result from implementing this proposed project.
- c. *Less Than Significant With Mitigation Incorporated* – The proposed project will occur entirely within the Wolf Reservoir site and adjacent street boundaries. Large trucks delivering equipment or removing excavated dirt or debris can enter the site without major conflicts with the flow of traffic on the adjacent roadways used to access the site. Primary access to the site will be provided along existing roadways. Additionally, the proposed project would be required to comply with all applicable fire code and ordinance requirements for construction, parking and access to the project site. Emergency response and evacuation procedures would be coordinated with the City and County, as well as the local fire department. As such, to mitigate the potential impacts to traffic flow during construction, the following mitigation measure shall be implemented:

TRAN-1 *The Department shall require its contractors prepare a construction and parking traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:*

- *Develop circulation and detour plans, if necessary, to minimize impacts to local street and State Highway circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.*
- *To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.*
- *Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.*
- *For roadways requiring lane closures that would result in a single open lane, maintain alternate one-way traffic flow and utilize flagger-controls.*
- *Coordinate with owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owners or operators of the timing, location, and duration of construction activities.*

TRAN-2 *The Department shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Big Bear Lake and Caltrans standard design requirements.*

Upon implementation of a construction traffic management plan, any potential increase in hazards due to design features or incompatible use will be considered less than significant in the short term. In the long term, no impacts to any hazards or incompatible uses in existing or planned roadways are anticipated. The implementation of the project would not create any hazards to surrounding roadways. Thus, any impacts are considered less than significant with implementation of mitigation.

- d. *Less Than Significant With Mitigation Incorporated* – The proposed project consists of construction and operational activities that will take place using the local circulation system. Access to the site is adequate for emergency vehicles. There is an emergency evacuation route located near the site, as State Highway 18/Big Bear Boulevard is the nearest San Bernardino County Mountain Area Emergency Route: Area 2 map provided as Figure IX-2. With implementation of MMs **TRAN-1** and **TRAN-2**, adequate emergency access along local roadways will be maintained. Thus, because of

the lack of substantial adverse impact on local circulation, significant impacts to emergency access are avoided. No further mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVIII. TRIBAL CULTURAL RESOURCES: Would the project cause a substantial change in the significance of tribal cultural resources, 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 the California Native American tribe, and that is:				
a) 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"/>
b) 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 Resources 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"/>

SUBSTANTIATION Remains to be resolved.

a&b. *Less Than Significant With Mitigation Incorporated* – The Department contacted the Yuhaaviatam of San Manuel Nation YSMN, formerly the San Manuel Band of Mission Indians) and requested consultation regarding the Wolf Reservoir and Booster Replacement Project. The YSMN responded that the proposed project area exists within Serrano ancestral territory and, therefore, is of interest to the Tribe. However, due to the nature and location of the proposed project, and given the CRM Department’s present state of knowledge, YSMN does not have any concerns with the project’s implementation, as planned, at this time. YSMN requested the inclusion of the following TCR mitigation measures.

TCR-1 *The Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN) shall be contacted, as detailed in CR-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a Cultural Resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site.*

TCR-2 *Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The*

Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

With implementation of the preceding mitigation measures, potential Tribal Cultural Resources impacts can be reduced to a less than significant impact level.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIX. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

- a. *Less Than Significant Impact* – The proposed project is the construction of a replacement reservoir and pump station at the existing Wolf Reservoir site. All of the required utilities to support this water infrastructure improvement project are or will be located in adjacent streets. The primary utilities that will be needed at the site for future operation are water and electricity, including telecommunications. No new relocations or expansions of infrastructure will be required to support the proposed project.
- b. *Less Than Significant Impact* – Please refer to Section X(b) for a discussion of available water supply for the City. Adequate water is available to meet the estimated increase in water stored at the new reservoir. The project itself will not result in a substantial increase in overall demand for water supply, only the amount of water stored at the site to meet system-wide water management goals will be increased. No significant adverse impact is forecast and no mitigation, other than use of standard low consumption water hardware at the site is required.
- c. *Less Than Significant Impact* – The City delivers wastewater to the Big Bear Area Regional Wastewater Agency facility at the south end of Baldwin Lake. The proposed project will not directly or indirectly increase wastewater flows. No mitigation is required.

- d. *Less Than Significant Impact* – The replacement reservoir and pump station construction will generate solid waste. Current regulations require recycling up to 50 percent of the construction waste generated at the site. The Department will require the contractor to meet the current regulatory requirements for disposal of construction waste. Little or no waste will be generated during operations and if any is generated it will be hauled away by visiting staff for proper disposal. No mitigation is required.
- e. *Less Than Significant Impact* – The proposed project does not involve any unusual or difficult solid waste generation activities that have a potential to conflict with federal, state and local management and reduction statutes. The contractor will be required to recycle and dispose of construction waste and future operations are not forecast to generate substantial solid waste. The proposed project construction and operational solid waste management will be integrated into the Department’s existing waste management program and will comply with solid waste management and reduction statutes and regulations. Potential impacts under this issue are considered less than significant with no mitigation.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XX. WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
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 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"/>

SUBSTANTIATION

- a. *Less Than Significant Impact* – Please refer to the evaluation of emergency response in the Traffic Section, Section XVII.). As indicated in that discussion, the proposed project will be constructed within the confines of the project site, but certain construction activities could result in limited interference with emergency evacuation along proximate access roads. Since activities within the local access roads are controllable, implementation of mitigation measure **TRAN-1** can ensure that significant conflicts with an evacuation plan or emergency access will not rise to a level of a significant impact. No additional mitigation is required.
- b. *Less Than Significant Impact* – The proposed project does not provide habitable space for humans. Additionally, constructing the replacement reservoir and pump station will result in thinning the trees on the existing site. This has the consequence of reducing the fuel load at the project site. Thus, the proposed project is not forecast to exacerbate wildfire risks at this location. Regardless, the proposed project site is an area susceptible to wildland fires, and is located within an area delineated as a Very

High Fire Hazard Severity Zone (VHFHSZ) in a Local Responsibility Area (LRA); the majority of the area surrounding Big Bear Lake and Baldwin Lake is located within a VHFHSZ, as shown on Figure IX-3, the Countywide Plan Policy Map of Fire Hazard Severity Zones. Overall, due to type of proposed use, the existing use of the site, the site preparation, and the lack of habitable units, the proposed project's potential to exacerbate wildfire risk is considered a less than significant impact.

- c. *Less Than Significant Impact* – The proposed project site is already connected to water and electricity infrastructure adjacent to the project site. These connections will require minimal alterations to the existing systems and have a very low potential to exacerbate fire risk at the project site. Further, due to proximity to this infrastructure, there should be minimal temporary and no ongoing impacts to the environment at the project site once facilities are installed and operational. Impacts under this category are forecast to be less than significant.
- d. *Less Than Significant Impact* – The proposed project is the replacement of the existing Wolf Reservoir and a pump station on the existing site. A minimal potential exists to expose humans to significant risks post fire as the site will not be inhabited and will actually increase the amount of water stored for fire-fighting purposes. Due to the project site's location on a ridge, the potential exposure of the site to hazards such as flooding or post fire instability onsite is low. However, a fire uphill of the site could result in potential damage due to a future landslide, but due to the lack of human occupancy, the potential impact under this issue is considered less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XXI. MANDATORY FINDINGS OF SIGNIFICANCE:				
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? ("Cumulatively considerable" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUBSTANTIATION

The analysis in this Initial Study and the findings reached indicate that the proposed project can be implemented without causing any new project specific or cumulatively considerable unavoidable significant adverse environmental impacts. Mitigation is required to control or reduce potential environmental impacts of the proposed project to a less than significant impact level. The following findings are based on the detailed analysis of the Initial Study of all environmental topics and the implementation of the mitigation measures identified in the previous text and summarized in this section.

- a. *Less Than Significant With Mitigation Incorporated* – The project has a potential to cause a significant impact to biological or cultural resources. The project has been identified as having low potential to degrade the quality of the natural environment, substantially reduce 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, or reduce the number or restrict the range of a rare or endangered plant or animal. The project requires contingency mitigation to prevent significant impacts from occurring as a result of implementation of the project. Based on the data contained in the Cultural Resources Report (Appendix 4), the potential for impacting cultural resources is low, particularly with the extensive mitigation measures that shall be implemented at the request of the Yuhaaviatam of San Manuel Nation to minimize impacts to Native American cultural resources or Tribal Cultural Resources. The Cultural Resources Report determined that no cultural resources of importance were found at the project site upon field review and a review of previous reports performed for this area, so it is not anticipated that any resources could be affected by the project because of previous disturbance at this project site. However, because it is not known what could be unearthed upon any excavation activities, contingency mitigation measures are provided to ensure that, in the unlikely event that any resources are found, they are protected from any potential impacts. Please see biological and cultural sections of this Initial Study.
- b. *Less Than Significant With Mitigation Incorporated* – The project has sixteen (16) potential impacts that are individually limited, but may be cumulatively considerable. The issues of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous

Materials, Hydrology and Water Quality, Noise, Transportation, and Tribal Cultural Resources, require the implementation of mitigation measures to reduce impacts to a less than significant level and ensure that cumulative effects are not cumulatively considerable. The project is not considered growth-inducing, as defined by *State CEQA Guidelines*, as it would replace an existing reservoir and pump station to support the existing and future DWP operations water supply operations that are intended to serve the City and some unincorporated communities in the Big Bear Valley. These issues require the implementation of mitigation measures to reduce impacts to a less than significant level and ensure that cumulative effects are not cumulatively considerable. All other environmental issues were found to have no significant project specific and cumulative impacts without implementation of mitigation. The potential cumulative environmental effects of implementing the proposed project have been determined to be less than considerable and thus, would have a less than significant cumulative impact.

- c. *Less Than Significant With Mitigation Incorporated* – The project will achieve long-term community goals by providing adequate facilities to support water supply operations in the City and certain communities within Big Bear Valley. The short-term impacts associated with the project, which are mainly construction-related impacts, are less than significant with mitigation, and the proposed project is compatible with long-term environmental protection and management of the City's potable water resources. The issues of Air Quality, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality and Noise require the implementation of mitigation measures to reduce human impacts to a less than significant level. All other environmental issues were found to have no significant impacts on humans without implementation of mitigation. The potential for direct human effects from implementing the proposed project have been determined to be less than significant.

Conclusion

This document evaluated all CEQA issues contained in the latest Initial Study Checklist form. The evaluation determined that either no impact or less than significant impacts would be associated with the issues of Agriculture and Forest Resources, Land Use and Housing, Mineral Resources, Population/Housing, Public Services, Recreation, Utilities and Service Systems and Wildfire. The issues of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, and Tribal Cultural Resources, require the implementation of mitigation measures to reduce impacts to a less than significant level. The required mitigation has been proposed in this Initial Study to reduce impacts for these issues to a less than significant impact.

Based on the findings in this Initial Study, the City of Big Bear Lake, Department of Water and Power proposes to adopt a Mitigated Negative Declaration (MND) for the Wolf Reservoir and Pump Station/Booster Replacement Project. A Notice of Availability/Notice of Intent to Adopt a Mitigated Negative Declaration (NOA/NOI) will be issued for this project by the Department. The Initial Study and NOI will be circulated for 30 days of public comment because this project involves the State as either a responsible or trustee agency. At the end of the 30-day review period, a final MND package will be prepared and it will be reviewed by the BBLDWP for possible adoption at a future BBLDWP Board hearing, the date for which has not yet been determined. If you or your agency comments on the MND/NOA/NOI for this project, you will be notified about the meeting date in accordance with the requirements in Section 21092.5 of CEQA.

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino*, (1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors*, (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

Revised 2019

Authority: Public Resources Code sections 21083 and 21083.09

Reference: Public Resources Code sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3/ 21084.2 and 21084.3

SUMMARY OF MITIGATION MEASURES

Aesthetics

AES-1 Where the removal of trees is required to develop the new reservoir, the Department shall replace all trees removed at a 1:1 ratio.

Air Quality

AQ-1 Fugitive Dust Construction

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site

AQ-2 Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better rated heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

Biological Resources

BIO-1 A pre-construction southern rubber boa survey is recommended that would consist of 100% visual coverage of the entire Project Area, including an approximately 100-foot buffer area around the 0.26-acre Project site. The survey should be conducted during the appropriate time of year (i.e., spring/early summer), when air temperatures reach between 60° and 70°F (15° to 21° Celsius), and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for southern rubber boa.

BIO-2 If focused presence/absence surveys are negative for southern rubber boa presence, it is recommended that rubber boa exclusion fence (e.g., silt fence) be installed around the perimeter of the proposed Project footprint, prior to commencement of any Project-related ground disturbing activities. All construction activities should be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in adjacent habitat.

BIO-3 A qualified biologist who is familiar with southern rubber boa and their habits should be on site during all ground disturbing activities to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (i.e., rotting logs/stumps, duff layer). The biological monitor should visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.

BIO-4 If southern rubber boa is found during pre-construction presence/absence surveys or during construction activities, all Project activities shall be halted, CDFW shall be contacted, and a CESA Incidental Take Permit shall be obtained from CDFW prior to reinitiating Project activities.

BIO-5 To ensure the Project does not adversely affect San Bernardino flying squirrel, it is recommended that a pre-construction survey be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.

- BIO-6 If suitable San Bernardino flying squirrel cavity nesting sites are detected within the Project site, then coordination with the CDFW would be necessary to determine appropriate minimization and mitigation measures to offset Project related impacts to this species.
- BIO-7 To minimize potential impacts to nocturnal species due to light pollution, project-related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect these species from direct night lighting. Shielding shall be incorporated in Project design to ensure ambient lighting in adjacent areas is minimized.
- BIO-8 Vegetation removal, including any tree removal or pruning, and structure demolitions should be conducted outside of the typical bird nesting season (between September 1st and March 1st. Otherwise, to avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre construction nesting bird surveys prior to Project related disturbance to suitable nesting areas to identify any active nests. The nesting bird surveys should consist of a minimum of five (5) consecutive survey days and should include an additional three (3) consecutive nights of survey for SPOW and other nocturnal species. Nocturnal spotted owl surveys should be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds), and should include a spot calling survey component that would utilize California spotted owl call playback at predetermined fixed calling points.
- BIO-9 If no active nests are found, no further action would be required. If an active nest is found, the biologist should set appropriate no work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. The nest(s) and buffer zones should be field checked weekly by a qualified biological monitor. The approved no work buffer zone should be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

Cultural Resources

- CUL-1 Should any cultural resources, including human remains, be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with the City's onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.
- CUL-2 If significant pre-contact cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to YSMN for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.
- CUL-3 If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

Geology and Soils

- GEO-1 Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of stored backfill material. Where covering is not possible, measures such as the use of straw bales or sand bags shall be used to capture and hold eroded material on the project site for future cleanup such that erosion does not occur.

GEO-2 All exposed, disturbed soil (trenches, stored backfill, etc.) shall be sprayed with water or soil binders twice a day, or more frequently if fugitive dust is observed migrating from the site within which the project is being constructed.

Hazards and Hazardous Materials

HAZ-1 All accidental spills or discharge of hazardous material during construction activities shall be reported to the Certified Unified Program Agency and shall be remediated in compliance with applicable federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into the Stormwater Pollution Prevention Plan (SWPPP or Erosion Control Plan) prepared for this project. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.

Hydrology and Water Quality

HYD-1 The District shall require that the construction contractor prepare and implement an erosion control plan (Plan) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater runoff and with the intent of keeping all products of erosion from moving offsite into receiving waters. The Plan shall include a Spill Prevention and Cleanup Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented in the Plan may include but not be limited to:

- The use of silt fences;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-2 The District will select best management practices and reduce future non-point source pollution in surface water runoff discharges from the site to the maximum extent practicable, both during construction and following development. The identified BMPs shall be installed in accordance with schedules contained in the Erosion Control Plan (Plan) and Water Quality Management Plan (WQMP).

Noise

NOI-1 All construction vehicles and fixed or mobile equipment shall be equipped with operating and maintained noise control devices. Enforcement will be accomplished by random field inspections by Department personnel.

NOI-2 All employees that will be exposed to noise levels greater than 75 dB over an 8-hour period shall be provided adequate hearing protection devices to ensure no hearing damage will result from construction activities.

- NOI-3 No construction activities shall occur during the hours of 7 PM through 7 AM, Monday through Saturday; at no time shall construction activities occur on Sundays or holidays, unless a declared emergency exists.
- NOI-4 Equipment not in use for five minutes shall be shut off.
- NOI-5 Equipment shall be maintained and operated such that loads are secured from rattling or banging.
- NOI-6 Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.
- NOI-7 The Department shall post a readily visible sign identifying a phone number to contact a person responsible for responding to noise complaints from nearby residences. The goal shall be to respond to any noise complaint within 24-hours and to initiate noise controls to reduce noise originating from the site during construction.

Transportation

- TRAN-1 The Department shall require its contractors prepare a construction and parking traffic control plan. Elements of the plan should include, but are not necessarily limited to, the following:
- Develop circulation and detour plans, if necessary, to minimize impacts to local street and State Highway circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible.
 - To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours.
 - Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. Use flaggers and/or signage to safely direct traffic through construction work zones.
 - For roadways requiring lane closures that would result in a single open lane, maintain alternate one-way traffic flow and utilize flagger-controls.
 - Coordinate with owners or administrators of sensitive land uses such as police and fire stations, hospitals, and schools. Provide advance notification to the facility owners or operators of the timing, location, and duration of construction activities.
- TRAN-2 The Department shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable City of Big Bear Lake and Caltrans standard design requirements.

Tribal Cultural Resources

- TCR-1 The Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN) shall be contacted, as detailed in CR-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a Cultural Resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with YSMN, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents YSMN for the remainder of the project, should YSMN elect to place a monitor on-site.
- TCR-2 Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to YSMN. The Lead Agency and/or applicant shall, in good faith, consult with YSMN throughout the life of the project.

REFERENCES

City of Big Bear Lake Department of Water and Power, 2020 Urban Water Management Plan, March 2022. <https://www.bbldwp.com/ArchiveCenter/ViewFile/Item/249> (accessed 4/12/23)

Big Bear Area Regional Wastewater Agency, Bear Valley Basin Groundwater Sustainable Agency, 2023. <https://www.bbarwa.org/bear-valley-basin-groundwater-sustainability-agency/> (accessed 4/12/23)

California Department of Water Resources, Sustainable Groundwater Management Act (SGMA). <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management> (accessed 4/12/23)

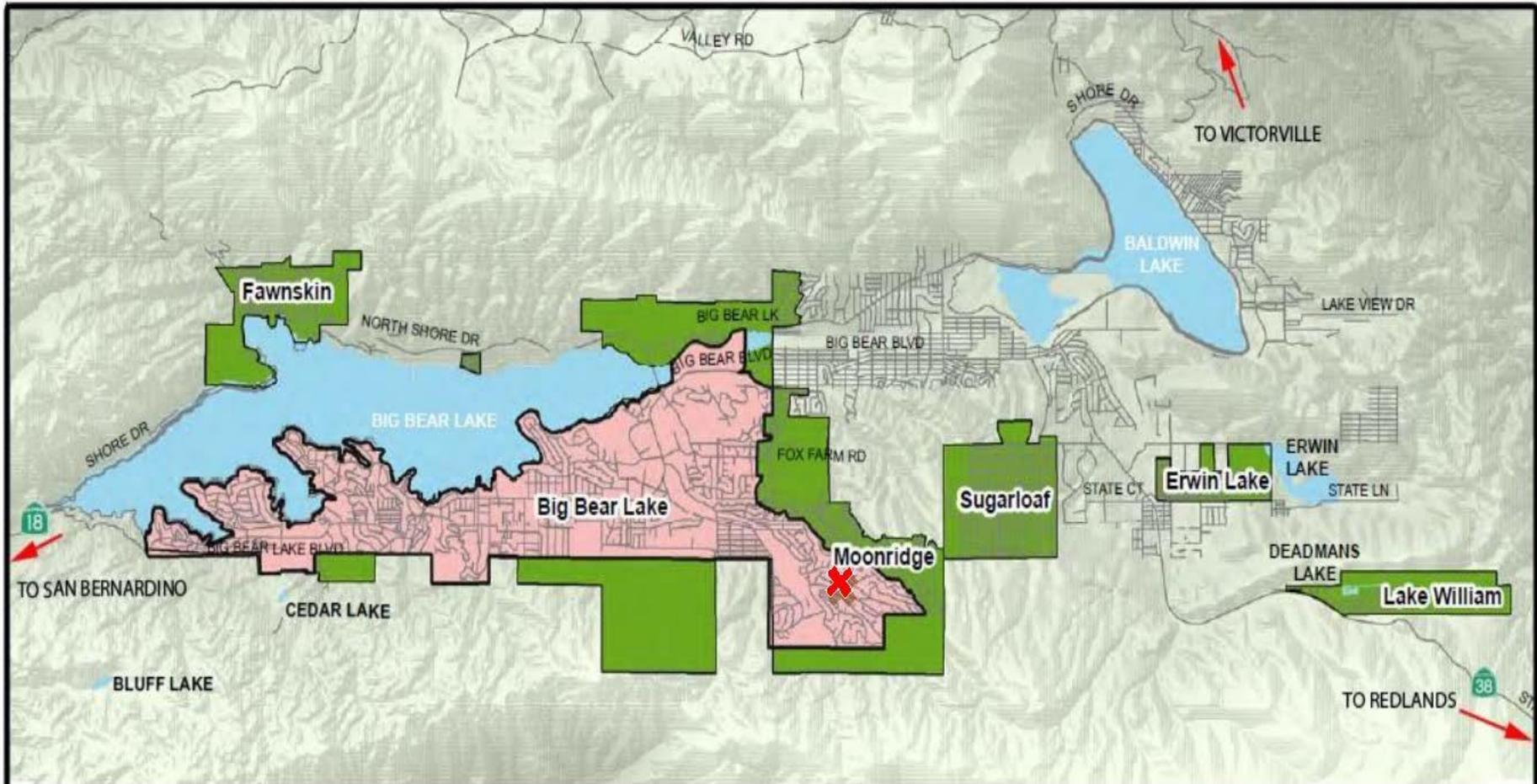
CRM TECH, *“Historical/Archaeological Resources Survey Report, Wolf Reservoir & Booster Replacement Project, Big Bear Lake Area, San Bernardino, California”* dated August 3, 2023

Gerrick Environmental, *“Air Quality and GHG Impact Analyses, Wolf Reservoir and Booster Replacement Project, Big Bear Lake, California”* dated March 22, 2023

Jacobs, *“City of Big Bear Lake Department of Water and Power Wolf Reservoir & Boosters Replacement Project Biological Resources Assessment/Jurisdictional Delineation Report”* dated April 2023

San Bernardino County Planning Department, Airport Comprehensive Land Use Plan, Big Bear City Airport. <http://www.sbcounty.gov/Uploads/lus/Airports/BigBear.pdf> (accessed 4-12-23)

FIGURES



Legend

- DWP Service Area within City
- DWP Service Area outside City
- City of Big Bear Lake
- Lakes
- Streets



Service Area Map
 2015 Urban Water
 Management Plan
 Big Bear Lake DWP


FIGURE 1

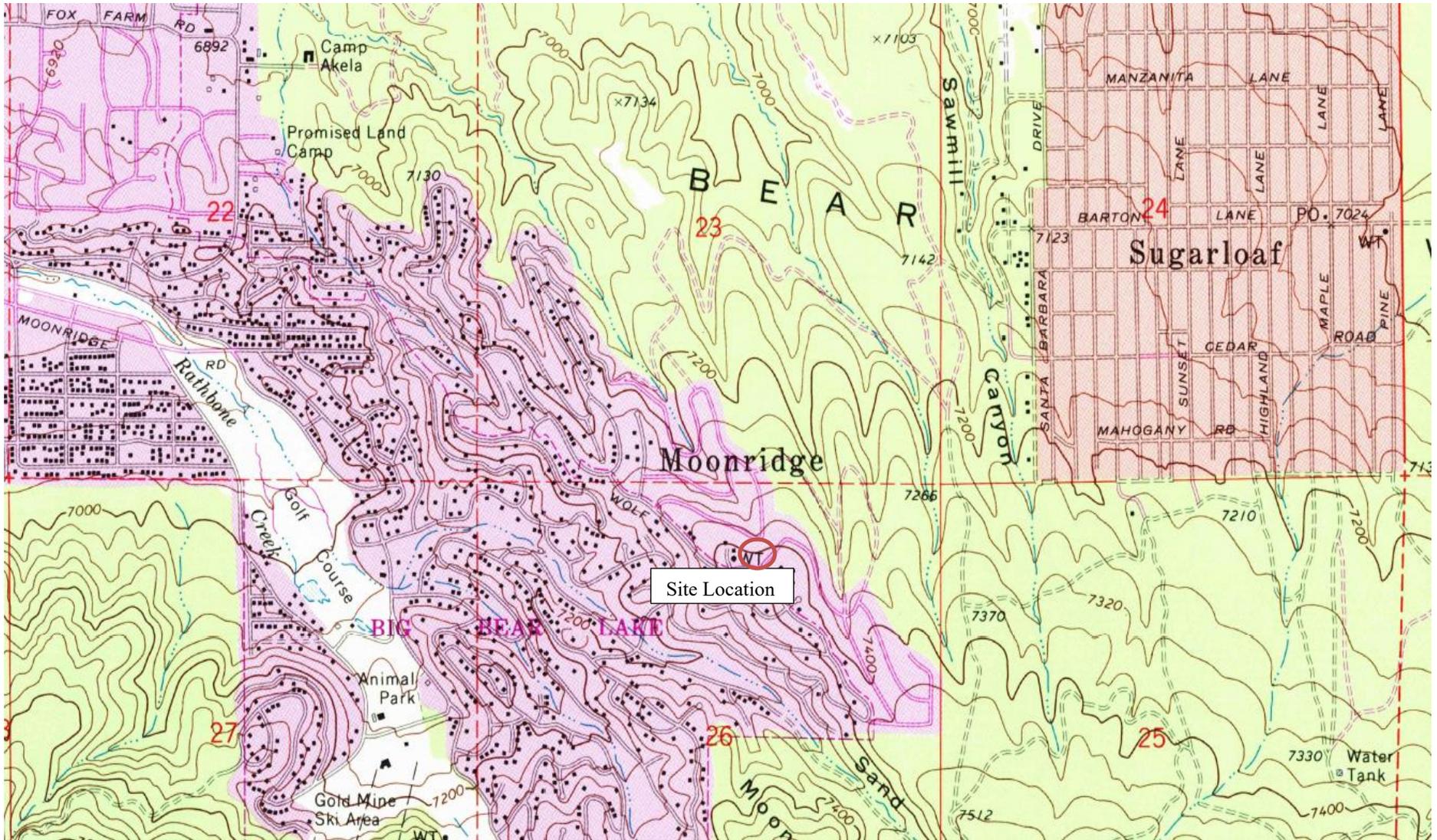
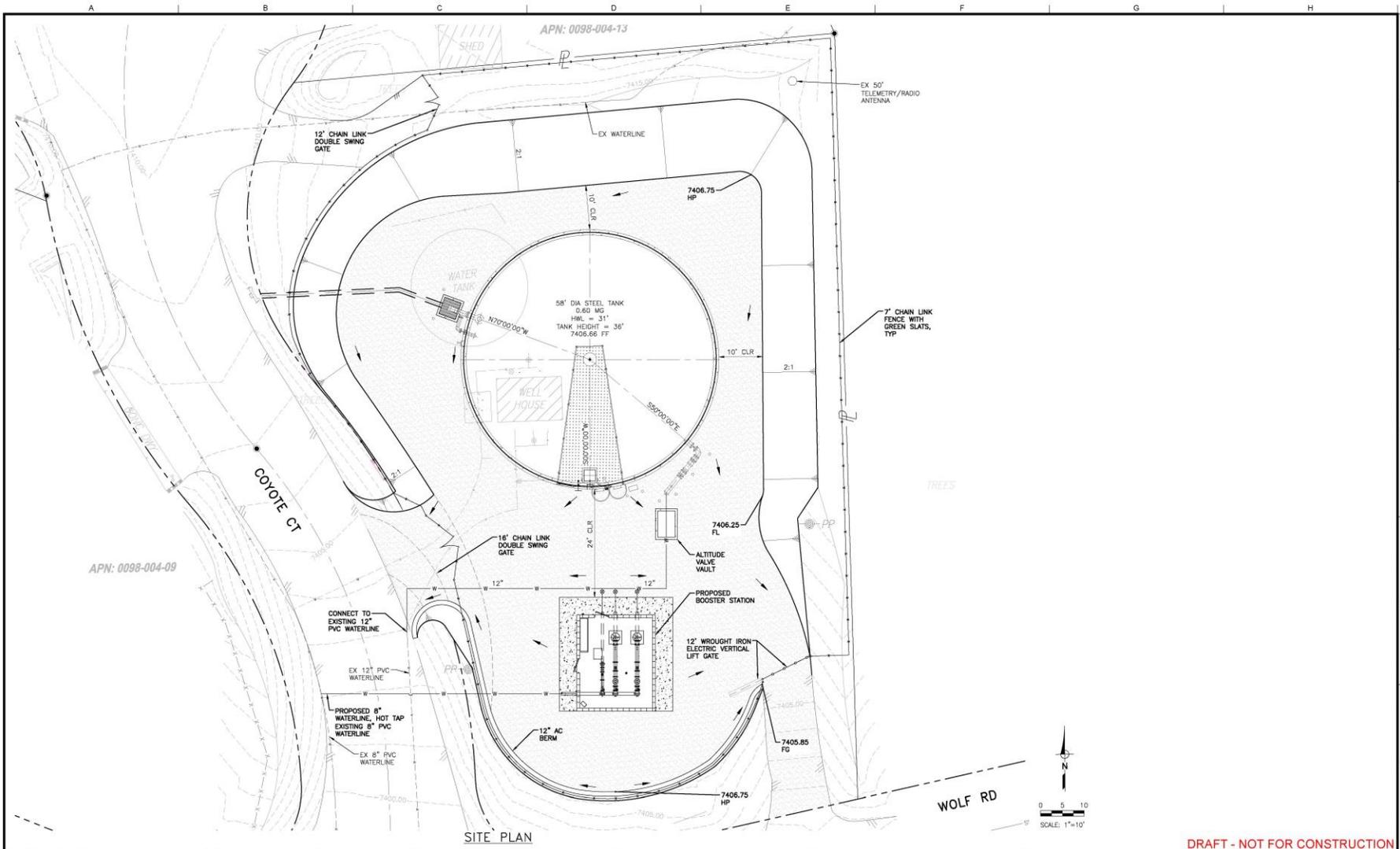


FIGURE 2



FIGURE 3



DRAFT - NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

WARNING
 0 1/2 1
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: FLM
 DRAWN: PMD
 CHECKED: CGD
 SCALE: 1"=10'

PREPARED BY:
 CHRISTOPHER G. DEETER
 REG. No.: 80618
 DATE: 3/1/2023

3602 INLAND EMPIRE BLVD., SUITE C 230, OAKLAND, CA 94764
 PHONE: (909) 483-3200 FAX: (909) 354-3483

DEPARTMENT OF WATER AND POWER
 CITY OF BIG BEAR LAKE
 41972 GARSTIN DRIVE, BIG BEAR LAKE, CA 92315
 APPROVED: REGINALD A. LAMSON - GENERAL MANAGER

WOLF RESERVOIR AND BOOSTER STATION
 PHASE I
 SITE PLAN

DRAWING: C-1
 PROJECT #

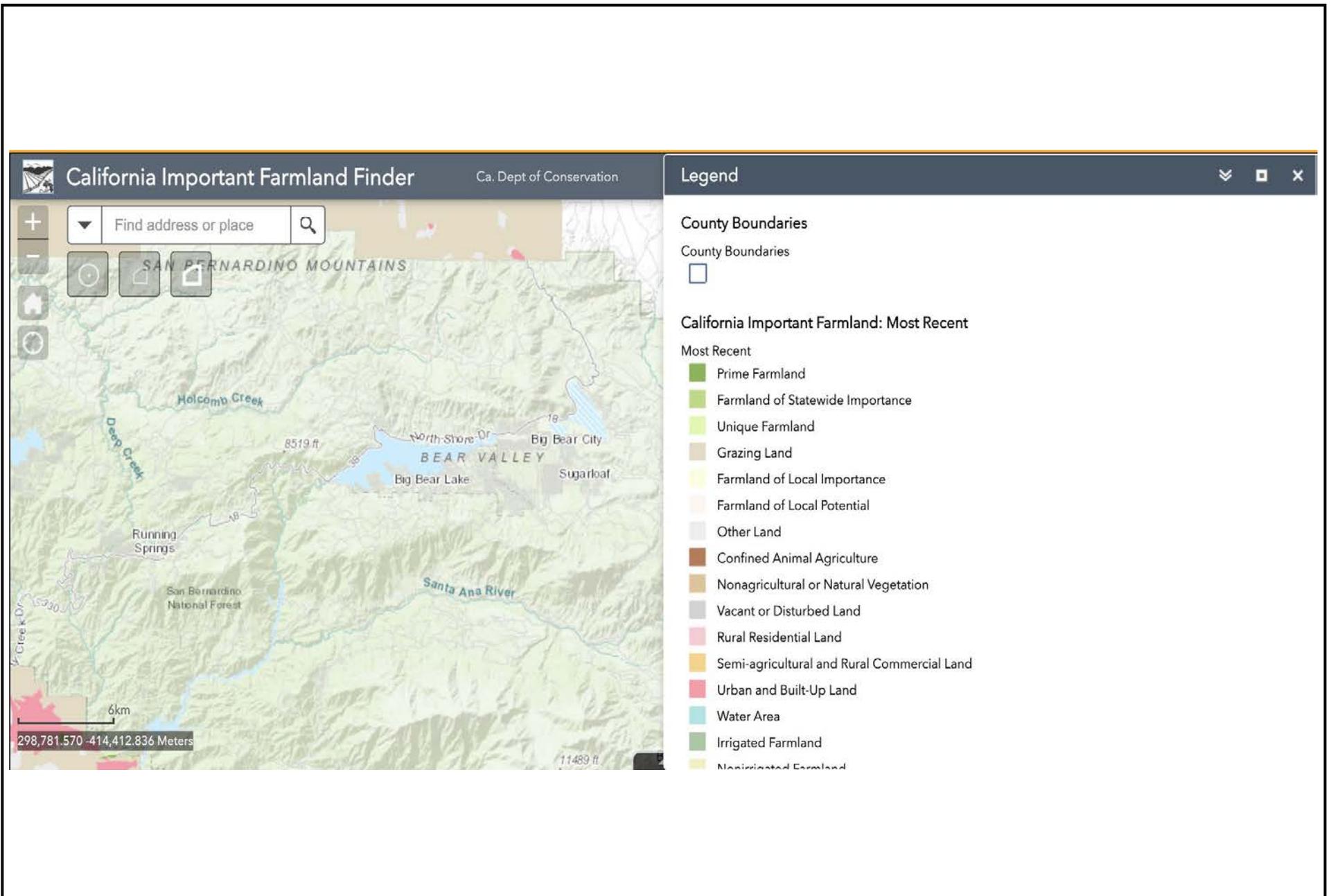


FIGURE II-1

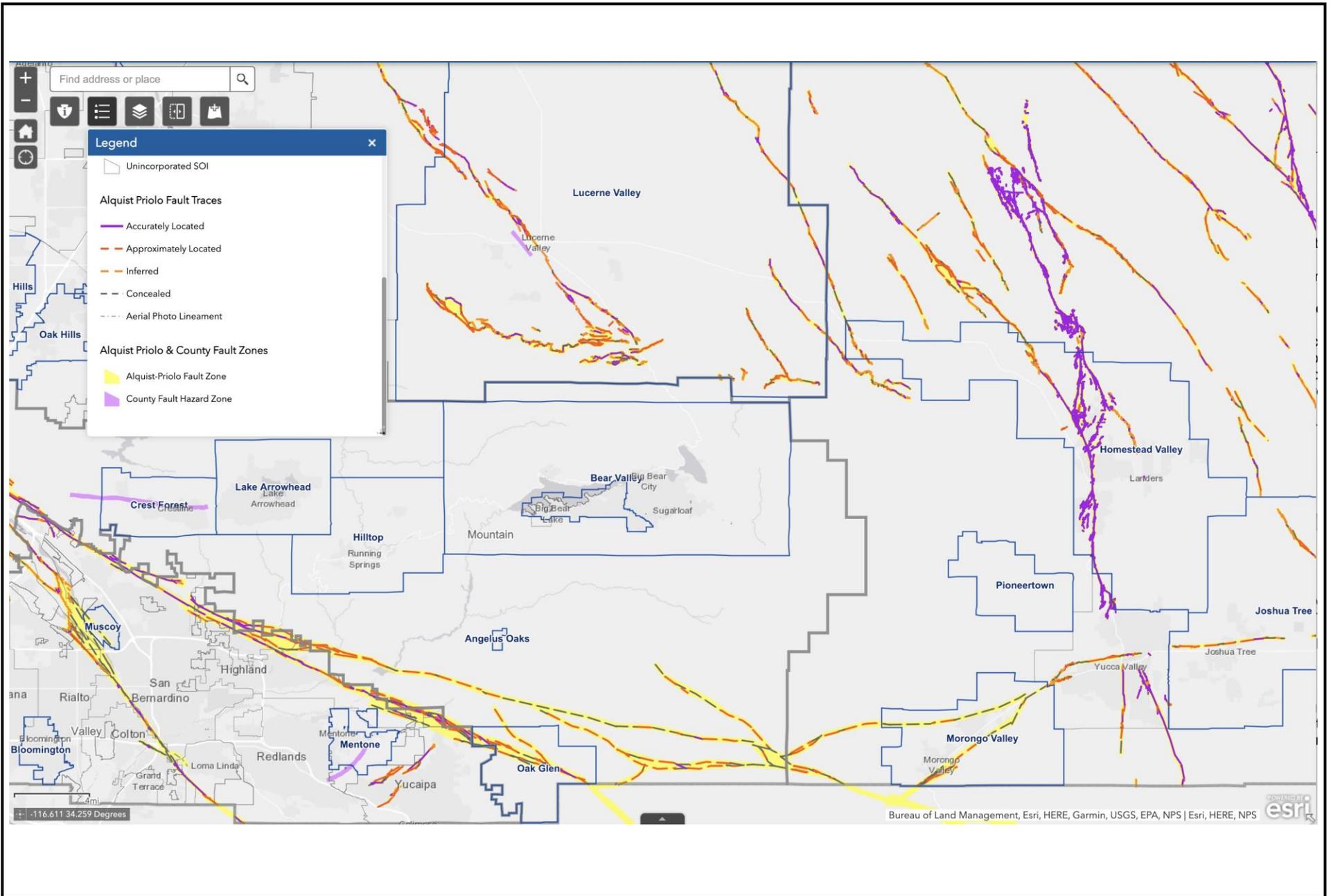


FIGURE VII-1

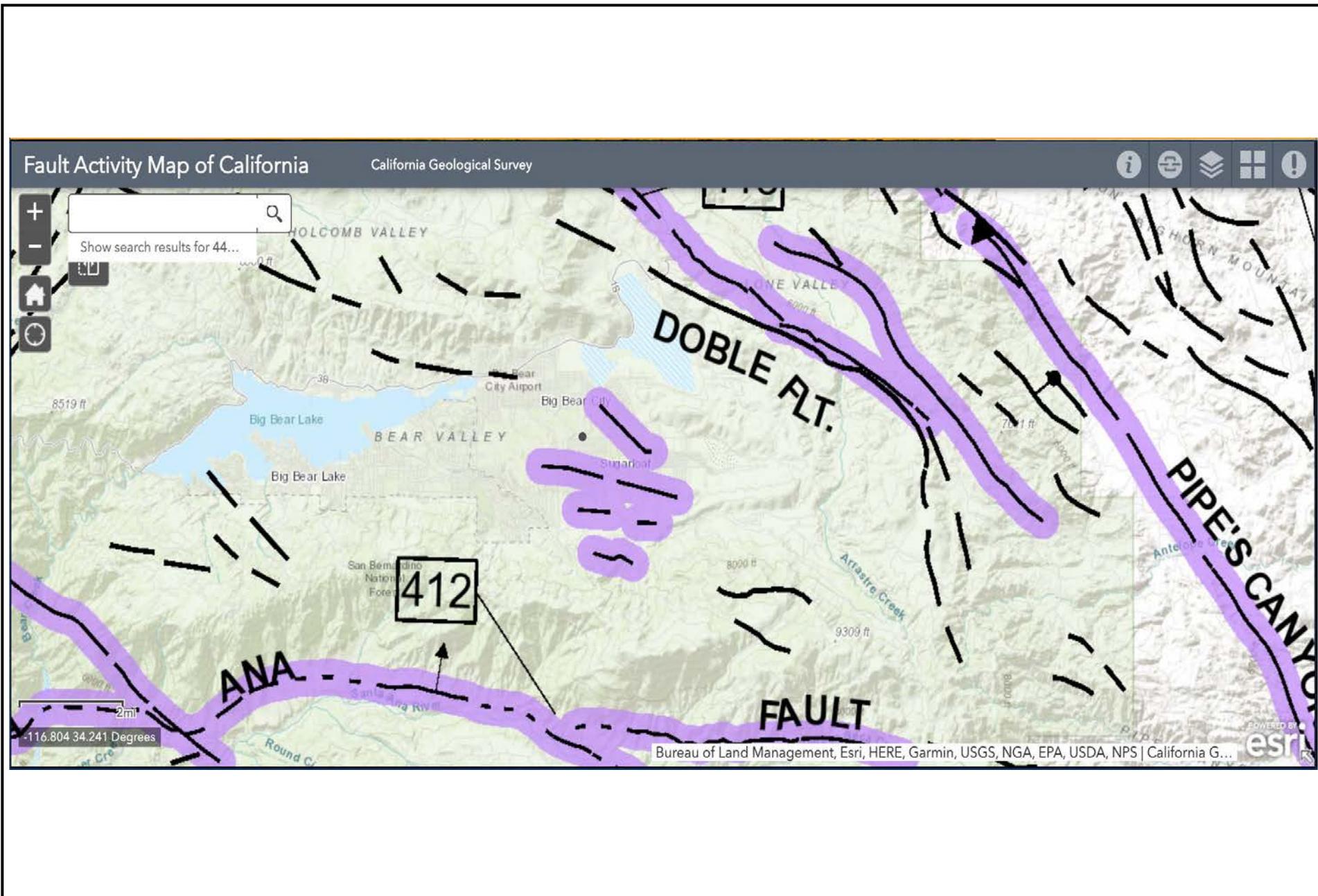


FIGURE VII-2

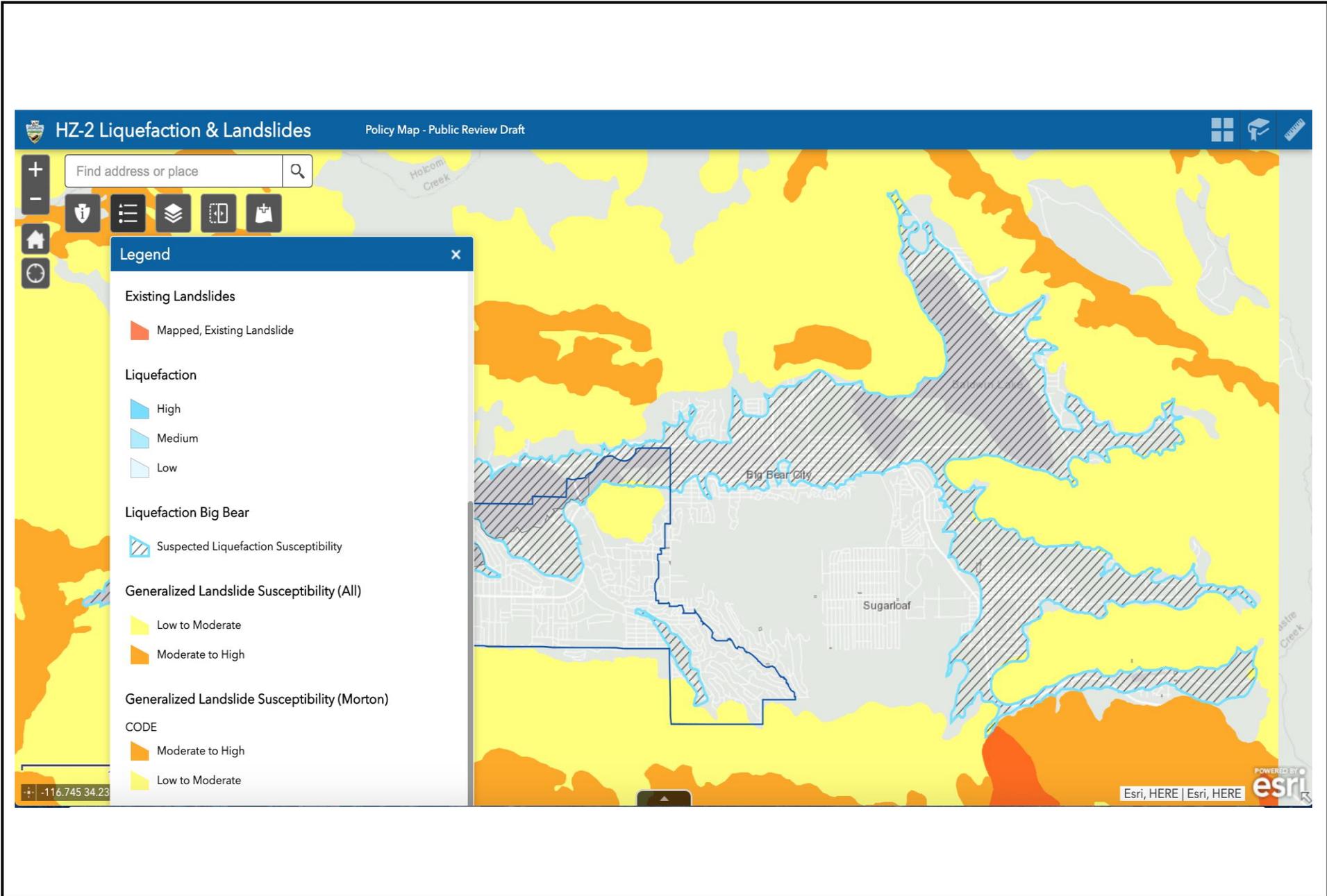


FIGURE VII-3

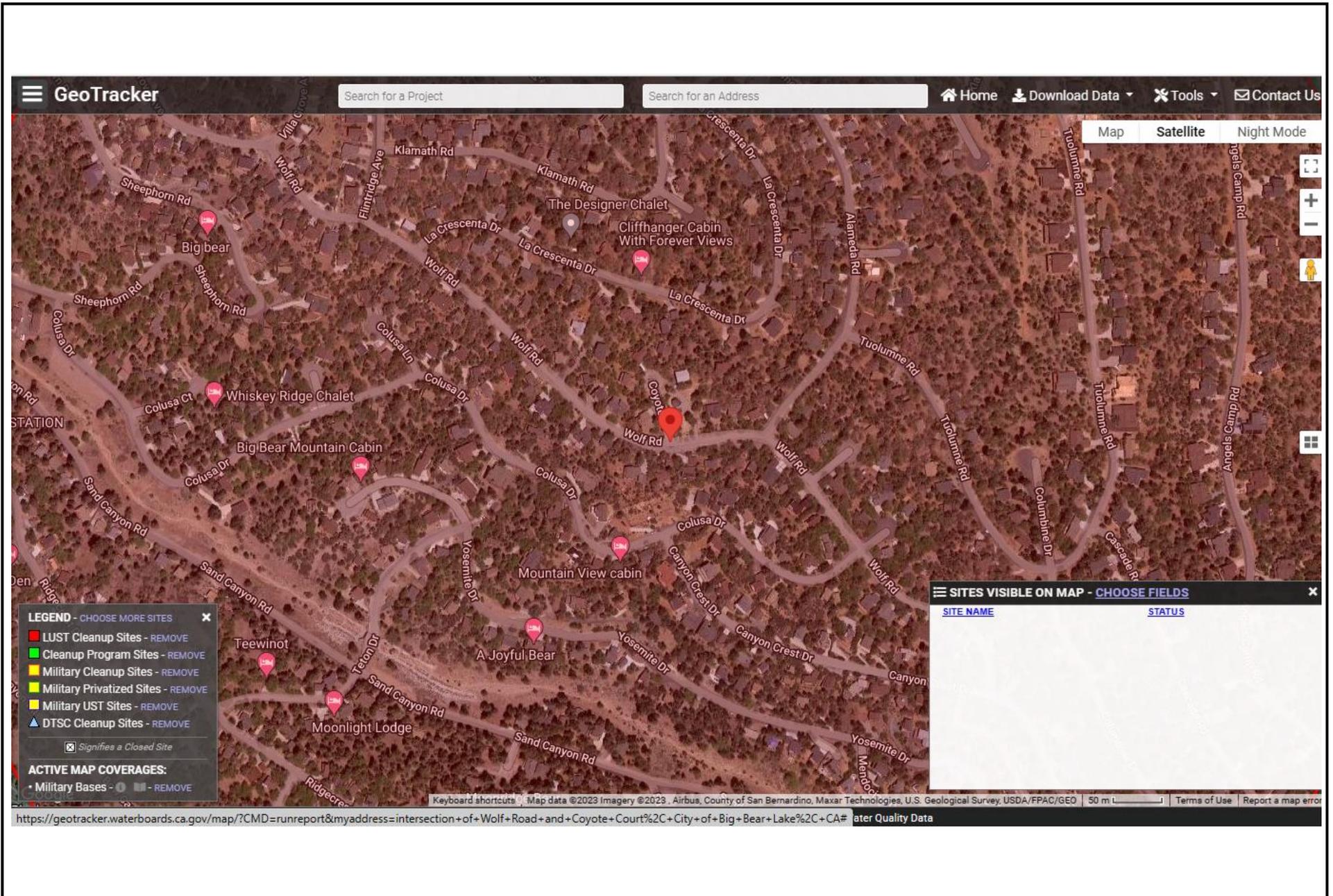
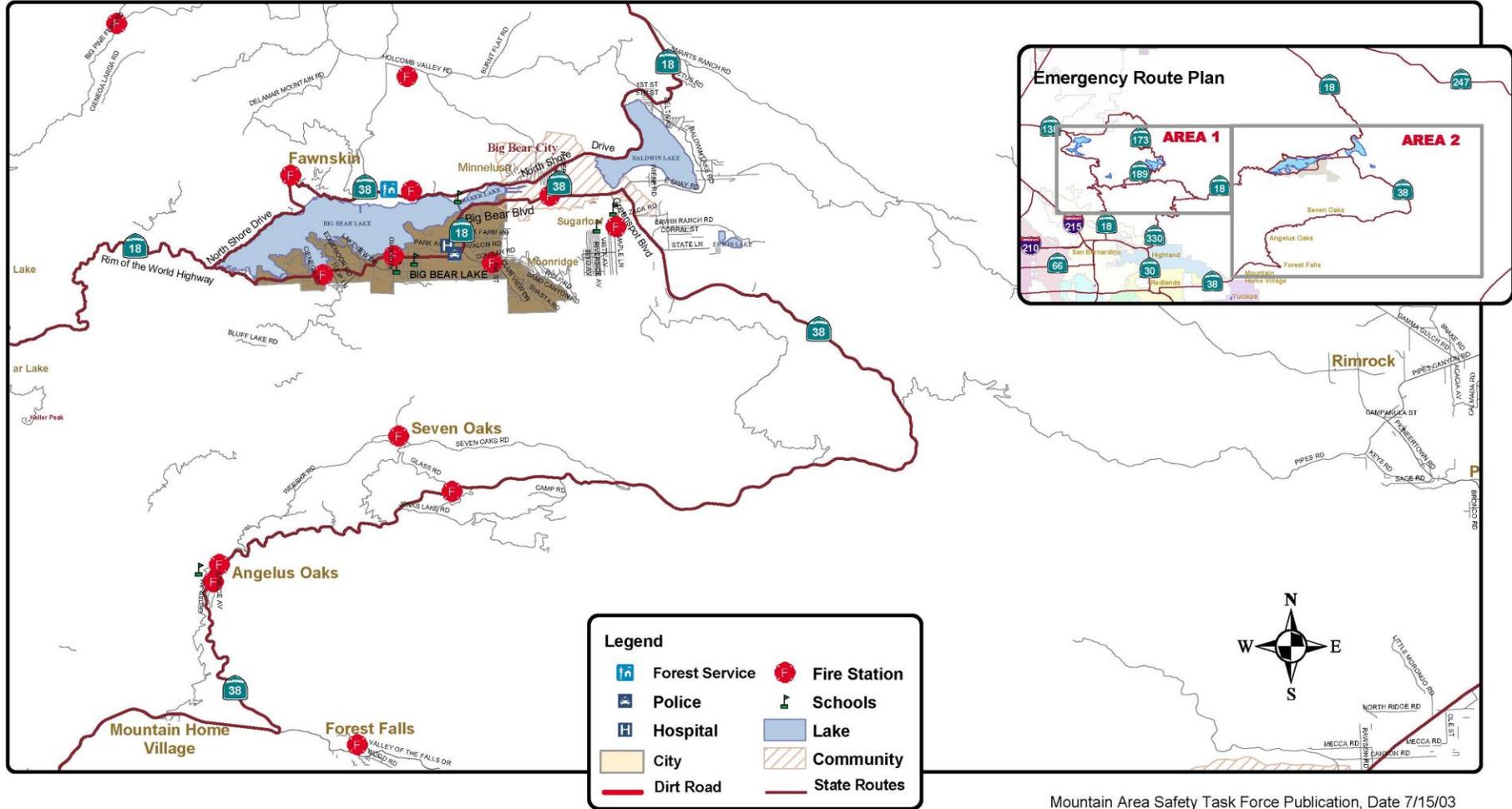


FIGURE IX-1



MOUNTAIN AREA EMERGENCY ROUTES

AREA 2



Mountain Area Safety Task Force Publication, Date 7/15/03

FIGURE IX-2

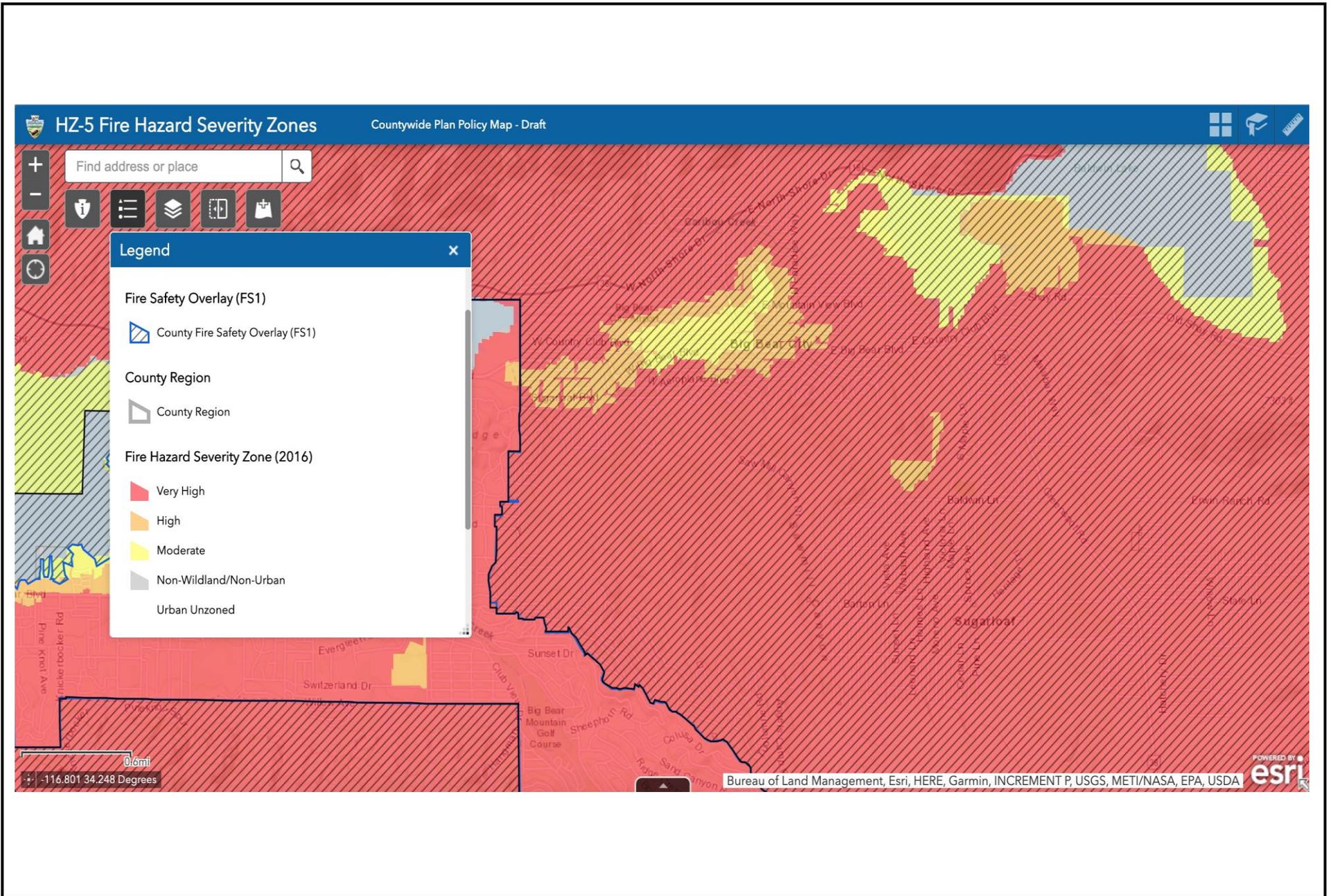


FIGURE IX-3

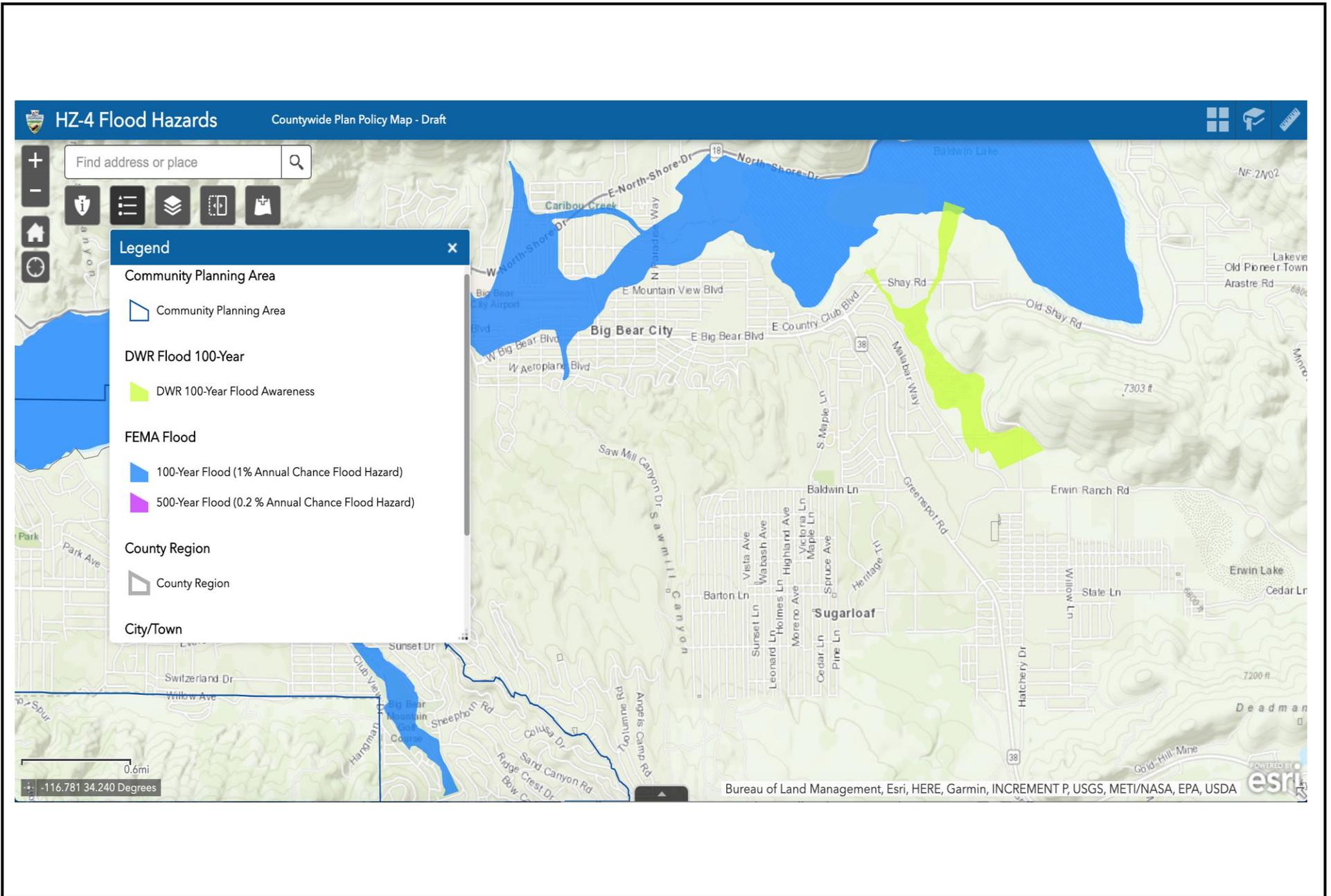


FIGURE X-1

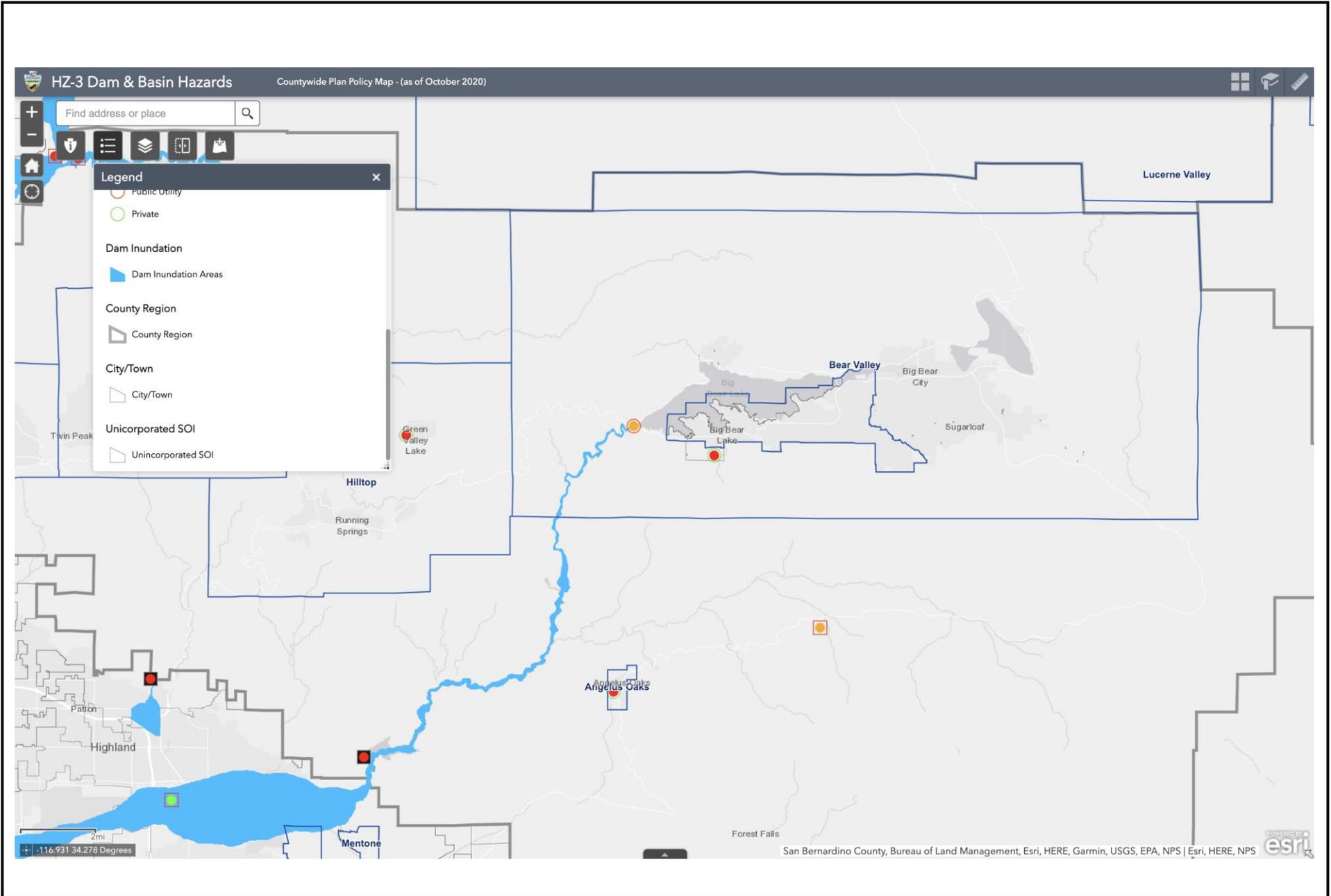


FIGURE X-2

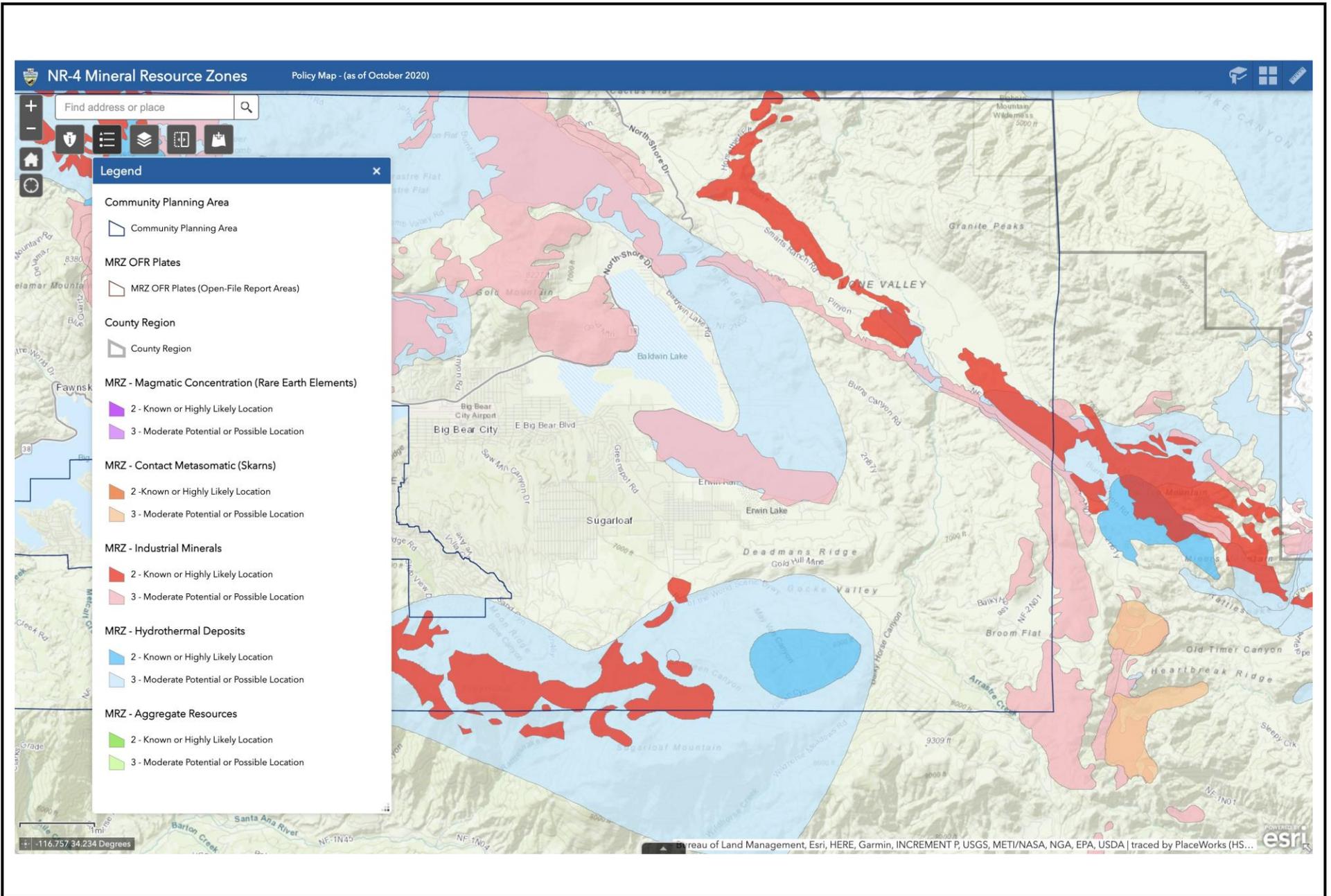


FIGURE XII-1

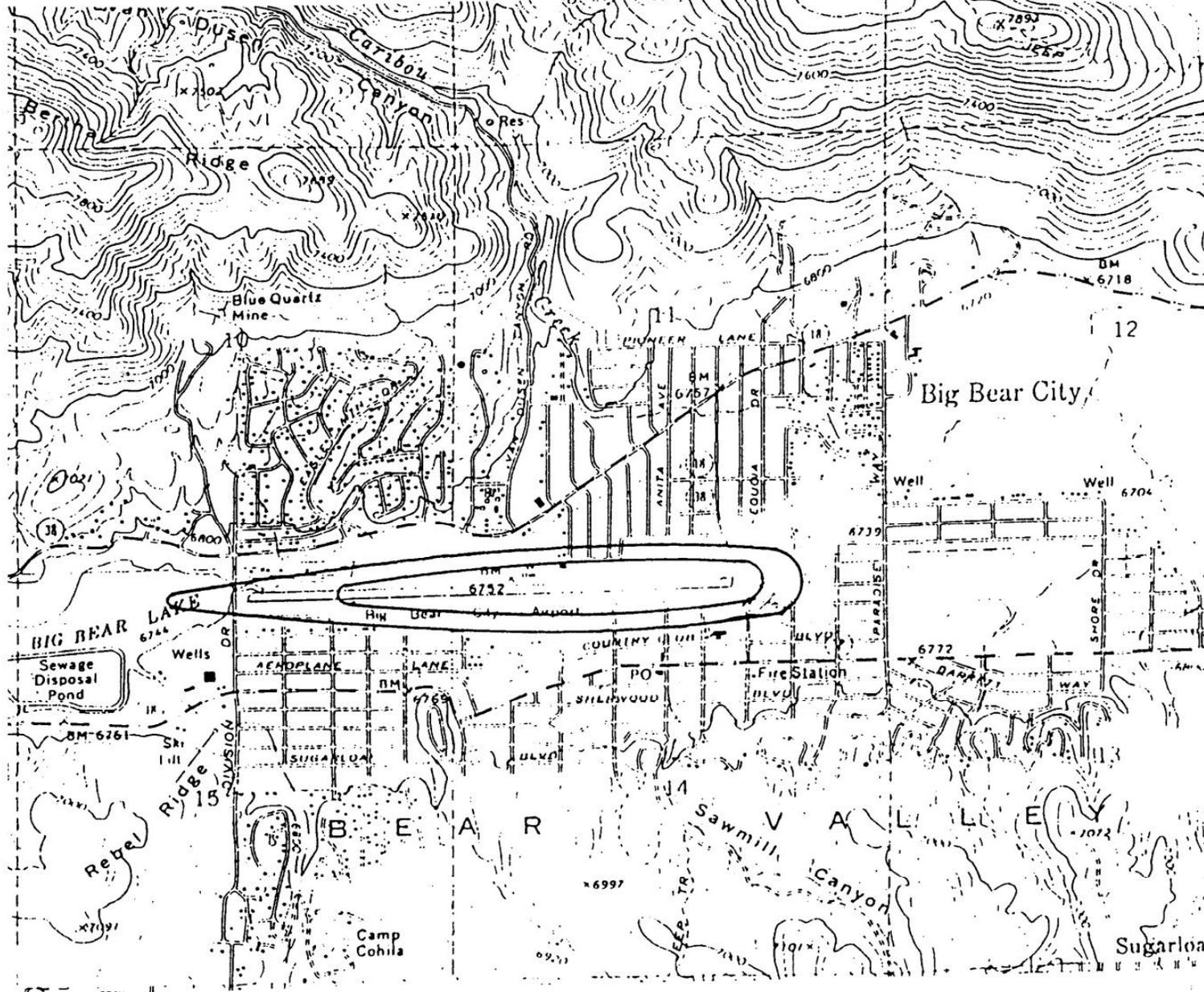


FIGURE XIII-1

APPENDIX 1

AIR QUALITY and GHG IMPACT ANALYSES

**BBL-194
WOLF RESERVOIR AND BOOSTER
REPLACEMENT PROJECT**

BIG BEAR LAKE, CALIFORNIA

Prepared by:

Sara Friedman-Gerrick
Gerrick Environmental

Prepared for:

Tom Dodson & Associates
Attn: Tom Dodson
PO Box 2307
San Bernardino, CA 92406-2307

Date:

March 22, 2023

Project No.: P23-015 AQ

BACKGROUND

The project consists of the installation and operation of a new 603,000-gallon water storage reservoir tank that will demolish and replace the existing 100,000-gallon Wolf Reservoir. The project also includes replacing the existing pump station at the project site with a concrete block building and a metal roof. The project site will be graded and lowered and as a result approximately 2,000 cubic yards (CY) of soil will be removed. The new reservoir will be a welded carbon steel. Construction of the new Wolf Reservoir is proposed to begin in late-2023 and be completed over a twelve-month period. There are existing residential uses adjacent to the site.

ATMOSPHERIC SETTING

The project area is in the San Bernardino Mountains. The area is characterized by an alpine climate, with substantial winter precipitation in the form of winter snow because of its high elevation. Snowfall, as measured at lake level, averages 61.8 inches each year (although upwards of 100 inches can accumulate on the forested ridges bordering the lake, above 8,000 feet). Snow has fallen in every month except July and August. There are normally 16.5 days each year with measurable snow (0.1 inch or more).

On average, the Bear Valley area receives approximately 24 inches of precipitation per year, with a sharp transition between the western edge of the Valley at the dam and the eastern edge at Baldwin Lake. Historical precipitation consists of both rainfall and snowfall. Within the Big Bear watershed, the precipitation varies with location. The west end of the lake, at the Big Bear dam, receives 14 inches per year.

Daily temperatures in the summer are from 60°F to 70°F. Temperatures in the winter average approximately 35 °F to 40 °F. According to the National Weather Service, the warmest month at Big Bear is July, when the average high is 80.7 °F and the average low is 47.1 °F. The coolest month is January, with an average high of 47.1 °F and an average low of 20.7 °F. There is an average of 1.2 days each year with highs of 90 °F or higher. The highest temperature recorded at Big Bear was 94 °F last recorded on July 15, 1998. The record lowest temperature was -25 °F on January 29, 1979.

AMBIENT AIR QUALITY STANDARDS (AAQS)

In order to gauge the significance of the air quality impacts of the proposed project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended several times in air quality problem areas like Southern California. In 2003, the Environmental Protection Agency (EPA) adopted a rule, which extended and established a new attainment deadline for ozone for the year 2021. Because the State of California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 1. Sources and health effects of various pollutants are shown in Table 2.

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) review all national AAQS in light of currently known health effects. EPA was charged with modifying existing standards or promulgating new ones where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted in 1997 for these pollutants.

Planning and enforcement of the federal standards for PM-2.5 and for ozone (8-hour) were challenged by trucking and manufacturing organizations. In a unanimous decision, the U.S. Supreme Court ruled that EPA did not require specific congressional authorization to adopt national clean air standards. The Court also ruled that health-based standards did not require preparation of a cost-benefit analysis. The Court did find, however, that there was some inconsistency between existing and "new" standards in their required attainment schedules. Such attainment-planning schedule inconsistencies centered mainly on the 8-hour ozone standard. EPA subsequently agreed to downgrade the attainment designation for a large number of communities to "non-attainment" for the 8-hour ozone standard.

Table 1

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards ¹		National Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃) ⁸	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)		
Respirable Particulate Matter (PM ₁₀) ⁹	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		—		
Fine Particulate Matter (PM _{2.5}) ⁹	24 Hour	—	—	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	12.0 µg/m ³	15 µg/m ³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—	—	
Nitrogen Dioxide (NO ₂) ¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard	
Sulfur Dioxide (SO ₂) ¹¹	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m ³)	
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for certain areas) ¹¹	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) ¹¹	—	
Lead ^{12,13}	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m ³ (for certain areas) ¹²	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m ³		
Visibility Reducing Particles ¹⁴	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ¹²	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (5/4/16)

Table 1 (continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above $150 \mu\text{g}/\text{m}^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from $15 \mu\text{g}/\text{m}^3$ to $12.0 \mu\text{g}/\text{m}^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at $35 \mu\text{g}/\text{m}^3$, as was the annual secondary standard of $15 \mu\text{g}/\text{m}^3$. The existing 24-hour PM10 standards (primary and secondary) of $150 \mu\text{g}/\text{m}^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ($1.5 \mu\text{g}/\text{m}^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (5/4/16)

Table 2
Health Effects of Major Criteria Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	<ul style="list-style-type: none"> • Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter. 	<ul style="list-style-type: none"> • Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO ₂)	<ul style="list-style-type: none"> • Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions. 	<ul style="list-style-type: none"> • Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O ₃)	<ul style="list-style-type: none"> • Atmospheric reaction of organic gases with nitrogen oxides in sunlight. 	<ul style="list-style-type: none"> • Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	<ul style="list-style-type: none"> • Contaminated soil. 	<ul style="list-style-type: none"> • Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Respirable Particulate Matter (PM-10)	<ul style="list-style-type: none"> • Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions. 	<ul style="list-style-type: none"> • Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	<ul style="list-style-type: none"> • Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NO_x, sulfur oxides, and organics. 	<ul style="list-style-type: none"> • Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO ₂)	<ul style="list-style-type: none"> • Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes. 	<ul style="list-style-type: none"> • Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Evaluation of the most current data on the health effects of inhalation of fine particulate matter prompted the California Air Resources Board (ARB) to recommend adoption of the statewide PM-2.5 standard that is more stringent than the federal standard. This standard was adopted in 2002. The State PM-2.5 standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard, but only requires continued progress towards attainment.

Similarly, the ARB extensively evaluated health effects of ozone exposure. A new state standard for an 8-hour ozone exposure was adopted in 2005, which aligned with the exposure period for the federal 8-hour standard. The California 8-hour ozone standard of 0.07 ppm is more stringent than the federal 8-hour standard of 0.075 ppm. The state standard, however, does not have a specific attainment deadline. California air quality jurisdictions are required to make steady progress towards attaining state standards, but there are no hard deadlines or any consequences of non-attainment. During the same re-evaluation process, the ARB adopted an annual state standard for nitrogen dioxide (NO₂) that is more stringent than the corresponding federal standard, and strengthened the state one-hour NO₂ standard.

As part of EPA's 2002 consent decree on clean air standards, a further review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM-2.5 were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM-10 standards were revoked, and a distinction between rural and urban air quality was adopted. In December, 2012, the federal annual standard for PM-2.5 was reduced from 15 µg/m³ to 12 µg/m³ which matches the California AAQS. The severity of the basin's non-attainment status for PM-2.5 may be increased by this action and thus require accelerated planning for future PM-2.5 attainment.

In response to continuing evidence that ozone exposure at levels just meeting federal clean air standards is demonstrably unhealthful, EPA had proposed a further strengthening of the 8-hour standard. A new 8-hour ozone standard was adopted in 2015 after extensive analysis and public input. The adopted national 8-hour ozone standard is 0.07 ppm which matches the current California standard. It will require three years of ambient data collection, then 2 years of non-attainment findings and planning protocol adoption, then several years of plan development and approval. Final air quality plans for the new standard are likely to be adopted around 2022. Ultimate attainment of the new standard in ozone problem areas such as Southern California might be after 2025.

In 2010 a new federal one-hour primary standard for nitrogen dioxide (NO₂) was adopted. This standard is more stringent than the existing state standard. Based upon air quality monitoring data in the South Coast Air Basin, the California Air Resources Board has requested the EPA to designate the basin as being in attainment for this standard. The federal standard for sulfur dioxide (SO₂) was also recently revised. However, with minimal combustion of coal and mandatory use of low sulfur fuels in California, SO₂ is typically not a problem pollutant.

BASELINE AIR QUALITY

Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the SCAQMD. The data resource in closest proximity to the project site is the Big Bear City Monitoring Station. However, this station only monitors small particulates (PM-2.5). The closest available data for ozone and large particulates (PM-10) is the Crestline Monitoring Station. Data for carbon monoxide and nitrogen oxide were obtained from the San Bernardino 4th Street Monitoring Station. Summary data compiled from these resources is provided in Table 3. Findings are summarized below:

Photochemical smog (ozone) levels frequently exceed standards at Crestline. The 8-hour state ozone standard has been exceeded an average of 30 percent of all days in the past four years near the project site while the 1-hour state standard has been violated an average of 17 percent of all days. While ozone levels are still high, they are much lower than 10 to 20 years ago.

Measurements of carbon monoxide have shown very low baseline levels in comparison to the most stringent one- and eight-hour standards.

Respirable dust (PM-10) levels very rarely exceed the state or federal standard PM-10 standard. There have only been two violations in the last four years of measurement days for state PM-10 and no violations of the federal standard. PM-2.5 on any measurement day.

A substantial fraction of PM-10 is comprised of small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). However, PM-2.5 readings rarely exceed the federal 24-hour PM-2.5 ambient standard and there have had no violations within the previous four years.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table 3
Air Quality Monitoring Summary (2018-2021)
(Number of Days Standards Were Exceeded, and
Maximum Levels During Such Violations)
(Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant/Standard	2018	2019	2020	2021
Ozone				
1-Hour > 0.09 ppm (S)	57	53	69	65
8-Hour > 0.07 ppm (S)	113	99	118	110
8- Hour > 0.075 ppm (F)	91	79	97	91
Max. 1-Hour Conc. (ppm)	0.142	0.129	0.159	0.148
Max. 8-Hour Conc. (ppm)	0.125	0.112	0.139	0.120
Carbon Monoxide				
8- Hour > 9. ppm (S,F)	0	0	0	0
Max 8-hour Conc. (ppm)	2.0	1.2	1.4	1.6
Nitrogen Dioxide				
1-Hour > 0.18 ppm (S)	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.055	0.056	0.054	0.050
Respirable Particulates (PM-10)				
24-hour > 50 µg/m ³ (S)	1/59	0/54	1/40	0/59
24-hour > 150 µg/m ³ (F)	0/59	0/54	0/40	0/59
Max. 24-Hr. Conc. (µg/m ³)	78.	38.	51.	33.
Fine Particulates (PM-2.5)				
24-Hour > 35 µg/m ³ (F)	0/54	0/46	0/58	0/59
Max. 24-Hr. Conc. (µg/m ³)	17.3	31.0	24.3	24.5

Source: South Coast Air Quality Management District;
Crestline Monitoring Station for Ozone and PM-10.
San Bernardino 4th Street Monitoring Station for CO and NO₂.
Big Bear City Monitoring Station for PM-2.5.

data: WWW.ARB.CA.GOV/ADAM/

AIR QUALITY PLANNING

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Substantial reductions in emissions of ROG, NO_x and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air “blueprint” in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date was to “slip” from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary “bump-up” from a “severe non-attainment” area to an “extreme non-attainment” designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on “black-box” measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from “severe-17” to “extreme.” This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM-2.5 control regulations that had not yet been approved or implemented. It was expected that several rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could

result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the one-hour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8-hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated at regular intervals. The 2012 AQMP was adopted in early 2013. An updated 2016 AQMP was adopted by the SCAQMD Board in March 2017. The 2016 AQMD demonstrated the emissions reductions shown in Table 4 compared to the 2012 AQMP.

**Table 4
Comparison of Emissions by Major Source Category From 2012 AQMP**

Pollutant	Stationary Sources	Mobile Sources
VOC	-12%	-3%
NOx	-13%	-1%
SOx	-34%	-23%
PM2.5	-9%	-7%

*source 2016 AQMP

SCAQMD has initiated the development of the 2022 AQMP to address the attainment of the 2015 8-hour ozone standard (70 ppb) for South Coast Air Basin and Coachella Valley which will focus on attaining the 70 ppb 8-hour ozone National Ambient Air Quality Standard (NAAQS) by 2037. On-road vehicles and off-road mobile sources represent the largest categories of NOx emissions. Accomplishment of attainment goals requires an approximate 70% reduction in NOx emissions. Large scale transition to zero emission technologies is a key strategy. To this end, Governor Executive Order N-79-20 requires 100 percent EV sales by 2035 for automobiles and short haul drayage trucks. A full transition to EV buses and heavy-duty long-haul trucks is required by 2045.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water improvement projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

AIR QUALITY IMPACT

STANDARDS OF SIGNIFICANCE

Air quality impacts are considered “significant” if they cause clean air standards to be violated where they are currently met, or if they “substantially” contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix G of the California CEQA Guidelines offers the following four tests of air quality impact significance. A project would have a potentially significant impact if it:

- a) Conflicts with or obstructs implementation of the applicable air quality plan.
- b) Results in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
- c) Exposes sensitive receptors to substantial pollutant concentrations.
- d) Creates objectionable odors affecting a substantial number of people.

Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified number of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that

exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

**Table 5
Daily Emissions Thresholds**

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Additional Indicators

Some of the structures to be demolished have been surveyed and are assumed to contain asbestos. The SCAQMD CEQA Handbook identifies various secondary significance criteria related to toxic, hazardous or odorous air contaminants. Such pollutants may be associated with demolition of existing structures if they contain asbestos, lead-based paint, or other hazardous building materials. Prior to demolition detailed surveys will be conducted to ascertain the possible presence of asbestos, lead-based paint, etc. If any such materials are present, they will be remediated using mandatory procedures specified by Rule 1403-Asbestos Emissions from Demolition and Renovation Activities SCAQMD and state air toxics agencies.

CONSTRUCTION ACTIVITY IMPACTS

CalEEMod was developed by the SCAQMD to provide a model by which to calculate both construction emissions and operational emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The project site encompasses approximately 20,000 sf or about 0.45 acre. The project entails several components. First, the existing 100,000-gallon reservoir will be demolished and will be replaced by a new 603,000-gallon water storage reservoir tank. Second, the project includes replacing the existing pump station at the project site with a new pump station that will include a concrete block building and a metal roof. Finally new piping will be required to provide supporting pipeline connections to the existing potable water distribution system. Construction starts late 2023 and take 12 months, but for ease of calculations it was assumed all construction would occur in year 2024. Existing facilities will be demolished and disposed of. The site will be graded and approximately 2,000 cy of soil will be removed.

Construction was modeled in CalEEMod2020.4.0 using the following construction equipment and schedule shown in Table 6.

**Table 6
Reservoir Construction Activity Equipment Fleet**

Phase Name and Duration	Equipment
Demolition (1 month)	1 Concrete Saw
	1 Drain Pump
	1 Dozer
	2 Loader/Backhoes
Grading (2 weeks) 2,000 CY earthworks export	1 Dozer
	1 Excavator
	1 Grader
New Tank Construction (10 months)	1 Crane/Hoe Ram
	2 Concrete Pumps
	2 Loader/Backhoes
	1 Generator Set
	2 Welders
	1 Stress Tower
Piping (1 month)	2 Trenchers
	2 Forklifts
	1 Welder

Pump Station Demo and Construction

Phase Name and Duration	Equipment
Excavation/Demo 3 weeks	1 Forklift
	1 Masonry Saw
	2 Loader/Backhoes
Building Construction 5 weeks	1 Mixer
	1 Pump
	2 Air Compressors
Equipping and Piping 5 weeks	1 Crane
	1 Loader/Backhoe
	1 Forklift
	1 Welder

Utilizing this indicated equipment fleet and durations shown in Table 6 the following worst-case daily construction emissions are calculated by CalEEMod and are listed in Table 7.

**Table 7
Construction Activity Emissions
Maximum Daily Emissions (pounds/day)**

Maximal Construction Emissions	ROG	NOx	CO	SO₂	PM-10	PM-2.5
Reservoir	1.6	13.5	15.9	0.0	2.8	1.5
Pump Station	1.3	9.9	14.8	0.0	0.6	0.5
Total 2024	2.9	23.4	30.7	0.0	3.4	2.0
SCAQMD Thresholds	75	100	550	150	150	55

*assumes SCAQMD Rule 403 Fugitive Dust applied.

As shown in Table 7, even in the unlikely event both activities overlapped, peak daily emissions would be less than their respective significance thresholds.

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24-hour per day, 365 days per year, 70-year lifetime exposure. The SCAQMD does not generally require the analysis of construction-related diesel emissions relative to health risk due to the short period for which the majority of diesel exhaust would occur. Health risk analyses are typically assessed over a 9-, 30-, or 70-year timeframe and not over a relatively brief construction period due to the lack of health risk associated with such a brief exposure.

LOCALIZED SIGNIFICANCE THRESHOLDS

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

Use of an LST analysis for a project is optional. For the proposed project, the primary source of possible LST impact would be during construction. LSTs are applicable for a sensitive receptor where it is possible that an individual could remain for 24 hours such as a residence, hospital or convalescent facility.

LSTs are only applicable to the following criteria pollutants: oxides of nitrogen (NOx), carbon monoxide (CO), and particulate matter (PM-10 and PM-2.5). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LST screening tables are available for 25, 50, 100, 200 and 500 meter source-receptor distances. For this project, the worst-case conditions for 25 meters are used since there are adjacent residences.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. LST pollutant screening level concentration data is currently published for 1, 2 and 5 acre sites for varying distances. For this project, the most stringent thresholds for a 1-acre site were applied.

The following thresholds and emissions in Table 8 are therefore determined (pounds per day):

**Table 8
LST and Project Emissions (pounds/day)**

LST 1 acre/25 meters E San Bernardino Mountains	CO	NOx	PM-10	PM-2.5
LST Threshold	775	118	4	4
Max On-Site Emissions				
Reservoir	16	14	3	2
Pump Station	15	10	1	1

LSTs were compared to the maximum daily construction activities. As seen in Table 8, with active dust suppression, emissions meet the LST for construction thresholds. LST impacts are less-than-significant.

OPERATIONAL IMPACTS

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping. Electrical consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

Odor Impacts

Project operations (pumping and storage) are an essentially closed system with negligible odor potential. The reservoir will be designed with adequate freeboard (head space between the top of the water and the roof) to contain any surges without forcing the emergency vents to open.

CONSTRUCTION EMISSIONS MINIMIZATION

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air basin and proximity of residential uses. Recommended measures include:

Fugitive Dust Control

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site

Similarly, ozone precursor emissions (ROG and NO_x) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better rated heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

GREENHOUSE GAS EMISSIONS

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth’s atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statutes and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California’s reputation as a “national and international leader on energy conservation and environmental stewardship.” It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate “early action” control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California’s GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), general and industry-specific protocols for assessing and reporting GHG emissions have been

developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

THRESHOLDS OF SIGNIFICANCE

In response to the requirements of SB97, the State Resources Agency developed guidelines for the treatment of GHG emissions under CEQA. These new guidelines became state laws as part of Title 14 of the California Code of Regulations in March, 2010. The CEQA Appendix G guidelines were modified to include GHG as a required analysis element. A project would have a potentially significant impact if it:

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,
- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

Section 15064.4 of the Code specifies how significance of GHG emissions is to be evaluated. The process is broken down into quantification of project-related GHG emissions, making a determination of significance, and specification of any appropriate mitigation if impacts are found to be potentially significant. At each of these steps, the new GHG guidelines afford the lead agency with substantial flexibility.

Emissions identification may be quantitative, qualitative, or based on performance standards. CEQA guidelines allow the lead agency to “select the model or methodology it considers most appropriate.” The most common practice for transportation/combustion GHG emissions quantification is to use a computer model such as CalEEMod, as was used in the ensuing analysis.

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

On December 5, 2008 the SCAQMD Governing Board adopted an Interim quantitative GHG Significance Threshold for industrial projects where the SCAQMD is the lead agency (e.g., stationary source permit projects, rules, plans, etc.) of 10,000 Metric Tons (MT) CO₂ equivalent/year. In September 2010, the SCAQMD CEQA Significance Thresholds GHG Working Group released revisions which recommended a threshold of 3,000 MT CO₂e for all land use projects. This 3,000 MT/year recommendation has been used as a guideline for this analysis. In the absence of an adopted numerical threshold of significance, project related GHG emissions in excess of the guideline level are presumed to trigger a requirement for enhanced GHG reduction at the project level.

PROJECT RELATED GHG EMISSIONS GENERATION

Construction Activity GHG Emissions

The project is assumed to occur over a 12-month period. During project construction, the CalEEMod2020.4.0 computer model predicts that the construction activities will generate the annual CO₂e emissions identified in Table 9.

Table 9
Construction Emissions (Metric Tons CO₂e)

2024	CO₂e
Reservoir	293.0
Pump Station	30.5
Total	323.5
Amortized	10.8

CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less-than-significant.

CONSISTENCY WITH GHG PLANS, PROGRAMS AND POLICIES

In March 2014, the San Bernardino Associated Governments and Participating San Bernardino County Cities Partnership (Partnership) created a final draft of the San Bernardino County Regional Greenhouse Gas Reduction Plan (Reduction Plan) for each of the 25 jurisdictional Partner Cities in the County. The plan was recently updated in March of 2021. The Reduction Plan was created in accordance with AB 32, which established a greenhouse gas limit for the state of California. The Reduction Plan seeks to create an inventory of GHG gases and develop jurisdiction specific GHG reduction measures and baseline information that could be used by the Partnership Cities of San Bernardino County, including the County itself.

Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the Reduction Plan would have a less than significant impact on climate change. The project will generate little GHG emissions as shown in Table 9. There are really no measures directly applicable to this water improvement project. The only emissions will be during construction and these emissions are minimal. Therefore, consistency with the Reduction Plan would result in a less than significant impact with respect to GHG emissions.

CALEEMOD2020.4.0 COMPUTER MODEL OUTPUT

RESERVOIR DEMOLITION AND CONSTRUCTION

- **DAILY EMISISONS**
- **ANNUAL EMISSIONS**

LIFT STATION DEMOLITION AND CONSTRUCTION

- **DAILY EMISISONS**
- **ANNUAL EMISSIONS**

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir, Big Bear
South Coast Air Basin, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.45	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	390.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site size is 20,000 sf

Construction Phase - Demo: 1 month, Grading: 2 weeks, Construction: 10 months, Pipeline: 1 month

Grading - 2,000 cy export

Off-road Equipment - Demo: 1 concrete saw, 1 pump, 1 dozer, 2 loader/backhoes

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Off-road Equipment - Construction: 1 crane, 1 stress tower, 2 loader/backhoes, 1 generator set, 2 pumps, 2 welders

Off-road Equipment - Piping: 2 trenchers, 2 forklifts, 1 welder

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	200.00

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	PhaseEndDate	6/5/2024	11/20/2024
tblConstructionPhase	PhaseEndDate	1/12/2024	1/30/2024
tblConstructionPhase	PhaseEndDate	1/17/2024	2/14/2024
tblConstructionPhase	PhaseStartDate	1/18/2024	2/15/2024
tblConstructionPhase	PhaseStartDate	1/16/2024	2/1/2024
tblGrading	AcresOfGrading	7.50	1.50
tblGrading	MaterialExported	0.00	2,000.00
tblLandUse	LotAcreage	0.00	0.45
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	UsageHours	1.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	1.5731	13.5152	15.9377	0.0302	5.2248	0.5753	5.6407	2.6468	0.5557	3.0303	0.0000	3,117.3237	3,117.3237	0.5767	0.2506	3,206.4326
Maximum	1.5731	13.5152	15.9377	0.0302	5.2248	0.5753	5.6407	2.6468	0.5557	3.0303	0.0000	3,117.3237	3,117.3237	0.5767	0.2506	3,206.4326

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	1.5731	12.6201	15.9377	0.0302	2.3589	0.5753	2.7748	1.1198	0.5557	1.5033	0.0000	3,117.3237	3,117.3237	0.5767	0.2506	3,206.4326
Maximum	1.5731	12.6201	15.9377	0.0302	2.3589	0.5753	2.7748	1.1198	0.5557	1.5033	0.0000	3,117.3237	3,117.3237	0.5767	0.2506	3,206.4326

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	6.62	0.00	0.00	54.85	0.00	50.81	57.69	0.00	50.39	0.00	0.00	0.00	0.00	0.00	0.00

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	1/30/2024	5	22	
2	Grading	Grading	2/1/2024	2/14/2024	5	10	
3	Building Construction	Building Construction	2/15/2024	11/20/2024	5	200	
4	Piping	Trenching	11/25/2024	12/20/2024	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Pumps	1	6.00	84	0.74
Grading	Excavators	1	6.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	2	4.00	231	0.29
Piping	Trenchers	2	6.00	78	0.50
Grading	Graders	1	6.00	187	0.41
Building Construction	Pumps	2	6.00	84	0.74

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Welders	2	6.00	46	0.45
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Piping	Forklifts	2	6.00	89	0.20
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Piping	Welders	1	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962
Total	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962
Total	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6983	0.0000	4.6983	2.5033	0.0000	2.5033			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623		1,475.8154	1,475.8154	0.4773		1,487.7481
Total	0.9224	9.5147	6.0394	0.0152	4.6983	0.3938	5.0920	2.5033	0.3623	2.8655		1,475.8154	1,475.8154	0.4773		1,487.7481

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0524	3.0902	0.8740	0.0142	0.4371	0.0217	0.4588	0.1198	0.0208	0.1406		1,564.7617	1,564.7617	0.0977	0.2490	1,641.3946
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0236	0.0152	0.2597	7.6000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		76.7466	76.7466	1.7400e-003	1.6800e-003	77.2900
Total	0.0760	3.1054	1.1337	0.0149	0.5265	0.0222	0.5487	0.1435	0.0212	0.1647		1,641.5083	1,641.5083	0.0994	0.2506	1,718.6845

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.8323	0.0000	1.8323	0.9763	0.0000	0.9763			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623	0.0000	1,475.8154	1,475.8154	0.4773		1,487.7481
Total	0.9224	9.5147	6.0394	0.0152	1.8323	0.3938	2.2261	0.9763	0.3623	1.3386	0.0000	1,475.8154	1,475.8154	0.4773		1,487.7481

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0524	3.0902	0.8740	0.0142	0.4371	0.0217	0.4588	0.1198	0.0208	0.1406		1,564.7617	1,564.7617	0.0977	0.2490	1,641.3946
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0236	0.0152	0.2597	7.6000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		76.7466	76.7466	1.7400e-003	1.6800e-003	77.2900
Total	0.0760	3.1054	1.1337	0.0149	0.5265	0.0222	0.5487	0.1435	0.0212	0.1647		1,641.5083	1,641.5083	0.0994	0.2506	1,718.6845

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5731	13.5152	15.9377	0.0291		0.5753	0.5753		0.5557	0.5557		2,722.6668	2,722.6668	0.4183		2,733.1247
Total	1.5731	13.5152	15.9377	0.0291		0.5753	0.5753		0.5557	0.5557		2,722.6668	2,722.6668	0.4183		2,733.1247

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5731	9.5357	15.9377	0.0291		0.5753	0.5753		0.5557	0.5557	0.0000	2,722.6668	2,722.6668	0.4183		2,733.1247
Total	1.5731	9.5357	15.9377	0.0291		0.5753	0.5753		0.5557	0.5557	0.0000	2,722.6668	2,722.6668	0.4183		2,733.1247

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

3.5 Piping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8315	7.1303	6.8730	9.3100e-003		0.4420	0.4420		0.4095	0.4095		871.9586	871.9586	0.2476		878.1476
Total	0.8315	7.1303	6.8730	9.3100e-003		0.4420	0.4420		0.4095	0.4095		871.9586	871.9586	0.2476		878.1476

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8315	1.3319	6.8730	9.3100e-003		0.4420	0.4420		0.4095	0.4095	0.0000	871.9586	871.9586	0.2476		878.1476
Total	0.8315	1.3319	6.8730	9.3100e-003		0.4420	0.4420		0.4095	0.4095	0.0000	871.9586	871.9586	0.2476		878.1476

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - Natural Gas

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir, Big Bear
South Coast Air Basin, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.45	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - site size is 20,000 sf

Construction Phase - Demo: 1 month, Grading: 2 weeks, Construction: 10 months, Pipeline: 1 month

Grading - 2,000 cy export

Off-road Equipment - Demo: 1 concrete saw, 1 pump, 1 dozer, 2 loader/backhoes

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Off-road Equipment - Construction: 1 crane, 1 stress tower, 2 loader/backhoes, 1 generator set, 2 pumps, 2 welders

Off-road Equipment - Piping: 2 trenchers, 2 forklifts, 1 welder

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	200.00

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	PhaseEndDate	6/5/2024	11/20/2024
tblConstructionPhase	PhaseEndDate	1/12/2024	1/30/2024
tblConstructionPhase	PhaseEndDate	1/17/2024	2/14/2024
tblConstructionPhase	PhaseStartDate	1/18/2024	2/15/2024
tblConstructionPhase	PhaseStartDate	1/16/2024	2/1/2024
tblGrading	AcresOfGrading	7.50	1.50
tblGrading	MaterialExported	0.00	2,000.00
tblLandUse	LotAcreage	0.00	0.45
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Piping
tblOffRoadEquipment	UsageHours	1.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1851	1.6176	1.8362	3.4100e-003	0.0277	0.0700	0.0976	0.0136	0.0672	0.0809	0.0000	291.5101	291.5101	0.0468	1.1700e-003	293.0277
Maximum	0.1851	1.6176	1.8362	3.4100e-003	0.0277	0.0700	0.0976	0.0136	0.0672	0.0809	0.0000	291.5101	291.5101	0.0468	1.1700e-003	293.0277

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1851	1.1617	1.8362	3.4100e-003	0.0133	0.0700	0.0833	6.0000e-003	0.0672	0.0732	0.0000	291.5098	291.5098	0.0468	1.1700e-003	293.0274
Maximum	0.1851	1.1617	1.8362	3.4100e-003	0.0133	0.0700	0.0833	6.0000e-003	0.0672	0.0732	0.0000	291.5098	291.5098	0.0468	1.1700e-003	293.0274

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	28.19	0.00	0.00	51.83	0.00	14.68	56.01	0.00	9.45	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2024	3-31-2024	0.4582	0.3929
2	4-1-2024	6-30-2024	0.4904	0.3610
3	7-1-2024	9-30-2024	0.4958	0.3650
		Highest	0.4958	0.3929

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	1/30/2024	5	22	
2	Grading	Grading	2/1/2024	2/14/2024	5	10	
3	Building Construction	Building Construction	2/15/2024	11/20/2024	5	200	

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Piping	Trenching	11/25/2024	12/20/2024	5	20
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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Pumps	1	6.00	84	0.74
Grading	Excavators	1	6.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	2	4.00	231	0.29
Piping	Trenchers	2	6.00	78	0.50
Grading	Graders	1	6.00	187	0.41
Building Construction	Pumps	2	6.00	84	0.74
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Welders	2	6.00	46	0.45
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Piping	Forklifts	2	6.00	89	0.20
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Piping	Welders	1	6.00	46	0.45

Trips and VMT

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3823
Total	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3823

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013
Total	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3822
Total	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3822

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013
Total	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0235	0.0000	0.0235	0.0125	0.0000	0.0125	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6100e-003	0.0476	0.0302	8.0000e-005		1.9700e-003	1.9700e-003		1.8100e-003	1.8100e-003	0.0000	6.6942	6.6942	2.1700e-003	0.0000	6.7483
Total	4.6100e-003	0.0476	0.0302	8.0000e-005	0.0235	1.9700e-003	0.0255	0.0125	1.8100e-003	0.0143	0.0000	6.6942	6.6942	2.1700e-003	0.0000	6.7483

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	0.0163	4.3900e-003	7.0000e-005	2.1500e-003	1.1000e-004	2.2600e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	7.1007	7.1007	4.4000e-004	1.1300e-003	7.4485
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	9.0000e-005	1.2100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3334	0.3334	1.0000e-005	1.0000e-005	0.3360
Total	3.7000e-004	0.0164	5.6000e-003	7.0000e-005	2.5900e-003	1.1000e-004	2.7000e-003	7.1000e-004	1.0000e-004	8.1000e-004	0.0000	7.4341	7.4341	4.5000e-004	1.1400e-003	7.7845

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.1600e-003	0.0000	9.1600e-003	4.8800e-003	0.0000	4.8800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6100e-003	0.0476	0.0302	8.0000e-005		1.9700e-003	1.9700e-003		1.8100e-003	1.8100e-003	0.0000	6.6942	6.6942	2.1700e-003	0.0000	6.7483
Total	4.6100e-003	0.0476	0.0302	8.0000e-005	9.1600e-003	1.9700e-003	0.0111	4.8800e-003	1.8100e-003	6.6900e-003	0.0000	6.6942	6.6942	2.1700e-003	0.0000	6.7483

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5000e-004	0.0163	4.3900e-003	7.0000e-005	2.1500e-003	1.1000e-004	2.2600e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	7.1007	7.1007	4.4000e-004	1.1300e-003	7.4485
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	9.0000e-005	1.2100e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3334	0.3334	1.0000e-005	1.0000e-005	0.3360
Total	3.7000e-004	0.0164	5.6000e-003	7.0000e-005	2.5900e-003	1.1000e-004	2.7000e-003	7.1000e-004	1.0000e-004	8.1000e-004	0.0000	7.4341	7.4341	4.5000e-004	1.1400e-003	7.7845

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3100e-003	0.0713	0.0687	9.0000e-005		4.4200e-003	4.4200e-003		4.1000e-003	4.1000e-003	0.0000	7.9103	7.9103	2.2500e-003	0.0000	7.9664
Total	8.3100e-003	0.0713	0.0687	9.0000e-005		4.4200e-003	4.4200e-003		4.1000e-003	4.1000e-003	0.0000	7.9103	7.9103	2.2500e-003	0.0000	7.9664

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.3100e-003	0.0133	0.0687	9.0000e-005		4.4200e-003	4.4200e-003		4.1000e-003	4.1000e-003	0.0000	7.9103	7.9103	2.2500e-003	0.0000	7.9664
Total	8.3100e-003	0.0133	0.0687	9.0000e-005		4.4200e-003	4.4200e-003		4.1000e-003	4.1000e-003	0.0000	7.9103	7.9103	2.2500e-003	0.0000	7.9664

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir Big Bear Pump Station
South Coast Air Basin, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	390.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - assumes half the site undergoes grading disturbance

Construction Phase - Demo/Excavation: 3 weeks, Building Construction: 5 weeks, Equipping and Piping: 5 weeks

Off-road Equipment - Excavation Demo: 1 Masonry Saw, 2 Loader/Backhoes, 1 Forklift

Off-road Equipment - Construction: 1 mixer, 1 pump, 2 air compressors

Off-road Equipment - Equipping and Pipeline: 1 crane, 1 loader/backhoe, 1 welder

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	25.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	PhaseEndDate	6/12/2024	2/28/2024

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseEndDate	1/19/2024	1/26/2024
tblLandUse	LotAcreage	0.00	0.20
tblOffRoadEquipment	LoadFactor	0.29	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Welders

2.0 Emissions Summary

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/8/2024	1/26/2024	5	15	
2	Building Construction	Building Construction	1/25/2024	2/28/2024	5	25	
3	Equiping and Piping	Trenching	3/1/2024	4/4/2024	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Forklifts	1	6.00	89	0.20
Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Equiping and Piping	Cranes	1	4.00	231	0.29
Equiping and Piping	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Pumps	1	6.00	84	0.74
Building Construction	Air Compressors	2	6.00	78	0.48
Equiping and Piping	Forklifts	1	6.00	89	0.20

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equiping and Piping	Welders	1	6.00	46	0.45
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Equiping and Piping	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5998	5.2526	7.8622	0.0121		0.2487	0.2487		0.2377	0.2377		1,156.8930	1,156.8930	0.2106		1,162.1590
Total	0.5998	5.2526	7.8622	0.0121		0.2487	0.2487		0.2377	0.2377		1,156.8930	1,156.8930	0.2106		1,162.1590

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125
Total	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5998	5.2526	7.8622	0.0121		0.2487	0.2487		0.2377	0.2377	0.0000	1,156.8930	1,156.8930	0.2106		1,162.1590
Total	0.5998	5.2526	7.8622	0.0121		0.2487	0.2487		0.2377	0.2377	0.0000	1,156.8930	1,156.8930	0.2106		1,162.1590

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125
Total	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125

3.3 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6350	4.6476	6.6414	0.0114		0.2205	0.2205		0.2205	0.2205		1,068.0593	1,068.0593	0.0562		1,069.4639
Total	0.6350	4.6476	6.6414	0.0114		0.2205	0.2205		0.2205	0.2205		1,068.0593	1,068.0593	0.0562		1,069.4639

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6350	4.6476	6.6414	0.0114		0.2205	0.2205		0.2205	0.2205	0.0000	1,068.0593	1,068.0593	0.0562		1,069.4639
Total	0.6350	4.6476	6.6414	0.0114		0.2205	0.2205		0.2205	0.2205	0.0000	1,068.0593	1,068.0593	0.0562		1,069.4639

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

3.4 Equiping and Piping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5202	4.5240	4.6580	8.2600e-003		0.1961	0.1961		0.1833	0.1833		770.1672	770.1672	0.2146		775.5332
Total	0.5202	4.5240	4.6580	8.2600e-003		0.1961	0.1961		0.1833	0.1833		770.1672	770.1672	0.2146		775.5332

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Equiping and Piping - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125
Total	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5202	4.5240	4.6580	8.2600e-003		0.1961	0.1961		0.1833	0.1833	0.0000	770.1672	770.1672	0.2146		775.5332
Total	0.5202	4.5240	4.6580	8.2600e-003		0.1961	0.1961		0.1833	0.1833	0.0000	770.1672	770.1672	0.2146		775.5332

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Equiping and Piping - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125
Total	0.0295	0.0190	0.3246	9.5000e-004	0.1118	6.0000e-004	0.1124	0.0296	5.5000e-004	0.0302		95.9333	95.9333	2.1700e-003	2.1000e-003	96.6125

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir Big Bear Pump Station
South Coast Air Basin, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - assumes half the site undergoes grading disturbance

Construction Phase - Demo/Excavation: 3 weeks, Building Construction: 5 weeks, Equipping and Piping: 5 weeks

Off-road Equipment - Excavation Demo: 1 Masonry Saw, 2 Loader/Backhoes, 1 Forklift

Off-road Equipment - Construction: 1 mixer, 1 pump, 2 air compressors

Off-road Equipment - Equipping and Pipeline: 1 crane, 1 loader/backhoe, 1 welder

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	25.00
tblConstructionPhase	NumDays	10.00	15.00
tblConstructionPhase	PhaseEndDate	6/12/2024	2/28/2024

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseEndDate	1/19/2024	1/26/2024
tblLandUse	LotAcreage	0.00	0.20
tblOffRoadEquipment	LoadFactor	0.29	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Welders

2.0 Emissions Summary

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-8-2024	4-7-2024	0.1698	0.1698
		Highest	0.1698	0.1698

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/8/2024	1/26/2024	5	15	
2	Building Construction	Building Construction	1/25/2024	2/28/2024	5	25	
3	Equiping and Piping	Trenching	3/1/2024	4/4/2024	5	25	

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Forklifts	1	6.00	89	0.20
Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Equiping and Piping	Cranes	1	4.00	231	0.29
Equiping and Piping	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Pumps	1	6.00	84	0.74
Building Construction	Air Compressors	2	6.00	78	0.48
Equiping and Piping	Forklifts	1	6.00	89	0.20
Equiping and Piping	Welders	1	6.00	46	0.45
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Equiping and Piping	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-003	0.0394	0.0590	9.0000e-005		1.8700e-003	1.8700e-003		1.7800e-003	1.7800e-003	0.0000	7.8714	7.8714	1.4300e-003	0.0000	7.9072
Total	4.5000e-003	0.0394	0.0590	9.0000e-005		1.8700e-003	1.8700e-003		1.7800e-003	1.7800e-003	0.0000	7.8714	7.8714	1.4300e-003	0.0000	7.9072

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	2.2800e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6251	0.6251	2.0000e-005	2.0000e-005	0.6300
Total	2.2000e-004	1.6000e-004	2.2800e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6251	0.6251	2.0000e-005	2.0000e-005	0.6300

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-003	0.0394	0.0590	9.0000e-005		1.8700e-003	1.8700e-003		1.7800e-003	1.7800e-003	0.0000	7.8714	7.8714	1.4300e-003	0.0000	7.9072
Total	4.5000e-003	0.0394	0.0590	9.0000e-005		1.8700e-003	1.8700e-003		1.7800e-003	1.7800e-003	0.0000	7.8714	7.8714	1.4300e-003	0.0000	7.9072

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	2.2800e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6251	0.6251	2.0000e-005	2.0000e-005	0.6300
Total	2.2000e-004	1.6000e-004	2.2800e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6251	0.6251	2.0000e-005	2.0000e-005	0.6300

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Equiping and Piping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.5000e-003	0.0566	0.0582	1.0000e-004		2.4500e-003	2.4500e-003		2.2900e-003	2.2900e-003	0.0000	8.7336	8.7336	2.4300e-003	0.0000	8.7944
Total	6.5000e-003	0.0566	0.0582	1.0000e-004		2.4500e-003	2.4500e-003		2.2900e-003	2.2900e-003	0.0000	8.7336	8.7336	2.4300e-003	0.0000	8.7944

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.7000e-004	3.7900e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0418	1.0418	3.0000e-005	3.0000e-005	1.0501
Total	3.6000e-004	2.7000e-004	3.7900e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0418	1.0418	3.0000e-005	3.0000e-005	1.0501

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Equiping and Piping - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.5000e-003	0.0566	0.0582	1.0000e-004		2.4500e-003	2.4500e-003		2.2900e-003	2.2900e-003	0.0000	8.7335	8.7335	2.4300e-003	0.0000	8.7944
Total	6.5000e-003	0.0566	0.0582	1.0000e-004		2.4500e-003	2.4500e-003		2.2900e-003	2.2900e-003	0.0000	8.7335	8.7335	2.4300e-003	0.0000	8.7944

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.7000e-004	3.7900e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0418	1.0418	3.0000e-005	3.0000e-005	1.0501
Total	3.6000e-004	2.7000e-004	3.7900e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0418	1.0418	3.0000e-005	3.0000e-005	1.0501

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir, Big Bear
South Coast Air Basin, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.45	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10	Operational Year		2024	
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use size is 20,000 sf

Construction Phase - Demo: 1 month, Grading: 1 month, Construction: 10 months, Pipeline: 1 month

Off-road Equipment - Construction: 1 crane, 1 stress tower, 2 loader/backhoes, 1 generator set, 2 pumps, 2 welders

Off-road Equipment - Demo: 1 concrete saw, 1 pump, 1 dozer, 2 loader/backhoes

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Off-road Equipment - Piping: 2 trenchers, 2 forklifts, 1 welder

Trips and VMT - 3,600 CY exported, 10 cy per truck = 360 truck loads x 2 = 720 total haul trips (inbound/outbound), Haul TL = 10 miles

Grading - 3,600 cy export

Construction Off-road Equipment Mitigation -

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	200.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00
tblGrading	AcresOfGrading	16.50	1.50
tblGrading	MaterialExported	0.00	3,600.00
tblLandUse	LotAcreage	0.00	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripNumber	450.00	720.00

2.0 Emissions Summary

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.5712	25.3629	23.0569	0.0547	4.9833	0.9843	5.9676	2.5955	0.9325	3.5281	0.0000	5,344.7397	5,344.7397	0.9632	0.1715	5,419.9310
2025	1.4697	12.6195	15.8762	0.0291	0.1453	0.5000	0.5365	0.0385	0.4827	0.4827	0.0000	2,724.9544	2,724.9544	0.4119	2.5500e-003	2,735.2527
Maximum	2.5712	25.3629	23.0569	0.0547	4.9833	0.9843	5.9676	2.5955	0.9325	3.5281	0.0000	5,344.7397	5,344.7397	0.9632	0.1715	5,419.9310

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.5712	25.3629	23.0569	0.0547	2.1728	0.9843	3.1571	1.0746	0.9325	2.0072	0.0000	5,344.7397	5,344.7397	0.9632	0.1715	5,419.9310
2025	1.4697	12.6195	15.8762	0.0291	0.1453	0.5000	0.5365	0.0385	0.4827	0.4827	0.0000	2,724.9544	2,724.9544	0.4119	2.5500e-003	2,735.2527
Maximum	2.5712	25.3629	23.0569	0.0547	2.1728	0.9843	3.1571	1.0746	0.9325	2.0072	0.0000	5,344.7397	5,344.7397	0.9632	0.1715	5,419.9310

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.80	0.00	43.21	57.74	0.00	37.92	0.00	0.00	0.00	0.00	0.00	0.00

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2024	5/30/2024	5	22	
2	Grading	Grading	6/3/2024	7/2/2024	5	22	
3	Building Construction	Building Construction	7/1/2024	4/4/2025	5	200	
4	Piping	Trenching	4/5/2025	5/2/2025	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Pumps	1	6.00	84	0.74
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	1	6.00	158	0.38
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Cranes	2	4.00	231	0.29
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Pumps	2	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Welders	2	6.00	46	0.45
Piping	Forklifts	2	6.00	89	0.20
Piping	Trenchers	2	6.00	78	0.50
Piping	Welders	1	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	720.00	14.70	6.90	10.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Piping	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962
Total	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962
Total	0.0384	0.0247	0.4220	1.2300e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		124.7132	124.7132	2.8200e-003	2.7300e-003	125.5962

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6074	0.0000	4.6074	2.4933	0.0000	2.4933			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623		1,475.815 4	1,475.815 4	0.4773		1,487.748 1
Total	0.9224	9.5147	6.0394	0.0152	4.6074	0.3938	5.0012	2.4933	0.3623	2.8556		1,475.815 4	1,475.815 4	0.4773		1,487.748 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0512	2.3090	0.8065	9.6600e-003	0.2865	0.0144	0.3008	0.0785	0.0137	0.0923		1,067.675 9	1,067.675 9	0.0653	0.1698	1,119.918 3
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0236	0.0152	0.2597	7.6000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		76.7466	76.7466	1.7400e-003	1.6800e-003	77.2900
Total	0.0748	2.3242	1.0662	0.0104	0.3759	0.0148	0.3907	0.1023	0.0142	0.1164		1,144.422 5	1,144.422 5	0.0670	0.1715	1,197.208 3

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7969	0.0000	1.7969	0.9724	0.0000	0.9724			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623	0.0000	1,475.815 4	1,475.815 4	0.4773		1,487.748 1
Total	0.9224	9.5147	6.0394	0.0152	1.7969	0.3938	2.1907	0.9724	0.3623	1.3347	0.0000	1,475.815 4	1,475.815 4	0.4773		1,487.748 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0512	2.3090	0.8065	9.6600e-003	0.2865	0.0144	0.3008	0.0785	0.0137	0.0923		1,067.675 9	1,067.675 9	0.0653	0.1698	1,119.918 3
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0236	0.0152	0.2597	7.6000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		76.7466	76.7466	1.7400e-003	1.6800e-003	77.2900
Total	0.0748	2.3242	1.0662	0.0104	0.3759	0.0148	0.3907	0.1023	0.0142	0.1164		1,144.422 5	1,144.422 5	0.0670	0.1715	1,197.208 3

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561		2,724.5018	2,724.5018	0.4189		2,734.9746
Total	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561		2,724.5018	2,724.5018	0.4189		2,734.9746

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561	0.0000	2,724.5018	2,724.5018	0.4189		2,734.9746
Total	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561	0.0000	2,724.5018	2,724.5018	0.4189		2,734.9746

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827		2,724.954 4	2,724.954 4	0.4119		2,735.252 7
Total	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827		2,724.954 4	2,724.954 4	0.4119		2,735.252 7

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827	0.0000	2,724.954 4	2,724.954 4	0.4119		2,735.252 7
Total	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827	0.0000	2,724.954 4	2,724.954 4	0.4119		2,735.252 7

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617		868.6722	868.6722	0.2454		874.8074
Total	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617		868.6722	868.6722	0.2454		874.8074

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0359	0.0222	0.3931	1.1900e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		120.4634	120.4634	2.5500e-003	2.5500e-003	121.2869
Total	0.0359	0.0222	0.3931	1.1900e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		120.4634	120.4634	2.5500e-003	2.5500e-003	121.2869

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617	0.0000	868.6722	868.6722	0.2454		874.8074
Total	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617	0.0000	868.6722	868.6722	0.2454		874.8074

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0359	0.0222	0.3931	1.1900e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		120.4634	120.4634	2.5500e-003	2.5500e-003	121.2869
Total	0.0359	0.0222	0.3931	1.1900e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		120.4634	120.4634	2.5500e-003	2.5500e-003	121.2869

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir, Big Bear - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Wolf Reservoir, Big Bear

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.45	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10	Operational Year		2024	
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use size is 20,000 sf

Construction Phase - Demo: 1 month, Grading: 1 month, Construction: 10 months, Pipeline: 1 month

Off-road Equipment - Construction: 1 crane, 1 stress tower, 2 loader/backhoes, 1 generator set, 2 pumps, 2 welders

Off-road Equipment - Demo: 1 concrete saw, 1 pump, 1 dozer, 2 loader/backhoes

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Off-road Equipment - Piping: 2 trenchers, 2 forklifts, 1 welder

Trips and VMT - 3,600 CY exported, 10 cy per truck = 360 truck loads x 2 = 720 total haul trips (inbound/outbound), Haul TL = 10 miles

Grading - 3,600 cy export

Construction Off-road Equipment Mitigation -

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	200.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00
tblGrading	AcresOfGrading	16.50	1.50
tblGrading	MaterialExported	0.00	3,600.00
tblLandUse	LotAcreage	0.00	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripNumber	450.00	720.00

2.0 Emissions Summary

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.5684	25.4770	23.0497	0.0547	4.9833	0.9844	5.9676	2.5955	0.9326	3.5281	0.0000	5,342.6007	5,342.6007	0.9630	0.1720	5,417.9192
2025	1.4697	12.6195	15.8762	0.0291	0.1453	0.5000	0.5365	0.0385	0.4827	0.4827	0.0000	2,724.9544	2,724.9544	0.4119	2.7100e-003	2,735.2527
Maximum	2.5684	25.4770	23.0497	0.0547	4.9833	0.9844	5.9676	2.5955	0.9326	3.5281	0.0000	5,342.6007	5,342.6007	0.9630	0.1720	5,417.9192

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.5684	25.4770	23.0497	0.0547	2.1728	0.9844	3.1571	1.0746	0.9326	2.0072	0.0000	5,342.6007	5,342.6007	0.9630	0.1720	5,417.9192
2025	1.4697	12.6195	15.8762	0.0291	0.1453	0.5000	0.5365	0.0385	0.4827	0.4827	0.0000	2,724.9544	2,724.9544	0.4119	2.7100e-003	2,735.2527
Maximum	2.5684	25.4770	23.0497	0.0547	2.1728	0.9844	3.1571	1.0746	0.9326	2.0072	0.0000	5,342.6007	5,342.6007	0.9630	0.1720	5,417.9192

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2024	5/30/2024	5	22	
2	Grading	Grading	6/3/2024	7/2/2024	5	22	
3	Building Construction	Building Construction	7/1/2024	4/4/2025	5	200	
4	Piping	Trenching	4/5/2025	5/2/2025	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Pumps	1	6.00	84	0.74
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	1	6.00	158	0.38
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Cranes	2	4.00	231	0.29
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Pumps	2	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Welders	2	6.00	46	0.45
Piping	Forklifts	2	6.00	89	0.20
Piping	Trenchers	2	6.00	78	0.50
Piping	Welders	1	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	720.00	14.70	6.90	10.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Piping	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119		2,132.8264	2,132.8264	0.3957		2,142.7191

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0410	0.0271	0.3849	1.1700e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		117.7696	117.7696	2.8700e-003	2.9000e-003	118.7044
Total	0.0410	0.0271	0.3849	1.1700e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		117.7696	117.7696	2.8700e-003	2.9000e-003	118.7044

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191
Total	1.2795	11.8663	12.1416	0.0223		0.5391	0.5391		0.5119	0.5119	0.0000	2,132.8264	2,132.8264	0.3957		2,142.7191

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0410	0.0271	0.3849	1.1700e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		117.7696	117.7696	2.8700e-003	2.9000e-003	118.7044
Total	0.0410	0.0271	0.3849	1.1700e-003	0.1453	7.8000e-004	0.1461	0.0385	7.2000e-004	0.0393		117.7696	117.7696	2.8700e-003	2.9000e-003	118.7044

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6074	0.0000	4.6074	2.4933	0.0000	2.4933			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623		1,475.815 4	1,475.815 4	0.4773		1,487.748 1
Total	0.9224	9.5147	6.0394	0.0152	4.6074	0.3938	5.0012	2.4933	0.3623	2.8556		1,475.815 4	1,475.815 4	0.4773		1,487.748 1

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0468	2.4216	0.8221	9.6800e-003	0.2865	0.0144	0.3009	0.0785	0.0138	0.0923		1,069.809 9	1,069.809 9	0.0650	0.1702	1,122.147 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0252	0.0167	0.2368	7.2000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		72.4736	72.4736	1.7700e-003	1.7800e-003	73.0488
Total	0.0720	2.4383	1.0590	0.0104	0.3759	0.0149	0.3908	0.1023	0.0142	0.1165		1,142.283 5	1,142.283 5	0.0668	0.1720	1,195.196 5

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7969	0.0000	1.7969	0.9724	0.0000	0.9724			0.0000			0.0000
Off-Road	0.9224	9.5147	6.0394	0.0152		0.3938	0.3938		0.3623	0.3623	0.0000	1,475.815 4	1,475.815 4	0.4773		1,487.748 1
Total	0.9224	9.5147	6.0394	0.0152	1.7969	0.3938	2.1907	0.9724	0.3623	1.3347	0.0000	1,475.815 4	1,475.815 4	0.4773		1,487.748 1

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0468	2.4216	0.8221	9.6800e-003	0.2865	0.0144	0.3009	0.0785	0.0138	0.0923		1,069.809 9	1,069.809 9	0.0650	0.1702	1,122.147 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0252	0.0167	0.2368	7.2000e-004	0.0894	4.8000e-004	0.0899	0.0237	4.4000e-004	0.0242		72.4736	72.4736	1.7700e-003	1.7800e-003	73.0488
Total	0.0720	2.4383	1.0590	0.0104	0.3759	0.0149	0.3908	0.1023	0.0142	0.1165		1,142.283 5	1,142.283 5	0.0668	0.1720	1,195.196 5

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561		2,724.5018	2,724.5018	0.4189		2,734.9746
Total	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561		2,724.5018	2,724.5018	0.4189		2,734.9746

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561	0.0000	2,724.5018	2,724.5018	0.4189		2,734.9746
Total	1.5740	13.5240	15.9513	0.0291		0.5757	0.5757		0.5561	0.5561	0.0000	2,724.5018	2,724.5018	0.4189		2,734.9746

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827		2,724.954 4	2,724.954 4	0.4119		2,735.252 7
Total	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827		2,724.954 4	2,724.954 4	0.4119		2,735.252 7

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827	0.0000	2,724.954 4	2,724.954 4	0.4119		2,735.252 7
Total	1.4697	12.6195	15.8762	0.0291		0.5000	0.5000		0.4827	0.4827	0.0000	2,724.954 4	2,724.954 4	0.4119		2,735.252 7

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617		868.6722	868.6722	0.2454		874.8074
Total	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617		868.6722	868.6722	0.2454		874.8074

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0385	0.0244	0.3588	1.1300e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		113.7669	113.7669	2.5900e-003	2.7100e-003	114.6386
Total	0.0385	0.0244	0.3588	1.1300e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		113.7669	113.7669	2.5900e-003	2.7100e-003	114.6386

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617	0.0000	868.6722	868.6722	0.2454		874.8074
Total	0.7662	6.6493	6.7924	9.2800e-003		0.3904	0.3904		0.3617	0.3617	0.0000	868.6722	868.6722	0.2454		874.8074

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0385	0.0244	0.3588	1.1300e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		113.7669	113.7669	2.5900e-003	2.7100e-003	114.6386
Total	0.0385	0.0244	0.3588	1.1300e-003	0.1453	7.5000e-004	0.1461	0.0385	6.9000e-004	0.0392		113.7669	113.7669	2.5900e-003	2.7100e-003	114.6386

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir, Big Bear - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

**Wolf Reservoir, Big Bear
South Coast Air Basin, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.45	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10	Operational Year		2024	
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use size is 20,000 sf

Construction Phase - Demo: 1 month, Grading: 1 month, Construction: 10 months, Pipeline: 1 month

Off-road Equipment - Construction: 1 crane, 1 stress tower, 2 loader/backhoes, 1 generator set, 2 pumps, 2 welders

Off-road Equipment - Demo: 1 concrete saw, 1 pump, 1 dozer, 2 loader/backhoes

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Off-road Equipment - Piping: 2 trenchers, 2 forklifts, 1 welder

Trips and VMT - 3,600 CY exported, 10 cy per truck = 360 truck loads x 2 = 720 total haul trips (inbound/outbound), Haul TL = 10 miles

Grading - 3,600 cy export

Construction Off-road Equipment Mitigation -

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	200.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00
tblGrading	AcresOfGrading	16.50	1.50
tblGrading	MaterialExported	0.00	3,600.00
tblLandUse	LotAcreage	0.00	0.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	1.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripNumber	450.00	720.00

2.0 Emissions Summary

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1293	1.1550	1.2687	2.4600e-003	0.0563	0.0484	0.1048	0.0290	0.0465	0.0754	0.0000	211.7267	211.7267	0.0345	1.7400e-003	213.1085
2025	0.0580	0.4958	0.6114	1.0900e-003	1.4300e-003	0.0209	0.0223	3.8000e-004	0.0200	0.0204	0.0000	92.9763	92.9763	0.0150	2.0000e-005	93.3577
Maximum	0.1293	1.1550	1.2687	2.4600e-003	0.0563	0.0484	0.1048	0.0290	0.0465	0.0754	0.0000	211.7267	211.7267	0.0345	1.7400e-003	213.1085

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1293	1.1550	1.2687	2.4600e-003	0.0254	0.0484	0.0738	0.0122	0.0465	0.0587	0.0000	211.7264	211.7264	0.0345	1.7400e-003	213.1083
2025	0.0580	0.4958	0.6114	1.0900e-003	1.4300e-003	0.0209	0.0223	3.8000e-004	0.0200	0.0204	0.0000	92.9762	92.9762	0.0150	2.0000e-005	93.3575
Maximum	0.1293	1.1550	1.2687	2.4600e-003	0.0254	0.0484	0.0738	0.0122	0.0465	0.0587	0.0000	211.7264	211.7264	0.0345	1.7400e-003	213.1083

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.54	0.00	24.33	57.04	0.00	17.46	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-1-2024	7-31-2024	0.4462	0.4462
2	8-1-2024	10-31-2024	0.4961	0.4961
3	11-1-2024	1-31-2025	0.4849	0.4849
4	2-1-2025	4-30-2025	0.3864	0.3864
5	5-1-2025	7-31-2025	0.0053	0.0053
		Highest	0.4961	0.4961

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2024	5/30/2024	5	22	
2	Grading	Grading	6/3/2024	7/2/2024	5	22	
3	Building Construction	Building Construction	7/1/2024	4/4/2025	5	200	

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4	Piping	Trenching	4/5/2025	5/2/2025	5	20
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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Pumps	1	6.00	84	0.74
Demolition	Rubber Tired Dozers	1	6.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	1	6.00	158	0.38
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Cranes	2	4.00	231	0.29
Building Construction	Generator Sets	1	6.00	84	0.74
Building Construction	Pumps	2	6.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Welders	2	6.00	46	0.45
Piping	Forklifts	2	6.00	89	0.20
Piping	Trenchers	2	6.00	78	0.50
Piping	Welders	1	6.00	46	0.45

Trips and VMT

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	720.00	14.70	6.90	10.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Piping	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3823
Total	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3823

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013
Total	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3822
Total	0.0141	0.1305	0.1336	2.4000e-004		5.9300e-003	5.9300e-003		5.6300e-003	5.6300e-003	0.0000	21.2835	21.2835	3.9500e-003	0.0000	21.3822

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013
Total	4.1000e-004	3.1000e-004	4.3400e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.1918	1.1918	3.0000e-005	3.0000e-005	1.2013

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0274	0.0000	0.0274	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1047	0.0664	1.7000e-004		4.3300e-003	4.3300e-003		3.9800e-003	3.9800e-003	0.0000	14.7272	14.7272	4.7600e-003	0.0000	14.8463
Total	0.0102	0.1047	0.0664	1.7000e-004	0.0507	4.3300e-003	0.0550	0.0274	3.9800e-003	0.0314	0.0000	14.7272	14.7272	4.7600e-003	0.0000	14.8463

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4000e-004	0.0267	8.9400e-003	1.1000e-004	3.1000e-003	1.6000e-004	3.2600e-003	8.5000e-004	1.5000e-004	1.0000e-003	0.0000	10.6633	10.6633	6.5000e-004	1.7000e-003	11.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.6700e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7334	0.7334	2.0000e-005	2.0000e-005	0.7393
Total	8.0000e-004	0.0269	0.0116	1.2000e-004	4.0700e-003	1.7000e-004	4.2300e-003	1.1100e-003	1.5000e-004	1.2600e-003	0.0000	11.3967	11.3967	6.7000e-004	1.7200e-003	11.9243

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0198	0.0000	0.0198	0.0107	0.0000	0.0107	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0102	0.1047	0.0664	1.7000e-004		4.3300e-003	4.3300e-003		3.9800e-003	3.9800e-003	0.0000	14.7272	14.7272	4.7600e-003	0.0000	14.8463
Total	0.0102	0.1047	0.0664	1.7000e-004	0.0198	4.3300e-003	0.0241	0.0107	3.9800e-003	0.0147	0.0000	14.7272	14.7272	4.7600e-003	0.0000	14.8463

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.4000e-004	0.0267	8.9400e-003	1.1000e-004	3.1000e-003	1.6000e-004	3.2600e-003	8.5000e-004	1.5000e-004	1.0000e-003	0.0000	10.6633	10.6633	6.5000e-004	1.7000e-003	11.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.6700e-003	1.0000e-005	9.7000e-004	1.0000e-005	9.7000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.7334	0.7334	2.0000e-005	2.0000e-005	0.7393
Total	8.0000e-004	0.0269	0.0116	1.2000e-004	4.0700e-003	1.7000e-004	4.2300e-003	1.1100e-003	1.5000e-004	1.2600e-003	0.0000	11.3967	11.3967	6.7000e-004	1.7200e-003	11.9243

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1039	0.8926	1.0528	1.9200e-003		0.0380	0.0380		0.0367	0.0367	0.0000	163.1274	163.1274	0.0251	0.0000	163.7544
Total	0.1039	0.8926	1.0528	1.9200e-003		0.0380	0.0380		0.0367	0.0367	0.0000	163.1274	163.1274	0.0251	0.0000	163.7544

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1039	0.8926	1.0528	1.9200e-003		0.0380	0.0380		0.0367	0.0367	0.0000	163.1272	163.1272	0.0251	0.0000	163.7542
Total	0.1039	0.8926	1.0528	1.9200e-003		0.0380	0.0380		0.0367	0.0367	0.0000	163.1272	163.1272	0.0251	0.0000	163.7542

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0500	0.4291	0.5398	9.9000e-004		0.0170	0.0170		0.0164	0.0164	0.0000	84.0493	84.0493	0.0127	0.0000	84.3669
Total	0.0500	0.4291	0.5398	9.9000e-004		0.0170	0.0170		0.0164	0.0164	0.0000	84.0493	84.0493	0.0127	0.0000	84.3669

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0500	0.4291	0.5398	9.9000e-004		0.0170	0.0170		0.0164	0.0164	0.0000	84.0492	84.0492	0.0127	0.0000	84.3668
Total	0.0500	0.4291	0.5398	9.9000e-004		0.0170	0.0170		0.0164	0.0164	0.0000	84.0492	84.0492	0.0127	0.0000	84.3668

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							

3.5 Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.6600e-003	0.0665	0.0679	9.0000e-005		3.9000e-003	3.9000e-003		3.6200e-003	3.6200e-003	0.0000	7.8805	7.8805	2.2300e-003	0.0000	7.9361
Total	7.6600e-003	0.0665	0.0679	9.0000e-005		3.9000e-003	3.9000e-003		3.6200e-003	3.6200e-003	0.0000	7.8805	7.8805	2.2300e-003	0.0000	7.9361

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	3.6800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0466	1.0466	2.0000e-005	2.0000e-005	1.0546
Total	3.5000e-004	2.5000e-004	3.6800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0466	1.0466	2.0000e-005	2.0000e-005	1.0546

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.6600e-003	0.0665	0.0679	9.0000e-005		3.9000e-003	3.9000e-003		3.6200e-003	3.6200e-003	0.0000	7.8805	7.8805	2.2300e-003	0.0000	7.9361
Total	7.6600e-003	0.0665	0.0679	9.0000e-005		3.9000e-003	3.9000e-003		3.6200e-003	3.6200e-003	0.0000	7.8805	7.8805	2.2300e-003	0.0000	7.9361

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Piping - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.5000e-004	3.6800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0466	1.0466	2.0000e-005	2.0000e-005	1.0546	
Total	3.5000e-004	2.5000e-004	3.6800e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0466	1.0466	2.0000e-005	2.0000e-005	1.0546	

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Wolf Reservoir, Big Bear - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**Wolf Reservoir Big Bear Pump Station
South Coast Air Basin, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume half the site undergoes grading disturbance

Construction Phase - Demo/Excavation: 3 weeks, Building Construction: 5 weeks, Equipping and Piping: 5 weeks

Off-road Equipment - Construction: 1 mixer, 1 pump, 2 air compressors

Off-road Equipment - Excavation Demo: 1 Masonry Saw, 2 Loader/Backhoes, 1 Forklift

Off-road Equipment - Equipping and Pipeline: 1 crane, 1 loader/backhoe, 1 welder, 1 forklift

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Trips and VMT -

Grading -

Construction Off-road Equipment Mitigation -

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	25.00
tblConstructionPhase	NumDays	10.00	15.00
tblLandUse	LotAcreage	0.00	0.20

2.0 Emissions Summary

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/3/2025	5/23/2025	5	15	
2	Building Construction	Building Construction	5/24/2025	6/27/2025	5	25	
3	Equipment and Piping	Trenching	6/28/2025	8/1/2025	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Equipment and Piping	Cranes	1	4.00	231	0.29
Equipment and Piping	Forklifts	1	6.00	89	0.20
Equipment and Piping	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Equipment and Piping	Welders	1	6.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Forklifts	1	6.00	89	0.20
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Air Compressors	2	6.00	78	0.48

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Building Construction	Pumps	1	6.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Equipment and Piping	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977		1,156.7726	1,156.7726	0.2085		1,161.9855
Total	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977		1,156.7726	1,156.7726	0.2085		1,161.9855

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454
Total	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977	0.0000	1,156.7726	1,156.7726	0.2085		1,161.9855
Total	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977	0.0000	1,156.7726	1,156.7726	0.2085		1,161.9855

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454
Total	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454

3.3 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894		1,068.0593	1,068.0593	0.0536		1,069.3980
Total	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894		1,068.0593	1,068.0593	0.0536		1,069.3980

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894	0.0000	1,068.0593	1,068.0593	0.0536		1,069.3980
Total	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894	0.0000	1,068.0593	1,068.0593	0.0536		1,069.3980

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

3.4 Equipment and Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602		772.5864	772.5864	0.2143		777.9447
Total	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602		772.5864	772.5864	0.2143		777.9447

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454
Total	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602	0.0000	772.5864	772.5864	0.2143		777.9447
Total	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602	0.0000	772.5864	772.5864	0.2143		777.9447

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454
Total	0.0277	0.0171	0.3044	9.2000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		95.5120	95.5120	1.9600e-003	1.9600e-003	96.1454

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**Wolf Reservoir Big Bear Pump Station
South Coast Air Basin, Winter**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume half the site undergoes grading disturbance

Construction Phase - Demo/Excavation: 3 weeks, Building Construction: 5 weeks, Equipping and Piping: 5 weeks

Off-road Equipment - Construction: 1 mixer, 1 pump, 2 air compressors

Off-road Equipment - Excavation Demo: 1 Masonry Saw, 2 Loader/Backhoes, 1 Forklift

Off-road Equipment - Equipping and Pipeline: 1 crane, 1 loader/backhoe, 1 welder, 1 forklift

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Trips and VMT -

Grading -

Construction Off-road Equipment Mitigation -

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Wolf Reservoir Big Bear Pump Station

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.20	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	31
Climate Zone	10			Operational Year	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume half the site undergoes grading disturbance

Construction Phase - Demo/Excavation: 3 weeks, Building Construction: 5 weeks, Equipping and Piping: 5 weeks

Off-road Equipment - Construction: 1 mixer, 1 pump, 2 air compressors

Off-road Equipment - Excavation Demo: 1 Masonry Saw, 2 Loader/Backhoes, 1 Forklift

Off-road Equipment - Equipping and Pipeline: 1 crane, 1 loader/backhoe, 1 welder, 1 forklift

Off-road Equipment - Grading: 1 excavator, 1 grader, 1 dozer

Trips and VMT -

Grading -

Construction Off-road Equipment Mitigation -

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	25.00
tblConstructionPhase	NumDays	10.00	15.00
tblLandUse	LotAcreage	0.00	0.20

2.0 Emissions Summary

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	3-23-2025	6-22-2025	0.0946	0.0946
3	6-23-2025	9-22-2025	0.0681	0.0681
		Highest	0.0946	0.0946

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/3/2025	5/23/2025	5	15	
2	Building Construction	Building Construction	5/24/2025	6/27/2025	5	25	
3	Equipment and Piping	Trenching	6/28/2025	8/1/2025	5	25	

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Equipment and Piping	Cranes	1	4.00	231	0.29
Equipment and Piping	Forklifts	1	6.00	89	0.20
Equipment and Piping	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Equipment and Piping	Welders	1	6.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Forklifts	1	6.00	89	0.20
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Air Compressors	2	6.00	78	0.48
Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Building Construction	Pumps	1	6.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Equipment and Piping	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.1900e-003	0.0366	0.0588	9.0000e-005		1.5500e-003	1.5500e-003		1.4800e-003	1.4800e-003	0.0000	7.8706	7.8706	1.4200e-003	0.0000	7.9060
Total	4.1900e-003	0.0366	0.0588	9.0000e-005		1.5500e-003	1.5500e-003		1.4800e-003	1.4800e-003	0.0000	7.8706	7.8706	1.4200e-003	0.0000	7.9060

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.4000e-004	2.1400e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6224	0.6224	1.0000e-005	1.0000e-005	0.6270
Total	2.0000e-004	1.4000e-004	2.1400e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6224	0.6224	1.0000e-005	1.0000e-005	0.6270

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.1900e-003	0.0366	0.0588	9.0000e-005		1.5500e-003	1.5500e-003		1.4800e-003	1.4800e-003	0.0000	7.8705	7.8705	1.4200e-003	0.0000	7.9060
Total	4.1900e-003	0.0366	0.0588	9.0000e-005		1.5500e-003	1.5500e-003		1.4800e-003	1.4800e-003	0.0000	7.8705	7.8705	1.4200e-003	0.0000	7.9060

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.4000e-004	2.1400e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6224	0.6224	1.0000e-005	1.0000e-005	0.6270
Total	2.0000e-004	1.4000e-004	2.1400e-003	1.0000e-005	8.2000e-004	0.0000	8.3000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.6224	0.6224	1.0000e-005	1.0000e-005	0.6270

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.0700e-003	0.0526	0.0579	1.0000e-004		2.1400e-003	2.1400e-003		2.0000e-003	2.0000e-003	0.0000	8.7610	8.7610	2.4300e-003	0.0000	8.8217
Total	6.0700e-003	0.0526	0.0579	1.0000e-004		2.1400e-003	2.1400e-003		2.0000e-003	2.0000e-003	0.0000	8.7610	8.7610	2.4300e-003	0.0000	8.8217

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.4000e-004	3.5600e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0373	1.0373	2.0000e-005	2.0000e-005	1.0450
Total	3.4000e-004	2.4000e-004	3.5600e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0373	1.0373	2.0000e-005	2.0000e-005	1.0450

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.0700e-003	0.0526	0.0579	1.0000e-004		2.1400e-003	2.1400e-003		2.0000e-003	2.0000e-003	0.0000	8.7610	8.7610	2.4300e-003	0.0000	8.8217
Total	6.0700e-003	0.0526	0.0579	1.0000e-004		2.1400e-003	2.1400e-003		2.0000e-003	2.0000e-003	0.0000	8.7610	8.7610	2.4300e-003	0.0000	8.8217

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.4000e-004	2.4000e-004	3.5600e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0373	1.0373	2.0000e-005	2.0000e-005	1.0450
Total	3.4000e-004	2.4000e-004	3.5600e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0373	1.0373	2.0000e-005	2.0000e-005	1.0450

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	25.00
tblConstructionPhase	NumDays	10.00	15.00
tblLandUse	LotAcreage	0.00	0.20

2.0 Emissions Summary

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.0000e-005	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000	0.0000	2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/3/2025	5/23/2025	5	15	
2	Building Construction	Building Construction	5/24/2025	6/27/2025	5	25	
3	Equipment and Piping	Trenching	6/28/2025	8/1/2025	5	25	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Equipment and Piping	Cranes	1	4.00	231	0.29
Equipment and Piping	Forklifts	1	6.00	89	0.20
Equipment and Piping	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Equipment and Piping	Welders	1	6.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Forklifts	1	6.00	89	0.20
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Air Compressors	2	6.00	78	0.48

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Building Construction	Pumps	1	6.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Equipment and Piping	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977		1,156.7726	1,156.7726	0.2085		1,161.9855
Total	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977		1,156.7726	1,156.7726	0.2085		1,161.9855

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722
Total	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977	0.0000	1,156.7726	1,156.7726	0.2085		1,161.9855
Total	0.5585	4.8858	7.8397	0.0121		0.2068	0.2068		0.1977	0.1977	0.0000	1,156.7726	1,156.7726	0.2085		1,161.9855

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722
Total	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722

3.3 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894		1,068.0593	1,068.0593	0.0536		1,069.3980
Total	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894		1,068.0593	1,068.0593	0.0536		1,069.3980

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894	0.0000	1,068.0593	1,068.0593	0.0536		1,069.3980
Total	0.6004	4.3868	6.6361	0.0114		0.1894	0.1894		0.1894	0.1894	0.0000	1,068.0593	1,068.0593	0.0536		1,069.3980

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000							

3.4 Equipment and Piping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602		772.5864	772.5864	0.2143		777.9447
Total	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602		772.5864	772.5864	0.2143		777.9447

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722
Total	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602	0.0000	772.5864	772.5864	0.2143		777.9447
Total	0.4855	4.2057	4.6295	8.2900e-003		0.1714	0.1714		0.1602	0.1602	0.0000	772.5864	772.5864	0.2143		777.9447

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Equipment and Piping - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722
Total	0.0297	0.0188	0.2778	8.7000e-004	0.1118	5.8000e-004	0.1124	0.0296	5.3000e-004	0.0302		90.2016	90.2016	1.9900e-003	2.0800e-003	90.8722

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.543401	0.061496	0.184986	0.128935	0.023820	0.006437	0.011961	0.008652	0.000812	0.000508	0.024540	0.000745	0.003706

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Wolf Reservoir Big Bear Pump Station - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

APPENDIX 2

Biological Resources Assessment & Jurisdictional Delineation Report



Jacobs



City of Big Bear Lake Department of Water and Power
Wolf Reservoir & Boosters Replacement Project

Biological Resources Assessment And
Jurisdictional Delineation Report

Document No. | DRAFT
April 2023

Tom Dodson & Associates

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City of Big Bear Lake DWP North Shore Pipeline Replacement Project

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Client Name: Tom Dodson & Associates
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Author: Daniel Smith
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Contents

1.	Introduction	3
1.1	Project Description.....	3
1.1.1	Expected Construction Impacts	4
1.2	Location.....	4
1.3	Environmental Setting.....	10
2.	Assessment Methodology.....	11
2.1	Biological Resources Assessment	11
2.1.1	Biological Resources Assessment Field Survey	11
2.2	Jurisdictional Delineation.....	12
3.	Results.....	14
3.1	Existing Biological and Physical Conditions.....	14
3.1.1	Habitat.....	14
3.1.2	Wildlife	14
3.2	Special Status Species and Habitats	14
3.2.1	Special Status Species	16
3.2.1.1	Special Status Plants	16
3.2.1.2	Special Status Animals	19
3.2.2	Special Status Habitats.....	22
3.3	Jurisdictional Delineation.....	22
4.	Effects Analysis.....	24
5.	Conclusions and Recommendations.....	25
5.1	Sensitive Biological Resources	25
5.2	Jurisdictional Waters	27
6.	References.....	28

Appendix A. CNDDDB Species and Habitats Documented Within the *Big Bear Lake, Big Bear City, Fawnskin* and *Moonridge* USGS 7.5-Minute Quadrangles

Appendix B. Site Photos

Appendix C. Regulatory Framework

Appendix D. USFWS IPaC, CNDDDB, & CNPS Species Lists

1. Introduction

The City of Big Bear Lake (City or BBL) Department of Water and Power (DWP) proposes to replace an existing 0.10 million gallon (MG) seismically deficient water storage tank with a 0.6 MG modern reservoir, as well as replace the accompanying booster station and necessary undersized pipelines. The Wolf Reservoir and Boosters Replacement Project would improve service area operations by increasing capacity, reducing spills, improving fire protection capacity, and insuring the system against catastrophic failure in the event of an earthquake. The new reservoir and booster station would be constructed on City property, where the existing Wolf Reservoir is currently located in the Moonridge neighborhood of Big Bear Lake, California. The proposed water pipeline upgrades would replace existing undersized pipelines with larger diameter pipes to alleviate pinch points and improve efficiency.

On behalf of Tom Dodson and Associates (TDA), Jacobs Engineering Group, Inc. (Jacobs) has prepared this Biological Resources Assessment (BRA) report for the proposed BBLDWP Wolf Reservoir and Boosters Replacement Project (Project). The BRA fieldwork was conducted by Jacobs's biologist Daniel Smith on June 15, 2022. The purpose of the BRA survey was to address potential effects of the Project on designated Critical Habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA), as well as any species otherwise designated as sensitive by the California Department of Fish and Wildlife (CDFW [formerly California Department of Fish and Game]) and/or the California Native Plant Society (CNPS).

The Project Area was assessed for sensitive species known to occur locally. Attention was focused on those state and/or federally listed as threatened or endangered species and California Fully Protected species that have been documented in the vicinity of the Project Area, whose habitat requirements are present within or adjacent to the Project Area. Results of the habitat assessment are intended to provide sufficient baseline information to the Project Proponent (City) and, if required, to County, or other local government planning officials and federal and state regulatory agencies, including the U.S. Forest Service (Forest Service), U.S. Fish and Wildlife Service (USFWS) and CDFW, respectively, to determine if the Project is likely to affect any sensitive biological resources and to identify mitigation measures to offset those effects.

In addition to the BRA field survey, Jacobs's biologists assessed the Project Area for the presence of state and/or federal jurisdictional waters potentially subject to regulation by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA and Porter Cologne Water Quality Control Act, and CDFW under Section 1600 of the California Fish and Game Code (FGC), respectively.

The proposed Project would involve federal WaterSMART Drought Response Program grant funding awarded by the U.S. Bureau of Reclamation (USBR). Therefore, this Biological Resources Assessment and Jurisdictional Waters Assessment was prepared in accordance with the standards required by the National Environmental Policy Act (NEPA) review process.

1.1 Project Description

The BBLDWP will replace the existing 57-year-old, 0.10 MG welded steel reservoir located on the northeast corner of Wolf Road and Coyote Court with a 0.6 MG seismically engineered welded carbon steel reservoir. The modernization in design would provide a more stable source of supply, especially in the event of a disaster, while the increase in capacity would serve the community during a drought. The existing tank will be removed to accommodate the new 0.6 MG reservoir at the existing Wolf Reservoir site.

BBLDWP will also replace and modernize the 50-year-old booster station adjacent to the tank, replace the existing altitude valve with a float valve, replace end suction pumps with vertical turbine pumps, and install a side outlet universal joint. The existing booster station does not meet current standards and the pumps are inefficient. The building around the boosters has a low ceiling and lacks proper flooring. It is currently a combination of masonry block below ground and timber above ground. The wood building over the existing booster station will be demolished and removed. A block building with a metal roof will be constructed over the new booster station. The current Wolf Boosters are seldom utilized because of their age, poor hydraulic efficiency, and the noise that results while they are in use. Replacing the boosters with submersible, more efficient pumping units will reduce noise levels in the neighborhood where the DWP has received noise complaints.

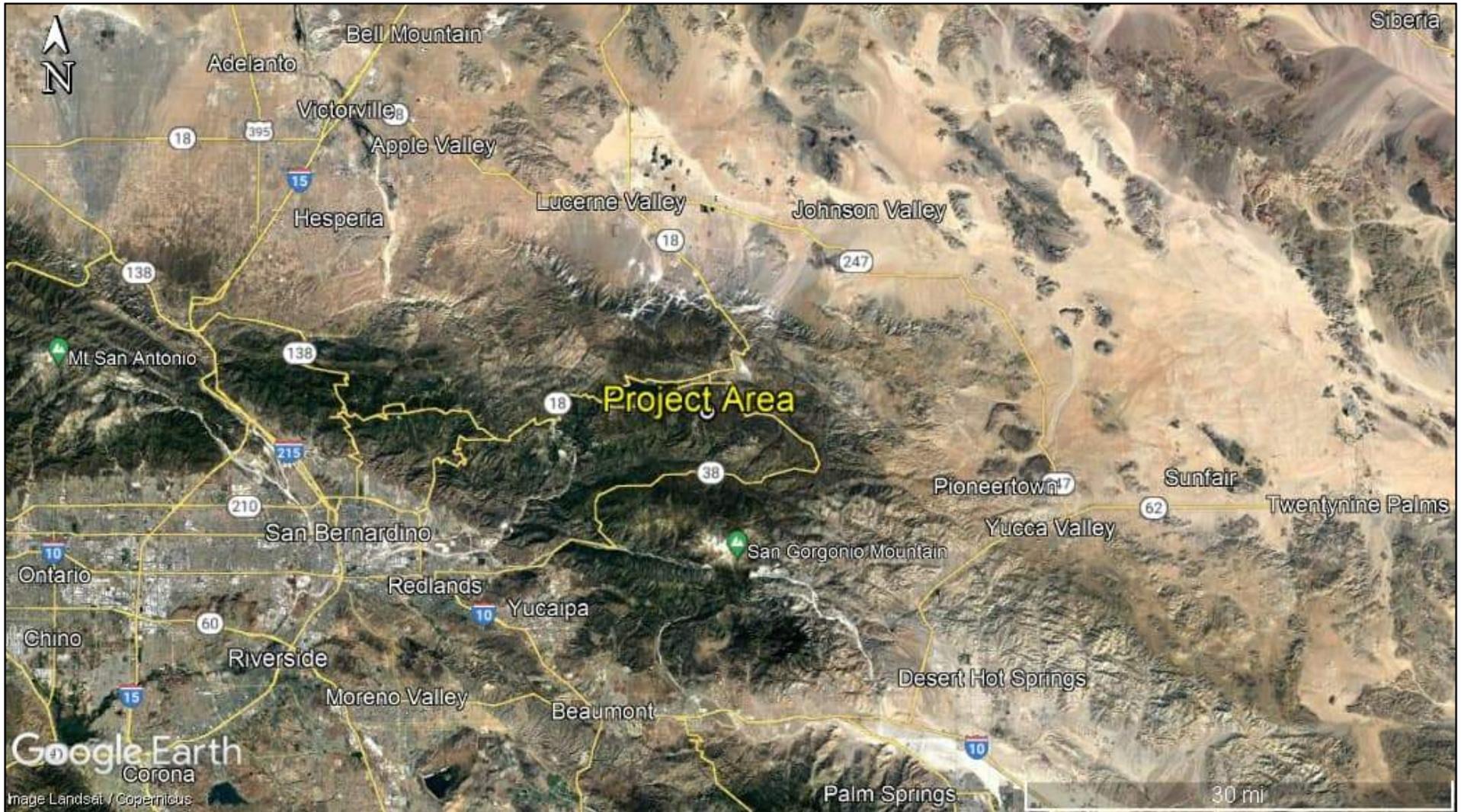
The pipeline upgrade component of the Project will consist of installing a total 2,200 feet of 12-inch pipeline and 1,500 feet of 8-inch pipeline, respectively. The new pipelines would replace existing 4- and 6-inch diameter pipelines and would be constructed entirely within existing paved roadway. Please refer to Appendix B for representative site photos of the proposed Project footprint.

1.1.1 Expected Construction Impacts

The Project will require the demolition of the existing booster station building that is primarily below ground. It will also require trenching within paved residential streets to install the new pipelines. Additionally, the Project will require grading and compaction to ensure a level surface for the placement of the new reservoir. The Project may require removal and/or pruning of a limited number of trees on the Wolf Reservoir site (Figure 3a; Appendix B). The demolition and site work will be performed as required by all dust and noise mitigation requirements.

1.2 Location

The Project Area is generally located southeast of Big Bear Lake in Sections 23, 26, and 27 of Township 2 North, Range 1 East, San Bernardino Base Meridian (SBBM), in the City of Big Bear Lake, San Bernardino County, California (Figures 1&2). The Project Area is depicted on the *Moonridge* U. S. Geological Survey's (USGS) 7.5-Minute Series Quadrangle map. Specifically, the Project is in the Moonridge residential neighborhood. The Wolf Reservoir and booster station replacement components of the Project is located within a 0.45-acre City owned parcel (Assessor Parcel Number [APN]: 031073104) on the northeast corner of Wolf Road and Coyote Court (Figure 3a). The pipeline upgrade components are within Siskiyou Drive, Buffalo Trail, Sheephorn Road, and Luna Road (Figures 3b&3c).

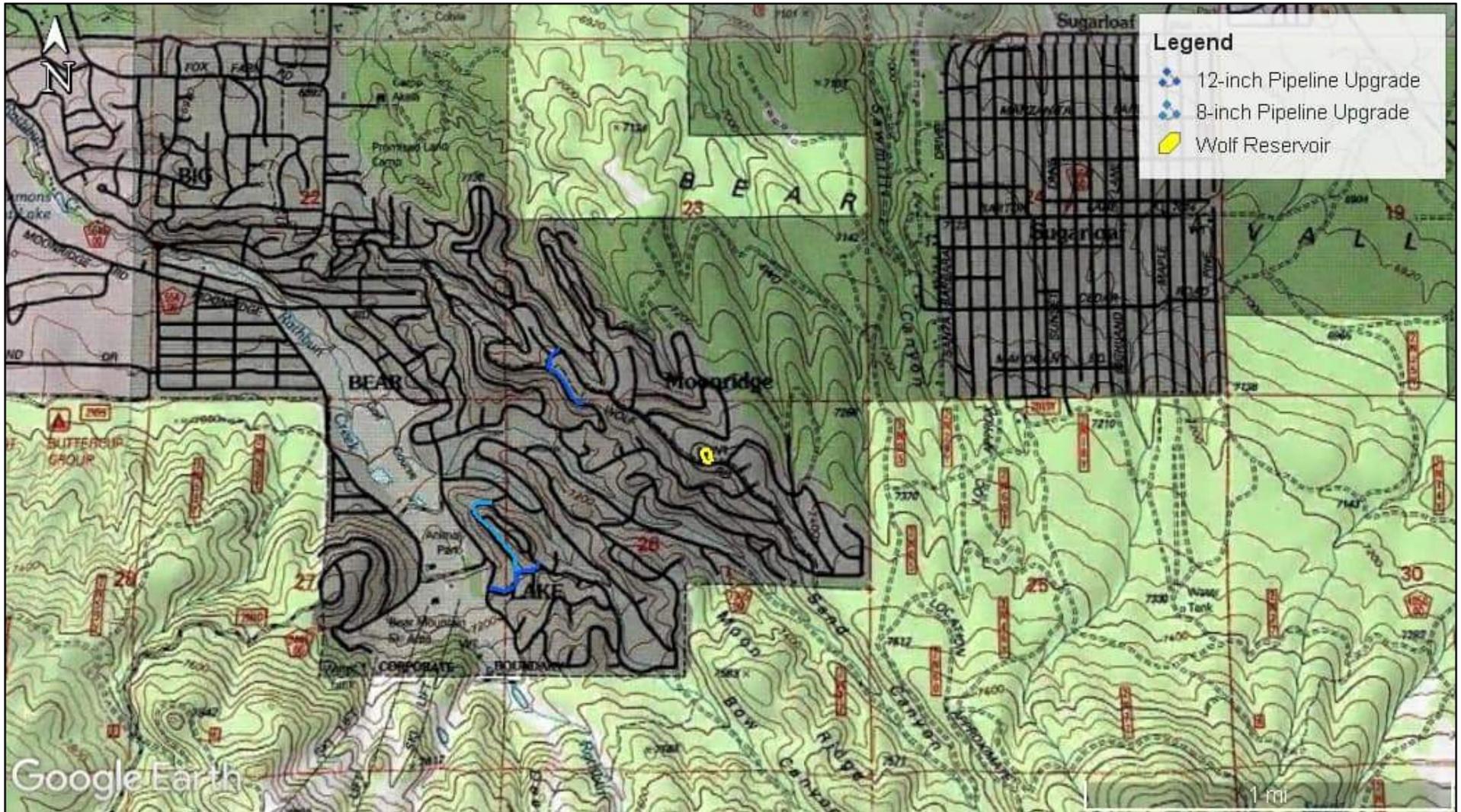


SOURCE: Google Earth

FIGURE 1

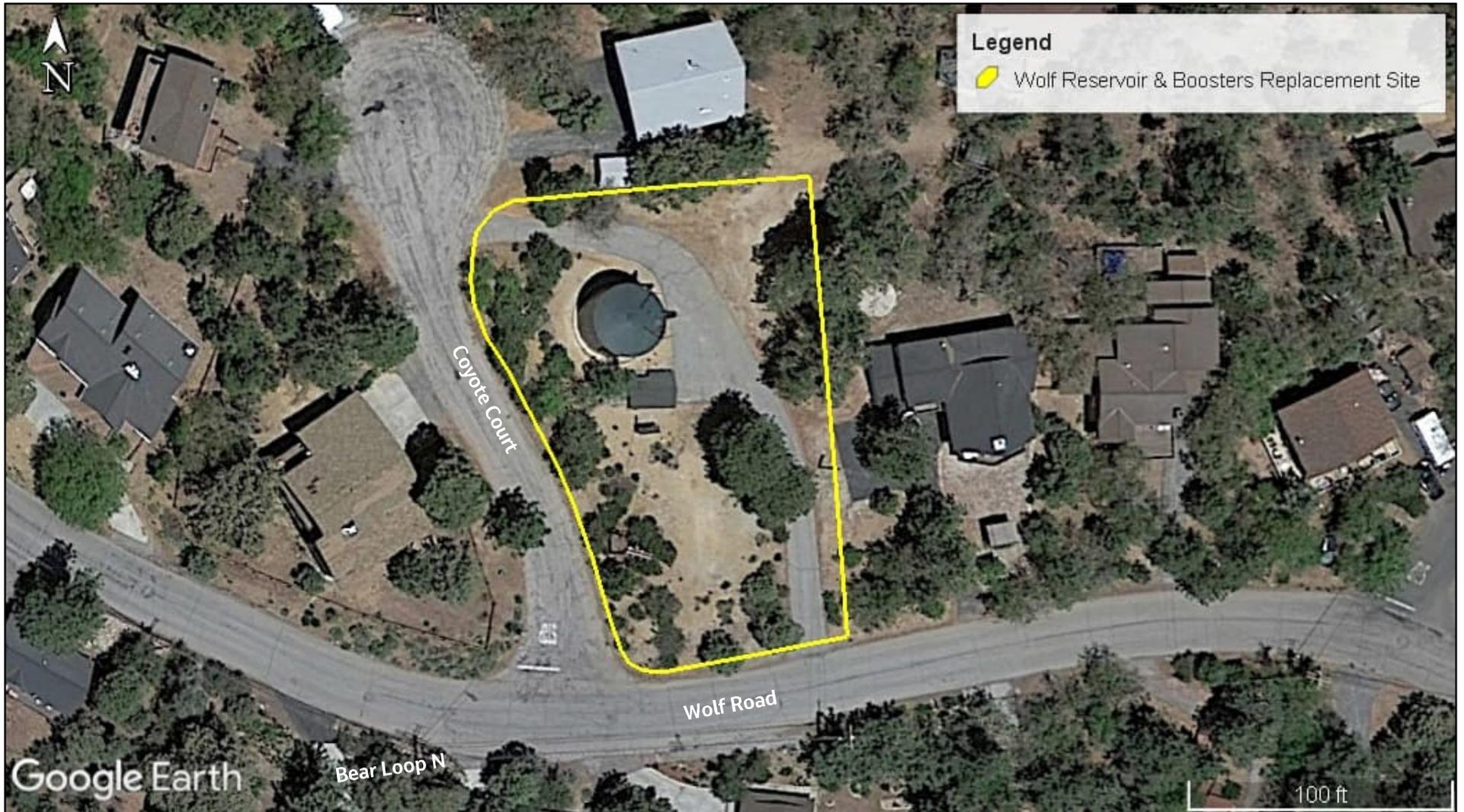


Regional Location
BBLDWP Wolf Reservoir & Boosters Replacement Project



SOURCE: Google Earth

FIGURE 2



SOURCE: Google Earth

FIGURE 3a

Aerial Photo of Wolf Reservoir & Boosters Replacement Site
BBLDWP Wolf Reservoir & Boosters Replacement Project



SOURCE: Google Earth

FIGURE 3b



SOURCE: Google Earth

FIGURE 3c



Aerial Photo of Pipeline Upgrade Alignment
BBLDWP Wolf Reservoir & Boosters Replacement Project

1.3 Environmental Setting

The Project Area is situated southeast of Big Bear Lake, in the Big Bear Valley area of the San Bernardino Mountains. The Big Bear Valley area is subject to both seasonal and annual variations in temperature and precipitation. Average annual maximum temperatures peak at 80.8 degrees Fahrenheit (° F) in July and fall to an average annual minimum temperature of 20.3° F in January. Average annual precipitation is greatest from November through April and reaches a peak in January (4.49 inches). Precipitation is lowest in the month of June (0.14 inches). Annual total precipitation averages 21.84 inches and annual total snowfall averages 62.6 inches.

The topography of the proposed Project footprint is flat, being within existing paved roadways and graded reservoir site. However, the Moonridge residential area is a mountain community built on moderate to steep slopes. The elevation of the Wolf Reservoir and booster station replacement components of the Project is 7,430 feet above mean sea level (amsl). The elevation of the pipeline upgrade components ranges from 7,150 to 7,260 feet amsl.

Hydrologically, the Project Area is situated within the Bear Valley Hydrologic Sub-Area (HSA 801.71). The Bear Valley HSA comprises a 34,333-acre drainage area, within the larger Santa Ana Watershed (HUC 18070203). The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. One of several tributaries to the Santa Ana River is Bear Creek, which outflows from Big Bear Lake from the Bear Valley Dam located at the westernmost (downstream) end of Big Bear Lake. Big Bear Lake is one of the head waters of the Santa Ana River Watershed.

Soils within the Project Area are comprised of Garloaf-Cariboucreek-Urban land complex, 15 to 30 percent (%) slopes. Garloaf family soils consist of very cobbly loam and very cobbly clay loam horizons comprised of alluvium derived from limestone. This soil type is well-drained and has not been identified as a hydric soil. Cariboucreek family soils consist of loam and clay loam horizons comprised of mixed alluvium. This soil type is also well-drained and has not been identified as a hydric soil.

The Big Bear Lake area is comprised of small mountain communities in the San Bernardino National Forest (SBNF) that consist of a mix of residential and commercial development surrounded by undeveloped montane conifer forest (Figures 1&2). Existing land use surrounding the proposed Project footprint consists entirely of residential neighborhoods. Nearby undeveloped National Forest land supports a mix of montane conifer forest plant communities including *Pinus jeffreyi* Forest and Woodland Alliance (Jeffrey pine forest and woodland) and *Juniperus grandis* Woodland Alliance (mountain juniper woodland).

2. Assessment Methodology

2.1 Biological Resources Assessment

Data regarding biological resources in the Project Area were obtained through literature review and field investigation. Prior to performing the survey, available databases, and documentation relevant to the Project Area were reviewed for documented occurrences of sensitive species in the Project vicinity (within approximately 3 miles). The USFWS threatened and endangered species occurrence data overlay, USFWS Information for Planning and Consultation System (IPaC), and the most recent versions of the California Natural Diversity Database (CNDDDB; *Rarefind 5*) and California Native Plant Society Electronic Inventory (CNPSEI) databases were searched for sensitive species data in the *Big Bear Lake*, *Big Bear City*, *Fawnskin* and *Moonridge* USGS 7.5-Minute Series Quadrangles (Appendix D). These databases contain records of reported occurrences of state and federally listed species or otherwise sensitive species and habitats that may occur within the vicinity of the proposed Project footprint (within approximately 3 miles). Other available technical information on the biological resources of the area was also reviewed including previous surveys and recent findings.

2.1.1 Biological Resources Assessment Field Survey

Jacobs's biologist Daniel Smith conducted a biological resources assessment of the Project Area on June 15, 2022. The Project is expected to be restricted to existing paved roadways and graded reservoir site. All physical disturbance is expected to occur within previously disturbed/developed areas. Therefore, the reconnaissance-level field survey consisted of a pedestrian survey that encompassed 100 % visual coverage of the Wolf Reservoir and booster station site, as well as the road shoulder along the proposed pipeline upgrade alignments in Siskiyou Drive, Buffalo Trail, Sheephorn Road, and Luna Road, respectively. No adjacent private properties were accessed during the survey. The purpose of the survey was to assess the Project Area for its potential to support special status species. Wildlife species were detected during field surveys by sight, calls, tracks, scat, and/or other sign. In addition to species observed, expected wildlife usage of the Project Area was determined based on known habitat preferences of regional wildlife species and knowledge of their relative distribution in the area. The focus of the faunal species survey was to identify potential habitat within and adjacent the proposed Project footprint for special status wildlife that may occur in the Project vicinity.

Floristic Botanical Field Survey

A floristic botanical field survey was also conducted by Jacobs's biologist Daniel Smith on June 15, 2022. In accordance with the CDFW's March 20, 2018, *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*, the survey was conducted during the appropriate time of year, when the target species were both evident and identifiable. The target species consisted of those state and/or federally listed plant species that have been documented in the Project vicinity (within approximately 3 miles), whose environmental requirements may be present within the Project Area. Target species included:

- Ash-gray paintbrush (*Castilleja cinerea*);
- Bear Valley sandwort (*Eremogone ursina*);
- Southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*);
- Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*); and
- San Bernardino Mountains bladderpod (*Physaria kingii* ssp. *bernardina*).

Prior to conducting the survey, Mr. Smith visited multiple reference sites within the Big Bear area, where the target species are known to occur, to determine whether the target species were identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural communities.

The reference sites that were visited prior to survey included previously documented occurrences within the Big Bear area, near the Aspen Glen Picnic Area (Bear Valley sandwort), the Eagle Point Rare Plant Preserve (ash-gray paintbrush and southern mountain buckwheat), SBNF land northwest of the North Shore Drive/Division Drive intersection (Cushenbury buckwheat), and SBNF land in the vicinity of Holcomb Valley/Caribou Creek (San Bernardino Mountains bladderpod). All five target species were evident and identifiable at the reference sites prior to the June 15 survey visit. During the survey, 100 % visual coverage of the Wolf Reservoir and booster station site, as well as the road shoulder along the proposed pipeline upgrade alignments, was achieved by walking the reservoir site and road shoulder, within and adjacent where Project related ground disturbance is expected to occur.

2.2 Jurisdictional Delineation

On June 15, 2022, Mr. Smith also evaluated the Project Area for the presence of riverine/riparian/wetland habitat and jurisdictional waters, i.e., Waters of the U.S. (WOTUS), as regulated by the USACE and RWQCB, and/or jurisdictional streambed and associated riparian habitat as regulated by the CDFW. Prior to the field visit, aerial photographs of the Project Area were viewed and compared with the surrounding USGS 7.5-Minute Topographic Quadrangle maps to identify drainage features within the survey area as indicated from topographic changes, blue-line features, or visible drainage patterns. The USFWS National Wetland Inventory and Environmental Protection Agency (EPA) Water Program "My Waters" Google Earth Pro data layer were also reviewed to determine whether any hydrologic features and wetland areas had been documented within the vicinity of the site. Similarly, the United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) Web Soil Survey was reviewed for soil types found within the Project Area to identify the soil series in the area and to check these soils to determine whether they are regionally identified as hydric soils. Upstream and downstream connectivity of waterways (if present) were reviewed on Google Earth Pro aerial photographs and topographic maps to determine jurisdictional status. The lateral extent of potential USACE jurisdiction was measured at the Ordinary High Watermark (OHWM) in accordance with regulations set forth in 33CFR part 328 and the USACE guidance documents listed below:

- *USACE Wetlands Research Program Technical Report Y-87-1 (on-line edition), Wetlands Delineation Manual, Environmental Laboratory, 1987 (Wetland Delineation Manual).*
- *USACE Minimum Standards for Acceptance of Preliminary Wetlands Delineations, November 30, 2001 (Minimum Standards).*
- *USACE Jurisdictional Determination Form Instructional Guidebook, May 30, 2007 (JD Form Guidebook).*
- *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010.*
- *USACE A Guide to Ordinary High-Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States, August 2014 (Delineation Manual).*

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

- ▶ ***Hydrophytic vegetation:*** Hydrophytic vegetation is plant life that grows, and is typically adapted for life, in permanently or periodically saturated soils. The hydrophytic vegetation criterion is met if more than 50 % of the dominant plant species from all strata (tree, shrub, and herb layers) is considered hydrophytic. Hydrophytic species are those included on the 2018 National Wetland Plant Lists for the Arid West Region (USACE 2018). Each species on the lists is rated with a wetland indicator category, as shown in Table 1 (below). To be considered hydrophytic, the species must have *wetland indicator status*, i.e., be rated as OBL, FACW or FAC.

Table 1. Wetland Indicator Vegetation Categories

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

- ▶ **Hydric Soil:** Soil maps from the USDA-NRCS Web Soil Survey (USDA 2021) were reviewed for soil types found within the Project Area. Hydric soils are saturated or inundated long enough during the growing season to develop anaerobic conditions that favor growth and regeneration of hydrophytic vegetation. There are several indirect indicators that may signify the presence of hydric soils including hydrogen sulfide generation, the presence of iron and manganese concretions, certain soil colors, gleying, and the presence of mottling. Generally, hydric soils are dark in color or may be gleyed (bluish, greenish, or grayish), resulting from soil development under anoxic (without oxygen) conditions. Bright mottles within an otherwise dark soil matrix indicate periodic saturation with intervening periods of soil aeration. Hydric indicators are particularly difficult to observe in sandy soils, which are often recently deposited soils of flood plains (entisols) and usually lack sufficient fines (clay and silt) and organic material to allow use of soil color as a reliable indicator of hydric conditions. Hydric soil indicators in sandy soils include accumulations of organic matter in the surface horizon, vertical streaking of subsurface horizons by organic matter, and organic pans.

The hydric soil criterion is satisfied at a location if soils in the area can be inferred or observed to have a high groundwater table, if there is evidence of prolonged soil saturation, or if there are any indicators suggesting a long-term reducing environment in the upper part of the soil profile. Reducing conditions are most easily assessed using soil color. Soil colors were evaluated using the Munsell Soil Color Charts (Munsell 2000). Soil pits are dug (when necessary) to an approximate depth of 16-20 inches to evaluate soil profiles for indications of anaerobic and redoximorphic (hydric) conditions in the subsurface.

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

Evaluation of CDFW jurisdiction followed guidance in the FGC. Specifically, CDFW jurisdiction would occur where a stream has a definite course with a distinguishable bed and bank showing evidence of where waters rise to their highest level and to the extent of associated riparian vegetation.

3. Results

3.1 Existing Biological and Physical Conditions

The proposed Project footprint consists of an approximately 0.45-acre parcel (reservoir and booster station site) and approximately 3,700 feet of paved roadway (pipeline upgrades) in a residential development setting. Disturbances in the Project Area consist mostly of vehicular traffic and pedestrian use associated with the existing roads and residential development, as well as existing utility infrastructure (i.e., Wolf Reservoir).

3.1.1 Habitat

The Project Area is in an urban environment and no natural habitat exists within or adjacent the proposed Project footprint. The undeveloped SBNF surrounding the Moonridge residential neighborhood supports mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats. The Jeffrey pine forest and woodland habitat is characterized by an open to continuous tree canopy, with a sparse to intermittent shrub layer and varied herbaceous layer (Sawyer et al. 2009). The mountain juniper woodland habitat is characterized by an open to intermittent tree canopy, with a sparse to intermittent shrub layer and sparse or grassy herbaceous layer (Sawyer et al. 2009). Dominant or otherwise conspicuous species in these plant communities include Jeffrey pine (*Pinus jeffreyi*), Sierra juniper (*Juniperus grandis*), California black oak (*Quercus kelloggii*), white fir (*Abies concolor*), manzanita (*Arctostaphylos* spp.), common sagebrush (*Artemisia tridentata*), and desert mountain mahogany (*Cercocarpus ledifolius*).

The proposed Project footprint is entirely within existing disturbed/developed areas including paved roadways. The Wolf Reservoir and booster station replacement site is a previously graded parcel consisting of asphalt pavement, compacted bare ground, and several trees and shrubs (Appendix B – Site Photos). Tree species identified on site and adjacent parcels include Jeffrey pine, Sierra juniper, and California black oak. Understory species included snow bush (*Ceanothus cordulatus*), desert mountain mahogany, green rabbitbrush (*Chrysothamnus viscidiflorus*), Brewer's fleabane (*Erigeron breweri*), diffuse daisy (*E. divergens*), and Parish's snowberry (*Symphoricarpos rotundifolius* var. *parishii*).

3.1.2 Wildlife

The Project Area is in a residential development and the only species expected to occur within the Project Area are those adapted to an urban environment. The only wildlife species observed or otherwise detected in the Project Area during the reconnaissance-level field survey were Steller's jay (*Cyanocitta stelleri*), dark-eyed junco (*Junco hyemalis*), mountain chickadee (*Poecile gambeli*), and white-breasted nuthatch (*Sitta carolinensis*).

3.2 Special Status Species and Habitats

According to the CNDDDB, 103 sensitive species (73 plant species, 30 animal species) and two sensitive habitats have been documented in the *Big Bear Lake*, *Big Bear City*, *Fawnskin* and *Moonridge* USGS 7.5-Minute Series Quadrangles. This list of sensitive species and habitats includes any state and/or federally listed threatened or endangered species, California Fully Protected species, CDFW designated Species of Special Concern (SSC), and otherwise Special Animals. "Special Animals" is a general term that refers to all the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." The CDFW considers the taxa on this list to be those of greatest conservation need.

Of the 103 sensitive species documented in the *Big Bear Lake*, *Big Bear City*, *Fawnskin* and *Moonridge* quads, 20 are state and/or federally listed or proposed for listing as threatened or endangered species. However, only 14 have been documented in the Project vicinity (within approximately 3 miles). Table 2 (below) provides a list of

all state and/or federally listed or proposed threatened and endangered species documented within the Project vicinity, where they are found (locally, adjacent to the Project alignment, or within the Project alignment), if suitable habitat for that species exists within the Project Area and whether the Project may affect that species.

Table 2. Listed Species Documented within the Project Vicinity

Common Name	Scientific Name	Status	Found Locally	Found Adjacent	Found Within	Suitable Habitat	Project Affect
<u>Plants:</u>							
ash-gray paintbrush	<i>Castilleja cinerea</i>	FT	Yes	No	No	None	No Effect
Big Bear Valley sandwort	<i>Eremogone ursina</i>	FT	Yes	No	No	None	No Effect
southern mountain buckwheat	<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	FT	Yes	No	No	None	No Effect
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	FE	No	No	No	None	No Effect
San Bernardino Mountains bladderpod	<i>Physaria kingii</i> ssp. <i>bernardina</i>	FE	No	No	No	None	No Effect
San Bernardino blue grass	<i>Poa atropurpurea</i>	FE	Yes	No	No	None	No Effect
bird-foot checkerbloom	<i>Sidalcea pedata</i>	FE/SE	Yes	No	No	None	No Effect
California dandelion	<i>Taraxacum californicum</i>	FE	Yes	No	No	None	No Effect
slender-petaled thelypodium	<i>Thelypodium stenopetalum</i>	FE/SE	Yes	No	No	None	No Effect
<u>Insects:</u>							
quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE	No	No	No	None	No Effect
<u>Amphibians:</u>							
southern mountain yellow-legged frog	<i>Rana muscosa</i>	FE/SE	No	No	No	None	No Effect
<u>Fish:</u>							
unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	FE/SE	No	No	No	None	No Effect
<u>Birds:</u>							
California spotted owl	<i>Strix occidentalis occidentalis</i>	FPE	No	No	No	None	No Effect

Common Name	Scientific Name	Status	Found Locally	Found Adjacent	Found Within	Suitable Habitat	Project Affect
<u>Reptiles:</u>							
southern rubber boa	<i>Charina umbratica</i>	ST	No	No	No	No	No Effect

The aquatic/riparian habitats required by southern mountain yellow-legged frog and southwestern willow flycatcher are absent from the Project Area. Additionally, the mesic meadow, seeps, and pebble plain habitats associated with San Bernardino blue grass, bird-foot checkerbloom, California dandelion, and slender-petaled thelypodium are absent from the Project Area and immediate vicinity. Therefore, no further discussion of these species is warranted.

The California spotted owl (*Strix occidentalis occidentalis*) has been proposed for federal ESA listing as an endangered species. Although not a state or federally listed species, the San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) is a CDFW SSC and along with the California spotted owl (SPOW), is considered a particularly sensitive species within the region. Furthermore, these species have been documented in the Project vicinity (within approximately 3 miles). Therefore, SPOW and flying squirrel will be included in the discussion below.

An analysis of the likelihood for occurrence of all CNDDDB sensitive species documented in the *Big Bear Lake, Big Bear City, Fawnskin* and *Moonridge* quads is provided in Appendix A. This analysis considers species' range as well as documentation within the vicinity of the Project Area and includes the habitat requirements for each species and the potential for their occurrence on site, based on required habitat elements and range relative to the current site conditions. A complete list of all sensitive species identified by the IPaC, CNDDDB, and CNPSEI databases as potentially occurring in the Project vicinity is provided in Appendix D.

3.2.1 Special Status Species

No state or federally listed threatened or endangered species, or other special status species, have been documented within or adjacent the proposed Project footprint and none are expected to occur.

3.2.1.1 Special Status Plants

Ash-gray Paintbrush – Threatened (Federal)

The federally listed as threatened ash-gray paintbrush is a hemiparasitic, perennial herb in the broomrape family (Orobanchaceae), with several ascending to decumbent (trailing) grayish stems sprouting from the root crown. The stems are 1 to 2 decimeters (4 to 8 inches) tall (Munz 1974, p. 795). Ash-gray paintbrush is distinguished from other species of *Castilleja* within its range by its perennial nature, ashy-puberulent (covered with short hairs) stems and leaves, yellowish or reddish flowers, with calyx lobes of equal length (Wetherwax et al. 2012, p. 957). Host plants include *Eriogonum kennedyi* var. *austromontanum*, *Eriogonum kennedyi* var. *kennedyi*, *Eriogonum wrightii* var. *subscaposum*, *Artemisia tridentata* ssp. *tridentata*, *Artemisia nova*, and other *Artemisia* taxa (USFWS 2013). However, because this species also possesses photosynthetic green leaves that can produce sugars, it is termed hemiparasitic and does not require a host plant species for its survival (USFWS 2013). This species typically occupies the meadow/forest ecotone (transitional area of vegetation between two different plant communities) of the San Bernardino Mountains at elevations between 1,800 and 3,300 meters (5,905 to 10,827 feet.) and has been recorded in the following ecological communities: pebble plains, dry and wet forest meadows, mixed conifer forests, open pine forests, and pinyon-juniper woodlands (USFWS 2013). However, the primary habitat for this species is pebble plains, supporting one or more of the host plant species for ash-gray paintbrush (USFWS 2013). This species typically blooms from June through August (Calflora 2022).

Findings: According to the CNDDDB, the nearest documented ash-gray paintbrush occurrence (2012) is approximately 0.34 mile north of the Wolf Reservoir site, within the Sawmill Pebble Plain Complex. However, potential host plants for ash-gray paintbrush (i.e., *Eriogonum kennedyi* var. *austromontanum*, *Eriogonum kennedyi* var. *kennedyi*, *Eriogonum wrightii* var. *subscaposum*, *Artemisia* spp.) are absent from the proposed Project footprint and this species was not detected during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, ash-gray paintbrush is considered absent from the proposed Project footprint at the time of survey and the Project will not affect this species.

Bear Valley Sandwort – Threatened (Federal)

The federally listed as threatened Bear Valley sandwort is a low, tufted perennial herb in the pink family (Caryophyllaceae). Individual plants are green, with stems from 10 to 18 centimeters (3.9 to 7.1 inches) long. The leaves are opposite and 0.5 to 1 centimeter (0.2 to 0.39 inches) long. The flowers are white, five-petaled, and arranged in open cymes (clusters). The petals are 0.2 to 0.45 centimeters (0.1 to 0.18 inches) long (USFWS 2015). This species is typically found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 1,950 and 2,100 meters (6,393 to 6,885 feet.) (USFWS 2015). Pebble plains are a rare plant community that occur in treeless, open patches within pine forests and pinyon-juniper woodlands that are comprised of clay soil mixed with quartzite pebbles and gravel that are continually pushed to the surface through frost action (USFS 2002, pp. 12, 15). Bear Valley sandwort is typically found within pebble plain habitat and is one of three indicator plant species, along with *Eriogonum kennedyi* var. *austromontanum*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain (USFWS 2015). This species typically blooms from May through August (Calflora 2022).

Findings: According to the CNDDDB, the nearest documented Bear Valley sandwort occurrence (2021) is approximately 0.34 mile north of the Wolf Reservoir site, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for Bear Valley sandwort within the proposed Project footprint and this species was not detected during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, Bear Valley sandwort is considered absent from the proposed Project footprint at the time of survey and the Project will not affect this species.

Southern Mountain Buckwheat – Threatened (Federal)

The federally listed as threatened southern mountain buckwheat is a woody-based, cushion-like, perennial plant in the buckwheat family (Polygonaceae). Individual plants are 8 to 15 centimeters (3.1 to 5.9 inches) tall, with stems forming loose, leafy mats, 14 to 36 centimeters (5.5 to 14.1 inches) wide. The leaves are oblanceolate (broadest above the middle and tapering toward the base) and 0.5 to 1 centimeter (0.2 to 0.4 inches) long, with dense white hair. The inflorescences (flower clusters) are 8 to 15 centimeters (3.2 to 5.9 inches) high, bearing head-like inflorescences. The perianth is white to rose and composed of inner and outer lobes that are similar in appearance (USFWS 2015). This species is typically found in pebble plain habitat in the northeastern San Bernardino Mountains of southwest San Bernardino County at elevations between 2,000 and 2,200 meters (6,557 to 7,213 feet.) (USFWS 2015). Southern mountain buckwheat is typically found within pebble plain habitat and is one of three indicator plant species, along with *Eremogone ursina*, and *Ivesia argyrocoma* var. *argyrocoma* defining a pebble plain (USFWS 2015). This species typically blooms from June through September (Calflora 2022).

Findings: According to the CNDDDB, the nearest documented southern mountain buckwheat occurrence (2017) is approximately 0.34 mile north of the Wolf Reservoir site, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for southern mountain buckwheat within the proposed Project footprint and this species was not detected during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, southern mountain buckwheat

is considered absent from the proposed Project footprint at the time of survey and the Project will not affect this species.

Cushenbury Buckwheat – Endangered (Federal)

The federally listed as endangered Cushenbury buckwheat is a low, densely matted perennial in the buckwheat family (Polygonaceae) that reaches approximately 10 centimeters (4 inches) in height and forms a mat up to 51 centimeters (20 inches) in diameter (USFWS 2009b). This species is typically found within pinyon woodland, pinyon-juniper woodland, Joshua tree woodland, and blackbush scrub habitats on limestone or other carbonate soils at elevations between 1,400 and 2,400 meters (4,600 and 7,900 feet) in the San Bernardino Mountains (USFWS 2009b). This species typically blooms from May to August (Calflora 2022).

Findings: According to the CNDDDB, the nearest documented Cushenbury buckwheat occurrence (2021) is approximately 2.74 miles northwest of the Wolf Reservoir site, northeast of Big Bear Lake, on limestone marble and dolomitic limestone soils (CNDDDB 2022).

The USFWS lists the primary constituent elements (PCEs) for Cushenbury buckwheat designated Critical Habitat as:

1. Soils derived primarily from the upper and middle members of the Bird Spring Formation and Bonanza King Formation parent materials that occur on hillsides at elevations between 4,600 to 7,900 feet (1,400 to 2,400 meters);
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment); and
3. Associated plant communities that have areas with an open canopy cover (generally less than 15 % cover) and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The Project site consists of existing graded/developed land and the PCEs identified for Cushenbury buckwheat Critical Habitat are absent from the Project Area. Specifically, the unaltered/intact carbonate soils Cushenbury buckwheat requires do not occur within the proposed Project footprint. Furthermore, this species was not detected during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, Cushenbury buckwheat is considered absent from the proposed Project footprint at the time of survey and the Project will not affect this species.

San Bernardino Mountains bladderpod – Endangered (Federal)

The federally listed as endangered San Bernardino Mountains bladderpod is a silvery, short-lived perennial in the mustard family (Brassicaceae), that reaches approximately 5 to 15 centimeters (2 to 6 inches) in height (USFWS 2009a). The outer basal leaves are diamond-shaped to round, and the inner leaves are elliptic with petioles 2 to 5 centimeters (0.8 to 2 inches) long. The flower petals are yellow, and the fruits are spherical, pubescent, two-chambered, and contain 2 to 4 seeds per chamber (USFWS 2009a). This species is typically found within single leaf pinyon-mountain juniper and white fir forest on limestone and dolomite soils and gentle to moderate slopes at elevations between 2,098 and 2,700 meters (6,883 and 8,800 feet) in the San Bernardino Mountains (USFWS 2009a). This species typically blooms from May to June (Calflora 2022).

Findings: According to the CNDDDB, the nearest documented San Bernardino Mountains bladderpod occurrence (2014) is approximately 1.5 miles south of the Wolf Reservoir site. This occurrence is located along Sugarlump Ridge, which is a carbonate ridgeline just south of the Bear Mountain Ski Resort (CNDDDB 2022).

The USFWS lists the primary constituent elements (PCEs) for San Bernardino Mountains bladderpod designated Critical Habitat as:

1. Soils derived primarily from Bonanza King Formation and Undivided Cambrian parent materials that occur on hillsides or on large rock outcrops at elevations between 6,883 and 8,800 feet (2,098 and 2,700 meters);
2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment); and
3. Associated plant communities that have areas with an open canopy cover and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The unaltered/intact carbonate soils San Bernardino Mountains bladderpod requires do not occur within the proposed Project footprint. Furthermore, this species was not detected during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, San Bernardino Mountains bladderpod is considered absent from the proposed Project footprint at the time of survey and the Project will not affect this species.

3.2.1.2 Special Status Animals

Quino Checkerspot Butterfly – Endangered (Federal)

The federally listed as endangered quino checkerspot butterfly is a butterfly in the checkerspot subfamily (Melitaeinae) of the brushfooted butterfly family (Nymphalidae) that occurs in Riverside and San Diego Counties and the northern areas of Baja California Norte, Mexico. This species occurs in patchy scrubland habitats characterized by mosaics of open areas and dense patches of shrubs (USFWS 2003). Host plants required by quino checkerspot larvae for food sources include *Plantago erecta*, *Plantago patagonica*, *Anterrhinum coulterianum*, and *Collinsia concolor* (USFWS 2003). Although quino checkerspot butterfly historically ranged throughout much of non-montane southern California, this species has been extirpated from more than 75 % of its former range (USFWS 2003). Due to dramatic declines resulting primarily from habitat loss, degradation, and fragmentation, the USFWS listed the quino checkerspot butterfly as endangered on January 16, 1997, and the USFWS issued an incidental take permit for this species to the Riverside County Habitat Conservation Agency under the MSHCP on June 22, 2004.

Findings: Although there is a single quino checkerspot butterfly historic collection (1969) from approximately 4 miles south/southwest of Big Bear City, the identity of this specimen is questionable (CNDDDB 2022). Furthermore, there are no other occurrences of this species documented in the Big Bear Valley and this species is considered extirpated in San Bernardino County. Therefore, quino checkerspot butterfly is not likely to occur in the Project Area and the Project will not affect this species.

Southern Rubber Boa – Threatened (State)

The state listed as threatened southern rubber boa (rubber boa) is a small, rather stout-bodied snake with smooth scales and a blunt head and tail (Stewart et al. 2005). Adults grow to about 49.5-55.9 centimeters (19.5-22 inches) in length. Adult rubber boas are light brown or tan in dorsal color with an unmarked yellow venter; juveniles are pale without a distinct margin between dorsal and ventral coloration (Stewart et al. 2005). Rubber boas are primarily fossorial and are rarely encountered on the surface, except on days and nights of high humidity and overcast sky. During warm months, this snake is typically active at night and on overcast days. Rubber boas hibernate during the winter, usually in crevices in rocky outcrops. Other potential hibernacula for this species may include rotting stumps.

Typical southern rubber boa habitat is mixed conifer-oak forest or woodland dominated by two or more of the following species: Jeffrey pine (*Pinus jeffreyi*), yellow pine (*P. ponderosa*), sugar pine (*P. lambertiana*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and black oak (*Quercus kelloggii*) (Stewart et al., 2005). Rubber boas are usually found near streams or wet meadows or within or under surface objects with good moisture retaining properties such as rotting logs (CDFW 2014). Much of the literature suggests that the rubber boa prefers moist conifer-oak forests and woodlands between 5,000 and 8,000 feet in elevation, especially in canyons and on cool, north facing slopes (CDFW 1987). However, the factors of overriding importance seem to be access to hibernation sites below the frost line and access to damp soil (Keasler 1982). In all habitat types, rock outcrops and surface materials (i.e., rocks, logs, and a well-developed duff layer) are important habitat components because they provide cover and maintain soil moisture (Loe 1985, as cited in Stewart et al. 2005).

Findings: According to the CNDDDB, the nearest documented southern rubber boa occurrence (2013) is approximately 2.9 miles west of the Wolf Reservoir site, on the south side of Big Bear Lake (CDFW pers. comm.). Southern rubber boa has not been documented in the Project Area and the conditions within the proposed Project footprint are not suitable to support this species. The proposed Project footprint is devoid of rock outcrops, rotting stumps/logs, and there is little to no duff layer or other ground cover on site that could provide sufficient soil moisture or potential rubber hibernacula and refugia. The Wolf Reservoir site is very open and dry, with compacted soils and impervious surfaces that do not provide the mesic conditions and friable substrates for burrowing that rubber boa require. Therefore, southern rubber boa is not likely to occur in the Project Area and the Project will not affect this species.

California Spotted Owl – SSC

The California spotted owl (SPOW) is considered an SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The SPOW breeds and roosts in forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies ($\geq 70\%$ canopy closure), multiple canopy layers, and downed woody debris (Verner et al. 1992a, as cited in Davis and Gould 2008). Large, old trees are the key component; they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor. These characteristics typify old-growth or late-seral-stage habitats (Davis and Gould 2008). Because the SPOW selects stands that have higher structural diversity and significantly more large trees than those generally available, it is considered a habitat specialist (Moen and Gutiérrez 1997, as cited in Davis and Gould 2008). In southern California, SPOW principally occupy montane hardwood and montane hardwood-conifer forests, especially those with canyon live oak (*Quercus chrysolepis*) and bigcone Douglas-fir (*Pseudotsuga macrocarpa*), at mid to high elevations (Davis and Gould 2008).

SPOW prey on small mammals, particularly dusky-footed woodrats (*Neotoma fuscipes*) at lower elevations (oak woodlands and riparian forests) and throughout southern California (Verner et al. 1992a, as cited in Davis and Gould 2008). The SPOW breeding season occurs from early spring to late summer or fall. Breeding spotted owls begin pre-laying behaviors, such as preening and roosting together, in February or March and juvenile owl

dispersal likely occurs in September and October (Meyer 2007). The SPOW does not build its own nest but depends on finding suitable, naturally occurring sites in tree cavities or on broken-topped trees or snags, on abandoned raptor or common raven (*Corvus corax*) nests, squirrel nests, dwarf mistletoe (*Arceuthobium* spp.) brooms, or debris accumulations in trees (Davis and Gould 2008). In the San Bernardino Mountains, platform nests predominate (59%) and were in trees with an average diameter at breast height (dbh) of 75 cm, whereas cavity nest trees and broken-top nest trees were significantly larger (mean dbh of 108.3 cm and 122.3 cm, respectively) (LaHaye et al. 1997, as cited in Davis and Gould 2008).

According to LaHaye and Gutierrez (2005), urbanization in the form of primary and vacation homes has degraded or consumed some forest in most mountain ranges. The results of spotted owl surveys conducted between 1987 and 1998 in the San Bernardino Mountains indicated that a large area of potentially suitable spotted owl habitat, enough to support 10-15 pairs, existed between Running Springs and Crestline (LaHaye and others 1999, as cited in LaHaye and Gutierrez 2005). However, only four pairs have been found in this area, and owls were found only in undeveloped sites. Thus, residential development within montane forests may preclude spotted owl occupancy, even when closed-canopy forest remains on developed sites (LaHaye and Gutierrez 2005).

Findings: According to the CNDDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately 1.3 miles southeast of the Wolf Reservoir site. The Project Area is within an existing residential development and is subject to a high level of human disturbance. Additionally, the Project Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Project Area and the Project will not affect this species.

San Bernardino Flying Squirrel – SSC

The San Bernardino flying squirrel (flying squirrel) is considered an SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The flying squirrel is a nocturnally active, arboreal squirrel that is distinguished by the furred membranes extending from wrist to ankle that allow squirrels to glide through the air between trees at distances up to 91 meters (300 feet) (Wolf 2010). The San Bernardino flying squirrel is the most southerly distributed subspecies of northern flying squirrel (*Glaucomys sabrinus*) and is paler in color and smaller than most other northern flying squirrel subspecies. It inhabits high-elevation mixed conifer forests comprised of white fir, Jeffrey pine, and black oak between ~4,000 to 8,500 feet. It has specific habitat requirements that include associations with mature forests, large trees, and snags, closed canopy, downed woody debris, and riparian areas, and it is sensitive to habitat fragmentation. It specializes in eating truffles (e.g. hypogeous mycorrhizal sporocarps) buried in the forest floor as well as arboreal lichens in winter when truffles are covered with snow and unavailable (Wolf 2010). This flying squirrel historically occurred as three isolated populations in the San Gabriel, San Bernardino, and San Jacinto Mountain forests.

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

Findings: The Flying Squirrels of Southern California is a project of the San Diego Natural History Museum (SDNHM), in collaboration with the U.S. Forest Service and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, the nearest documented flying squirrel occurrences (2015) is approx. 0.4 miles southwest of the Wolf Reservoir site. Although the Project Area is situated in a residential neighborhood and is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. Thus, there is a moderate potential for flying squirrel to occur in the Project Area and species-specific impacts avoidance and minimization measures are recommended in Section 5 of this assessment.

3.2.2 Special Status Habitats

The Project Area does not contain any sensitive habitats, including any USFWS designated Critical Habitat for any federally listed species. The nearest Critical Habitat unit is approximately 0.35 mile north of the Wolf Reservoir site. This Critical Habitat unit consists of Sawmill Pebble Plain Complex USFWS designated Critical Habitat for the federally listed as threatened ash-gray paintbrush, Bear Valley Sandwort, and southern mountain buckwheat. However, no portion of the proposed Project footprint is within or adjacent this Critical Habitat unit, or any other sensitive habitats. Therefore, the Project will not result in the loss or adverse modification of USFWS designated Critical Habitat, or any other special status habitats.

3.3 Jurisdictional Delineation

The Project Area is within the Baldwin Hydrologic Sub-Area (HSA 801.73). The Baldwin HSA comprises a 34,333-acre drainage area, within the larger Santa Ana Watershed (HUC 18070203). This watershed is primarily within San Bernardino County and includes portions of Riverside and Orange Counties with a small portion of Los Angeles County. The Santa Ana Watershed is bound on the north by the Mojave and Southern Mojave Watersheds, on the southeast by the Whitewater River and San Jacinto Watersheds, and on the west by the San Gabriel, Seal Beach, Newport Bay, and Aliso-San Onofre Watersheds. The Santa Ana Watershed encompasses a portion of the San Gabriel and San Bernardino Mountains in the north and is approximately 3,000 square miles in area. The Santa Ana River is the major hydrogeomorphic feature within the Santa Ana Watershed. One of several tributaries to the Santa Ana River is Bear Creek, which outflows from Big Bear Lake from the Bear Valley Dam located at the westernmost (downstream) end of Big Bear Lake. Big Bear Lake is one of the head waters of the Santa Ana River Watershed.

Waters of the U.S.

The USACE has authority to permit the discharge of dredged or fill material in WOTUS under Section 404 of the CWA. WOTUS are defined as:

“All waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters” (Section 404 of the CWA; 33 CFR 328.3 (a)).

Therefore, CWA jurisdiction exists over the following:

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

Additionally, areas meeting all three wetland parameters would be designated as USACE wetlands, if they are adjacent to jurisdictional WOTUS, or otherwise determined to have a significant nexus to a TNW.

There are no wetland or non-wetland WOTUS within the Project Area. Therefore, the Project will not result in any impacts (temporary or permanent) to jurisdictional waters subject to regulation by the USACE or RWQCB under Sections 404/401 of the CWA.

State Lake/Streambed

There are no lakes, rivers, streams, or other aquatic resources, stream-dependent wildlife resources, or riparian habitats that would be subject to regulation by the CDFW under Section 1602 of the FGC, or by the RWQCB under the Porter Cologne Water Quality Control Act within the Project Area. Therefore, the Project will not result in any permanent or temporary impacts to jurisdictional waters of the State and no FGC Section 1602 or RWQCB Waste Discharge Requirements (WDRs) permitting is required.

4. Effects Analysis

The proposed Project will not affect any state or federally listed species or other special status species, including any California Fully Protected species or California rare and endangered plant species. The proposed Project will not affect USFWS designated Critical Habitat. Furthermore, the proposed Project will not affect any resources protected under the Coastal Barriers Resources Act, Coastal Zone Management Act, Fish and Wildlife Conservation Act, Magnuson-Stevens Fishery Conservation and Management Act, the Protection of Wetlands – Executive Order 11990 or Wild and Scenic Rivers Act, respectively.

The proposed Project will not impact any state or federal jurisdictional waters potentially subject to regulation by the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA and Porter Cologne Water Quality Control Act, or CDFW under Section 1602 of the California FGC, respectively. Therefore, no CWA Section 404/401 or FGC Section 1602 permitting will be required.

Migratory Bird Treaty Act

Although the Project is within an urban environment, there is vegetation, as well as man-made structures, within the Project Area that are suitable to support nesting birds. Most native bird species and their active nests (i.e., with eggs or young) are protected from unlawful take by the federal Migratory Bird Treaty Act of 1918 (MBTA). Additionally, the State of California provides protection for native bird species and their nests in the FGC under Sections 3503, 3503.5, 3511, 3513, and 3800, respectively (Appendix C). Bird nesting protections in the FGC include the following (Sections 3503, 3503.5, 3511, 3513 and 3800):

- Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.
- Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys, and falcons, among others), and Strigiformes (owls).
- Section 3511 prohibits the take or possession of Fully Protected birds.
- Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that Project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.
- Section 3800 prohibits the take of any any non-game bird (i.e., bird that is naturally occurring in California that is not a gamebird, migratory game bird, or fully protected bird).

5. Conclusions and Recommendations

5.1 Sensitive Biological Resources

A BRA and floristic botanical field survey, which included 100% visual coverage of the Wolf Reservoir and booster station site, as well as the road shoulder along the proposed pipeline upgrade alignments, was conducted by Jacobs in June of 2022 to identify potential habitat for special status plant and wildlife species within the Project Area. No special status species, including any state or federally listed threatened or endangered species, were observed in the Project Area during the reconnaissance-level assessment survey, and none are expected to occur. The Project Area does not contain any sensitive habitats, including any USFWS designated Critical Habitat for federally listed species, and the Project will not result in any loss or adverse modification of Critical Habitat. Furthermore, the proposed Project will not affect any resources protected under the Coastal Barriers Resources Act, Coastal Zone Management Act, Fish and Wildlife Conservation Act, Magnuson-Stevens Fishery Conservation and Management Act, the Protection of Wetlands – Executive Order 11990 or Wild and Scenic Rivers Act, respectively.

Special Status Plant Species

There is no pebble plain or pebble plain-like habitat within the proposed Project footprint suitable for Bear Valley sandwort or southern mountain buckwheat and the carbonate soils that Cushenbury buckwheat and San Bernardino Mountains bladderpod is associated with do not occur within the Project Area. Furthermore, no ash-gray paintbrush, Bear Valley sandwort, southern mountain buckwheat, Cushenbury buckwheat, or San Bernardino Mountains bladderpod were detected on site during the floristic botanical field survey conducted by Jacobs in June of 2022. Therefore, these species are considered absent from the proposed Project footprint at the time of survey and the Project will not affect any special status plant species.

Special Status Wildlife

The Project Area is in a residential development setting. Due to the environmental conditions and existing disturbances within and adjacent the proposed Project footprint, the Project Area is not suitable to support any state or federally listed threatened or endangered or proposed threatened or endangered wildlife species. However, there is potentially suitable habitat in nearby undeveloped areas for several sensitive species including the state listed as threatened southern rubber boa and the California SSC San Bernardino flying squirrel. Furthermore, the San Bernardino flying squirrel has been documented in residential areas in the Big Bear Valley and elsewhere. Therefore, the following precautionary measures are recommended to avoid any potential Project related effects on southern rubber boa and San Bernardino flying squirrel:

- A pre-construction southern rubber boa survey is recommended that would provide 100% visual coverage of the entire Wolf Reservoir and booster station replacement site and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for southern rubber boa.
- Install rubber boa exclusion fence (e.g., silt fence) around the perimeter of the Wolf Reservoir and booster station replacement site prior to commencement of any Project-related ground disturbing activities. All construction activities should be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in nearby habitat.
- A qualified biologist who is familiar with southern rubber boa and their habits should be present on site during initial ground disturbing activities to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (e.g., rotting logs/stumps, duff layer). The

biological monitor should visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.

- If southern rubber boa is found during pre-construction presence/absence surveys or during construction activities, all Project activities shall be halted, CDFW shall be contacted, and a CESA Incidental Take Permit shall be obtained from CDFW prior to reinitiating Project activities.
- To ensure the Project does not impact San Bernardino flying squirrel, it is recommended that a pre-construction survey be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.
- If suitable San Bernardino flying squirrel cavity nesting sites are detected within the proposed Project footprint, then coordination with the CDFW would be necessary to determine appropriate minimization and mitigation measures to offset Project related impacts to this species.

Nesting Birds

Although SPOW are not likely to nest in the Project Area due to existing disturbances within and adjacent the proposed Project footprint, the Project Area is suitable to support other nesting bird species. Most native bird species are protected from unlawful take by the MBTA (Appendix C). Additionally, the State of California provides protection for native bird species and their nests in the FGC (Appendix C). In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally February 1st through August 31st. However, if all work cannot be conducted outside of nesting season, the following precautionary measures are recommended to ensure MBTA compliance:

- Vegetation removal, including any tree removal or pruning, and structure demolition should be conducted outside the typical nesting season (i.e., between September 1st and January 31st).
- To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre-construction nesting bird surveys prior to Project-related disturbance to suitable nesting areas to identify any active nests. The nesting bird surveys should consist of a minimum of five (5) consecutive survey days and should include an additional three (3) consecutive nights of survey for nocturnal species. Nocturnal surveys should be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds).
- If no active nests are found, no further action would be required. If an active nest is found, the biologist should set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. The nest(s) and buffer zones should be field checked weekly by a qualified biological monitor. The approved no-work buffer zone should be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

Lighting Impacts

To avoid potential impacts to nocturnal species San Bernardino flying squirrel, due to light pollution, Project related night lighting (both temporary and permanent) should be directed away from adjacent areas to protect nocturnal species from direct night lighting. Shielding should be incorporated in Project designs to ensure ambient lighting in adjacent areas is not increased.

5.2 Jurisdictional Waters

In addition to the BRA field survey, Jacobs also assessed the proposed Project footprint for the presence of any state and/or federal jurisdictional waters. The result of the jurisdictional waters assessment is that there are no wetland or non-wetland WOTUS or waters of the State present within the proposed Project footprint that would potentially be subject to regulation by the USACE under Section 404 of the CWA, the RWQCB under Section 401 of the CWA and/or Porter Cologne Water Quality Control Act, or the CDFW under Section 1602 of the California FGC, respectively.

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Appendix A. CNDDDB Species and Habitats Documented Within the
Big Bear Lake, Big Bear City, Fawnskin and Moonridge
USGS 7.5-Minute Quadrangles

Special Status Species Occurrence Potential Analysis

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i>	Cienega Seca oxytheca	None/ None	G4?T2; S2; CNPS: 1B.3	Upper montane coniferous forest, pinyon and juniper woodland, Joshua tree woodland. Dry gravelly banks and granitic sand. 1920-2560 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i>	Cushenbury oxytheca	Endangered/ None	G4?T1; S1; CNPS: 1B.1	Pinyon and juniper woodland. On limestone talus and rocky slopes. 1400-2350 m.	The pinyon-juniper woodland habitat this species is associated with is absent from the Project Area and the nearest documented occurrence for this species is approx. 5.2 miles N of the site. Occurrence potential is low.
<i>Accipiter cooperii</i>	Cooper's hawk	None/ None	G5; S4; CDFW: WL	Woodland, chiefly of open, interrupted, or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains; also, live oaks.	No suitable nesting habitat for this species exists within the Project Area. Occurrence potential is low.
<i>Anniella stebbinsi</i>	Southern California legless lizard	None/ None	G3; S3; CDFW: SSC	Generally, south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally, in moist, loose soil. They prefer soils with a high moisture content.	The only documented occurrence for this species in the 4-quad CNDDDB query is a historical collection (1966) and the site consists of graded/developed land with dry, compact soils. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Antennaria marginata</i>	white-margined everlasting	None/ None	G4G5; S1; CNPS: 2B.3	Lower montane coniferous forest, upper montane coniferous forest. Dry woods. 2070-3355 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Aquila chrysaetos</i>	golden eagle	None/ None	G5; S3; CDFW: FP	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff- walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	The site is situated in a residential neighborhood and is subject to existing human disturbance. Furthermore, the nearest documented occurrence for this species is approx. 4.9 miles NW of the Project Area and this species has not been documented nesting in the Big Bear Valley area. Occurrence potential is low.
<i>Arenaria lanuginosa</i> var. <i>saxosa</i>	rock sandwort	None/ None	G5T5; S2; CNPS: 2B.3	Subalpine coniferous forest, upper montane coniferous forest. Mesic, sandy sites. 1920-2935 m.	The microhabitat this species is associated with (i.e., mesic sites) is absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Astragalus albens</i>	Cushenbury milk-vetch	Endangered/ None	G1; S1; CNPS: 1B.1	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Sandy or stony flats, rocky hillsides, canyon washes, and fans, on carbonate or mixed granitic-calcareous debris. 1185- 1950 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.
<i>Astragalus bernardinus</i>	San Bernardino milk- vetch	None/ None	G3; S3; CNPS: 1B.2	Joshua tree woodland, pinyon and juniper woodland. Granitic or carbonate substrates. 290-2290 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Astragalus lentiginosus</i> var. <i>sierrae</i>	Big Bear Valley milk- vetch	None/ None	G5T2; S2; CNPS: 1B.2	Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, upper montane coniferous forest. Stony meadows and open pinewoods; sandy and gravelly soils in a variety of habitats. 1710-3230 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Astragalus leucolobus</i>	Big Bear Valley woollypod	None/ None	G2; S2; CNPS: 1B.2	Lower montane coniferous forest, pebble plain, pinyon and juniper woodland, upper montane coniferous forest. Dry pine woods, gravelly knolls among sagebrush, or stony lake shores in the pine belt. 1460-2895 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Astragalus tidestromii</i>	Tidestrom's milk-vetch	None/ None	G4; S2; CNPS: 2B.2	Mojavean desert scrub. Washes, in sandy or gravelly soil. On limestone. 765-1575 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Atriplex parishii</i>	Parish's brittlescale	None/ None	G1G2; S1; CNPS: 1B.1	Vernal pools, chenopod scrub, playas. Usually on drying alkali flats with fine soils. 4-1420 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Berberis fremontii</i>	Fremont barberry	None/ None	G5; S3; CNPS: 2B.3	Pinyon and juniper woodland, Joshua tree woodland. Rocky, sometimes granitic. 1140-1770 m.	The Project Area is outside the known elevation range for this species and the site consists of graded/developed land. Occurrence potential is low.
<i>Boechnera dispar</i>	pinyon rockcress	None/ None	G3; S3; CNPS: 2B.3	Joshua tree woodland, pinyon and juniper woodland, Mojavean desert scrub. Granitic, gravelly slopes and mesas. Often under desert shrubs which support it as it grows. 1005-2805 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Boechnera lincolnensis</i>	Lincoln rockcress	None/ None	G4G5; S3; CNPS: 2B.3	Chenopod scrub, Mojavean desert scrub. On limestone. 880-2410 m.	The habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Boechnera parishii</i>	Parish's rockcress	None/ None	G2; S2; CNPS: 1B.2	Pebble plain, pinyon and juniper woodland, upper montane coniferous forest. Generally found on pebble plains on clay soil with quartzite cobbles, sometimes on limestone. 1825-2805 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Boechnera shockleyi</i>	Shockley's rockcress	None/ None	G3; S2; CNPS: 2B.2	Pinyon and juniper woodland. On ridges, rocky outcrops and openings on limestone or quartzite. 875-2515 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Bombus caliginosus</i>	obscure bumble bee	None/ None	G4?; S1S2	Coastal areas from Santa Barbara County to north to Washington state. Food plant genera include <i>Baccharis</i> , <i>Cirsium</i> , <i>Lupinus</i> , <i>Lotus</i> , <i>Grindelia</i> and <i>Phacelia</i> .	The Project Area is outside the current known range for this species and the food plants for this species are absent from the Project Area. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Bombus crotchii</i>	Crotch bumble bee	None/ Candidate Endangered	G3G4; S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	The food plants for this species are absent from the Project Area and the nearest documented occurrence for this species (1999) is approx. 5.6 miles NE of the Project Area. Occurrence potential is low.
<i>Bombus morrisoni</i>	Morrison bumble bee	None/ None	G4G5; S1S2	From the Sierra-Cascade ranges eastward across the intermountain west. Food plant genera include <i>Cirsium</i> , <i>Cleome</i> , <i>Helianthus</i> , <i>Lupinus</i> , <i>Chrysothamnus</i> , and <i>Melilotus</i> .	The food plants for this species are absent from the Project Area and the nearest documented occurrence for this species (1999) is approx. 4.9 miles NW of the Project Area. Occurrence potential is low.
<i>Botrychium crenulatum</i>	scalloped moonwort	None/ None	G4; S3; CNPS: 2B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest, lower montane coniferous forest, marshes, and swamps. Moist meadows, freshwater marsh, and near creeks. 1185-3110 m.	The microhabitats this species is associated with (i.e., moist meadows, freshwater marsh, and creeks) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa-lily	None/ None	G3T2; S2; CNPS: 1B.2	Meadows and seeps, chaparral, lower montane coniferous forest. Vernal moist places in yellow-pine forest, chaparral. 195-2530 m.	The microhabitats this species is associated with (i.e., vernal moist places) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Calochortus plummerae</i>	Plummer's mariposa-lily	None/ None	G4; S4; CNPS: 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	Some of the habitat this species is associated with is present in the Project vicinity, but the site consists of graded/developed land and this species has not been documented in the Big Bear Valley area. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Calochortus striatus</i>	alkali mariposa-lily	None/ None	G3?; S2S3; CNPS: 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows, and seeps. Alkaline meadows and ephemeral washes. 70-1600m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Calyptridium pygmaeum</i>	pygmy pussypaws	None/ None	G1G2; S1S2; CNPS: 1B.2	Upper montane coniferous forest, subalpine coniferous forest. Sandy or gravelly sites. 2145-3415 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and the only documented occurrence for this species in the 4-quad CNDDDB query is a historical collection (1926). Occurrence potential is low.
<i>Carex occidentalis</i>	western sedge	None/ None	G4; S3; CNPS: 2B.3	Lower montane coniferous forest, meadows and seeps. 1645-2320 m.	The microhabitats this species is associated with (i.e., meadows and seeps) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Castilleja cinerea</i>	ash-gray paintbrush	Threatened/ None	G1G2; S1S2; CNPS: 1B.2	Pebble plains, upper montane coniferous forest, Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland. Endemic to the San Bernardino Mountains, in clay openings; often in meadow edges. 725-2860 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species was absent at the time of survey (June 2022).
<i>Castilleja lasiorhyncha</i>	San Bernardino Mountains owl's-clover	None/ None	G2?; S2?; CNPS: 1B.2	Meadows and seeps, pebble plain, upper montane coniferous forest, chaparral, riparian woodland. Mesic to drying soils in open areas of stream and meadow margins or in vernal wet areas. 1140-2320 m.	The microhabitats this species is associated with (i.e., stream and meadow margins and vernal wet areas) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Chaetodipus fallax pallidus</i>	pallid San Diego pocket mouse	None/ None	G5T34; S3S4; CDFW: SSC	Desert border areas in eastern San Diego County in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.
<i>Charina umbratica</i>	southern rubber boa	None/ Threatened	G2G3; S2S3	Known from the San Bernardino and San Jacinto mtns; found in a variety of montane forest habitats. Snakes resembling <i>C. umbratica</i> reported from Mt. Pinos and Tehachapi mtns group with <i>C. bottae</i> based on mtDNA. Further research needed. Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs, rock outcrops, and under surface litter.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.
<i>Claytonia peirsonii</i> ssp. <i>bernardinus</i>	San Bernardino spring beauty	None/ None	G2G3T1; S1; CNPS: 1B.1	Pinyon and juniper woodland, upper montane coniferous forest. Rocky, talus slopes, carbonate, usually openings. 2360-2465 m.	The Project Area is outside the known elevation range for this species and the site consists of graded/developed land. Occurrence potential is low.
<i>Claytonia peirsonii</i> ssp. <i>californacis</i>	Furnace spring beauty	None/ None	G2G3T1; S1; CNPS: 1B.1	Pinyon and juniper woodland, upper montane coniferous forest. Rocky, talus slopes, carbonate, usually openings. 2300 m.	The Project Area is outside the known elevation range for this species and the site consists of graded/developed land. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None/ None	G3G4; S2; CDFW: SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	The site is situated in a residential neighborhood and is subject to a high level of existing human disturbance. Occurrence potential is low.
<i>Cymopterus multinervatus</i>	purple-nerve cymopterus	None/ None	G4G5; S2; CNPS: 2B.2	Mojavean desert scrub, pinyon and juniper woodland. Sandy or gravelly places. 765-2195 m.	The Project Area is outside the known elevation range for this species and the site consists of graded/developed land. Occurrence potential is low.
<i>Drymocallis cuneifolia</i> var. <i>cuneifolia</i>	wedgeleaf woodbeauty	None/ None	G2T1; S1; CNPS: 1B.1	Upper montane coniferous forest, riparian scrub. Sometimes on carbonate. 1520-2220 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Dryopteris filix-mas</i>	male fern	None/ None	G5; S2; CNPS: 2B.3	Upper montane coniferous forest. In granite crevices. 1855-3075 m.	Some of the habitat this species is associated with is present within the Project vicinity. However, the only documented occurrence for this species in the 4-quad CNDDDB query is a historical collection (1882) and the site consists of graded/developed land. Occurrence potential is low.
<i>Dudleya abramsii</i> ssp. <i>affinis</i>	San Bernardino Mountains dudleya	None/ None	G4T2; S2; CNPS: 1B.2	Pebble (pavement) plain, upper montane coniferous forest, pinyon and juniper woodland. Outcrops, granite, or quartzite, rarely limestone. 1200-2425 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Empidonax traillii</i> <i>extimus</i>	southwestern willow flycatcher	Endangered/ Endangered	G5T2; S1	Riparian woodlands in Southern California.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Ensatina eschscholtzii klauberi</i>	large-blotched salamander	None/ None	G5T2?; S3; CDFW: WL	Found in conifer and woodland associations. Found in leaf litter, decaying logs and shrubs in heavily forested areas.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.
<i>Eremogone ursina</i>	Big Bear Valley sandwort	Threatened/ None	G1; S1; CNPS: 1B.2	Pebble plain, pinyon and juniper woodland, meadows and seeps. Mesic, rocky sites. 1795-2895 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species was absent at the time of survey (June 2022).
<i>Erigeron parishii</i>	Parish's daisy	Threatened/ None	G2; S2; CNPS: 1B.1	Mojavean desert scrub, pinyon and juniper woodland. Often on carbonate; limestone mountain slopes; often associated with drainages. Sometimes on granite. 1050-2245 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species was absent at the time of survey (June 2022).
<i>Eriogonum evanidum</i>	vanishing wild buckwheat	None/ None	G2; S1; CNPS: 1B.1	Chaparral, cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland. Sandy sites. 975-2240 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	southern alpine buckwheat	None/ None	G4T3; S3; CNPS: 1B.3	Alpine boulder and rock fields, subalpine coniferous forest. Dry granitic gravel. 2500-3415 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	southern mountain buckwheat	Threatened/ None	G4T2; S2; CNPS: 1B.2	Pebble (pavement) plain, lower montane coniferous forest. Usually found in pebble plain habitats. 1765-3020 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species was absent at the time of survey (June 2022).
<i>Eriogonum microthecum</i> var. <i>johnstonii</i>	Johnston's buckwheat	None/ None	G5T2; S2; CNPS: 1B.3	Subalpine coniferous forest, upper montane coniferous forest. Slopes and ridges on granite or limestone. 1795-2865 m	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and there is only one documented occurrence for this species (1998) in the 4-quad CNDDDB query. Occurrence potential is low.
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i>	Bear Lake buckwheat	None/ None	G5T1; S1; CNPS: 1B.1	Lower montane coniferous forest, Great Basin scrub. Clay outcrops. 2000-2100 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and there is only one documented occurrence for this species (2003) in the 4-quad CNDDDB query. Occurrence potential is low.
<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Cushenbury buckwheat	Endangered/ None	G5T1; S1; CNPS: 1B.1	Mojavean desert scrub, pinyon and juniper woodland, Joshua tree woodland. Limestone mountain slopes. Dry, usually rocky places. 1430-2440 m.	The substrates this species is associated with (i.e., limestone slopes) do not occur in the proposed Project footprint and this species was absent at the time of survey (June 2022).
<i>Erythranthe exigua</i>	San Bernardino Mountains monkeyflower	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest. Seeps and sandy sometimes disturbed soil in moist drainages of annual streams; clay soils. 2060-2630 m.	The microhabitats this species is associated with (i.e., seeps and moist drainages) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Erythranthe purpurea</i>	little purple monkeyflower	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plain, upper montane coniferous forest. Dry clay or gravelly soils under Jeffrey pines, along annual streams or vernal springs and seeps. 2045- 2290 m.	The microhabitats this species is associated with (i.e., annual streams or vernal springs and seeps) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Euchloe hyantis andrewsi</i>	Andrew's marble butterfly	None/ None	G3G4T1; S1	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino Mtns, San Bernardino Co, 5,000-6,000 ft. Hostplants are <i>Streptanthus bernardinus</i> and <i>Arabis holboellii var. pinetorum</i> ; larval foodplant is <i>Descurainia richardsonii</i> .	The host and food plant species for this species are absent from the proposed Project footprint. Occurrence potential is low.
<i>Euphydryas editha quino</i>	quino checkerspot butterfly	Endangered/ None	G5T1T2; S1S2	Sunny openings within chaparral and coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants <i>Plantago erecta</i> , <i>P. insularis</i> , and <i>Orthocarpus purpurescens</i> .	The Project Area is outside the current known range of this species and there is no suitable habitat for this species within the Project Area. Occurrence potential is low.
<i>Gasterosteus aculeatus williamsoni</i>	unarmored threespine stickleback	Endangered/ Endangered	G5T1; S1; CDFW: FP	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small Southern California streams. Cool (<24 C), clear water with abundant vegetation.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is considered absent from the Project Area.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Gentiana fremontii</i>	Fremont's gentian	None/ None	G4; S2; CNPS: 2B.3	Meadows and seeps, upper montane coniferous forest. Wet mountain meadows. 2400-2700 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with (i.e., wet meadows) are absent from the Project Area. Therefore, this species is considered absent from the proposed Project footprint.
<i>Gilia leptantha</i> ssp. <i>leptantha</i>	San Bernardino gilia	None/ None	G4T2; S2; CNPS: 1B.3	Lower montane coniferous forest. Sandy or gravelly sites. 1520-2595 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, this species has not been documented in the Project vicinity since 1926 and the site consists of graded/developed land. Occurrence potential is low.
<i>Glaucomys oregonensis californicus</i>	San Bernardino flying squirrel	None/ None	G5T1T2; S1S2; CDFW: SSC	Known from black oak or white fir dominated woodlands between 5,200 – 8,500 ft in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range. Needs cavities in trees/snags for nests and cover. Needs nearby water.	Although the site is situated in a residential neighborhood and is subject to a high level of existing human disturbance, this species has been documented in residential areas and the nearest documented occurrence (2015) is approx. 0.4 miles SW of the proposed Project footprint. Occurrence potential is moderate.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted/ Endangered	G5; S3; CDFW: FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	There is no shoreline habitat suitable to support wintering BAEA within the Project Area. Although this species has been documented nesting in the Fawnskin area, approx. 7 miles NW of the Project site on the west side of Grout Bay, the Project site is in a residential area subject to a high level of existing human disturbance. Therefore, the Project Area is not likely to support nesting BAEA and occurrence potential is low.
<i>Heuchera parishii</i>	Parish's alumroot	None/ None	G3; S3; CNPS: 1B.3	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest, alpine boulder and rock field. Rocky places. Sometimes on carbonate. 1340-3505 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Horkelia wilderae</i>	Barton Flats horkelia	None/ None	G1; S1; CNPS: 1B.1	Lower montane coniferous forest, upper montane coniferous forest, chaparral. On rocky, north aspects in openings that hold persistent snowdrifts. 1980-2895 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species has not been documented in the Big Bear Valley area. Occurrence potential is low.
<i>Hulsea vestita ssp. pygmaea</i>	pygmy hulsea	None/ None	G5T1; S1; CNPS: 1B.3	Alpine boulder and rock field, subalpine coniferous forest. Gravelly sites; on granite. 2860-3502 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Hydroporus simplex</i>	simple hydroporus diving beetle	None/ None	G1?; S1?	Known from aquatic habitats in Tuolumne and San Bernardino counties.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.
<i>Icteria virens</i>	yellow-breasted chat	None/ None	G5; S3; CDFW: SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	None/ None	G2T2; S2; CNPS: 1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest. In pebble plains and meadows with other rare plants. 1490-2960 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Lewisia brachycalyx</i>	short-sepaled lewisia	None/ None	G4; S2; CNPS: 2B.2	Lower montane coniferous forest, meadows and seeps. Dry to moist meadows in rich loam. 1400-2290 m.	The microhabitats this species is associated with (i.e., dry to moist meadows in rich loam) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Lilium parryi</i>	lemon lily	None/ None	G3; S3; CNPS: 1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest. Wet, mountainous terrain; generally, in forested areas; on shady edges of streams, in open boggy meadows and seeps. 625-2930 m.	The microhabitats this species is associated with (i.e., wet, mountainous terrain; in forested areas; on shady edges of streams, in open boggy meadows and seeps) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Linanthus killipii</i>	Baldwin Lake linanthus	None/ None	G1; S1; CNPS: 1B.2	Alkaline meadows, pebble plain, pinyon and juniper woodland, Joshua tree woodland. Usually on pebble plains with other rare species. 1645-2645 m.	The habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	white bog adder's-mouth	None/ None	G4?T4; S1; CNPS: 2B.1	Meadows and seeps, bogs and fens, upper montane coniferous forest. Hillside bogs and mesic meadows. 2375-2560 m.	The microhabitats this species is associated with (i.e., hillside bogs and mesic meadows) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Myotis evotis</i>	long-eared myotis	None/ None	G5; S3	Found in all brush, woodland, and forest habitats from sea level to about 9,000 ft. Prefers coniferous woodlands and forests. Nursery colonies in buildings, crevices, spaces under bark, and snags. Caves used primarily as night roosts.	Some suitable habitat for this species exists in the Project vicinity. However, the site consists of graded/developed land situated in a residential neighborhood and is subject to a high level of existing human disturbance. Occurrence potential is low.
<i>Myotis thysanodes</i>	fringed myotis	None/ None	G4; S3	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood and hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.	Some suitable habitat for this species exists in the Project vicinity. However, the site consists of graded/developed land situated in a residential neighborhood and is subject to a high level of existing human disturbance. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Myotis volans</i>	long-legged myotis	None/ None	G5; S3	Most common in woodland and forest habitats above 4,000 ft. Trees are important day roosts; caves and mines are night roosts. Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.	Some suitable habitat for this species exists in the Project vicinity. However, the site consists of graded/developed land situated in a residential neighborhood and is subject to a high level of existing human disturbance. Occurrence potential is low.
<i>Myotis yumanensis</i>	Yuma myotis	None/ None	G5; S4	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	There are no water bodies present within the Project Area and the site consists of graded/developed land situated in a residential neighborhood and is subject to a high level of existing human disturbance. Occurrence potential is low.
<i>Navarretia peninsularis</i>	Baja navarretia	None/ None	G3; S2; CNPS: 1B.2	Lower montane coniferous forest, chaparral, meadows and seeps, pinyon and juniper woodland. Wet areas in open forest. 1150-2365 m.	The Project Area consists of graded/developed land that does not support the mesic conditions associated with this species. Occurrence potential is low.
<i>Neotamias speciosus speciosus</i>	lodgepole chipmunk	None/ None	G4T2T3; S2S3	Summits of isolated Piute, San Bernardino, and San Jacinto mountains. Usually found in open-canopy forests. Habitat is usually lodgepole pine forests in the San Bernardino Mts and chinquapin slopes in the San Jacinto Mts.	The lodgepole pine forests this species typically occurs in are absent from the Project Area. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Oncorhynchus mykiss irideus</i> pop. 10	Steelhead – southern California DPS	Endangered/ None	G5T1Q; S1	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.
<i>Oreonana vestita</i>	woolly mountain-parsley	None/ None	G3; S3; CNPS: 1B.3	Subalpine coniferous forest, upper montane coniferous forest, lower montane coniferous forest. High ridges; on scree, talus, or gravel. 800-3370 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Oxytropis oreophila</i> var. <i>oreophila</i>	rock-loving oxytrope	None/ None	G5T4T5; S2; CNPS: 2B.3	Alpine boulder and rock field, subalpine coniferous forest. Gravelly or rocky sites. 2615-3505 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.
<i>Packera bernardina</i>	San Bernardino ragwort	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest. Mesic, sometimes alkaline meadows, and dry rocky slopes. 1615-2470 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
	Pebble Plains	None/ None	G1; S1.1		There is no pebble plain or pebble plain-like habitat within the proposed Project footprint and pebble plain indicator species are absent from the proposed Project footprint.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Perideridia parishii</i> ssp. <i>parishii</i>	Parish's yampah	None/ None	G4T3T4; S2; CNPS: 2B.2	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Damp meadows or along streambeds- prefers an open pine canopy. 1470-2530 m.	The microhabitats this species is associated with (i.e., damp meadows or streambeds) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Phlox dolichantha</i>	Big Bear Valley phlox	None/ None	G2; S2; CNPS: 1B.2	Pebble plains, upper montane coniferous forest. Sloping hillsides, in shade under pines and <i>Quercus kelloggii</i> , with heavy pine litter; also, in openings. 1980-2805 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Phrynosoma blainvillii</i>	coast horned lizard	None/ None	G3G4; S3S4; CDFW: SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	This species has not been documented in the Big Bear Valley and the Project Area is likely outside the current range of this species. Occurrence potential is low.
<i>Physaria kingii</i> ssp. <i>bernardina</i>	San Bernardino Mountains bladderpod	Endangered/ None	G5T1; S1; CNPS: 1B.1	Pinyon and juniper woodland, lower montane coniferous forest, subalpine coniferous forest. Dry sandy to rocky carbonate soils. 1980-2590 m.	The carbonate soils this species requires are absent from the Project Area and this species was absent at the time of survey (June 2022).
<i>Piranga rubra</i>	summer tanager	None/ None	G5; S1; CDFW: SSC	Summer resident of desert riparian along lower Colorado River, and locally elsewhere in California deserts. Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.	No suitable habitat for this species exists within the Project Area. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Poa atropurpurea</i>	San Bernardino blue grass	Endangered/ None	G2; S2; CNPS: 1B.2	Meadows and seeps. Mesic meadows of open pine forests and grassy slopes, loamy alluvial to sandy loam soil. 1255-2655 m.	The habitats this species is associated with (i.e., mesic meadows and seeps) do not occur in the proposed Project footprint and this species was absent at the time of survey (June 2022).
<i>Poliomintha incana</i>	frosted mint	None/ None	G5; SH; CNPS: 2A	Lower montane coniferous forest. In boggy soil. 1600-1700 m.	The microhabitats this species is associated with (i.e., boggy soils) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Psychomastax deserticola</i>	desert monkey grasshopper	None/ None	G1G2; S1S2	Occurs in very arid environments in the vicinity of the San Bernardino Mtns. Known to occur on chamise (<i>Adenostoma fasciculatum</i>).	No suitable habitat for this species exists within the Project Area. Occurrence potential is <i>low</i> .
<i>Pyrrocoma uniflora</i> var. <i>gossypina</i>	Bear Valley pyrrocoma	None/ None	G5T1; S1; CNPS: 1B.2	Pebble plain, meadows and seeps. Meadows, meadow edges, and along streams in or near pebble plain habitat. 2040-2280 m.	The microhabitats this species is associated with (i.e., meadow edges, seeps, and streams) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Rana muscosa</i>	southern mountain yellow-legged frog	Endangered/ Endangered	G1; S1; CDFW: WL	Federal listing refers to populations in the San Gabriel, San Jacinto and San Bernardino mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014. Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs. to complete their aquatic development.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Rosa woodsii</i> var. <i>glabrata</i>	Cushenbury rose	None/ None	G5T1; S1; CNPS: 1B.1	Mojavean desert scrub. Springs. 1095-1220 m.	The Project Area is outside the known elevation range for this species and the habitats this species is associated with are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Saltugilia latimeri</i>	Latimer's woodland-gilia	None/ None	G3; S3; CNPS: 1B.2	Chaparral, Mojavean desert scrub, pinyon and juniper woodland. Rocky or sandy substrate; sometimes in washes, sometimes limestone. 120-2200 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	None/ Rare	G3T1; S1; CNPS: 1B.2	Chaparral, cismontane woodland, lower montane coniferous forest. Disturbed burned or cleared areas on dry, rocky slopes, in fuel breaks and fire roads along the mountain summits. 1095-2135 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land and this species has not been documented in the Big Bear Valley area. Occurrence potential is low.
<i>Sidalcea malviflora</i> ssp. <i>dolosa</i>	Bear Valley checkerbloom	None/ None	G5T2; S2; CNPS: 1B.2	Meadows and seeps, riparian woodland, lower montane coniferous forest, upper montane coniferous forest. Known from wet areas within forested habitats. Affected by hydrological changes. 1575-2590 m.	The microhabitats this species is associated with (i.e., wet areas) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Sidalcea pedata</i>	bird-foot checkerbloom	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Meadows and seeps, pebble plains. Vernal mesic sites in meadows or pebble plains. 1840-2305 m.	The habitats this species is associated with (i.e., vernal mesic sites in meadows or pebble plains) do not occur in the proposed Project footprint and this species was absent at the time of survey (June 2022).

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Sisyrinchium longipes</i>	timberland blue-eyed grass	None/ None	G3G4; S1; CNPS: 2B.2	Meadows and seeps. Mesic areas in meadows; seeps. 2060 m.	The microhabitats this species is associated with (i.e., mesic areas in meadows; seeps) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
	Southern California Threespine Stickleback Stream	None/ None	GNR; SNR		This aquatic habitat is absent from the Project Area.
<i>Sphenopholis obtusata</i>	prairie wedge grass	None/ None	G5; S2; CNPS: 2B.2	Cismontane woodland, meadows and seeps. Open moist sites, along rivers and springs, alkaline desert seeps. 15-2625 m.	The microhabitats this species is associated with (i.e., moist sites, along rivers and springs, alkaline desert seeps) are absent from the Project Area. Therefore, this species is presumed absent from the proposed Project footprint.
<i>Streptanthus bernardinus</i>	Laguna Mountains jewelflower	None/ None	G3G4; S3S4; CNPS: 4.3	Chaparral, lower montane coniferous forest. Clay or decomposed granite soils; sometimes in disturbed areas such as stream sides or roadcuts. 1440-2500 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Streptanthus campestris</i>	southern jewelflower	None/ None	G3; S3; CNPS: 1B.3	Chaparral, lower montane coniferous forest, pinyon and juniper woodland. Open, rocky areas. 605-2590 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Streptanthus juneae</i>	June's jewelflower	None/ None	G2; S2 CNPS: 1B.2	Lower montane coniferous forest, chaparral (montane). Openings. 2155-2370 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.

Scientific Name	Common Name	Listing Status Federal/ State	Other Status	Habitat	Occurrence Potential
<i>Symphyotrichum defoliatum</i>	San Bernardino aster	None/ None	G2; S2; CNPS: 1B.2	Meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland. Vernal mesic grassland or near ditches, streams and springs; disturbed areas. 3-2045 m.	Some of the habitat this species is associated with is present in the Project vicinity. However, the site consists of graded/developed land. Occurrence potential is low.
<i>Taraxacum californicum</i>	California dandelion	Endangered/ None	G1G2; S1S2; CNPS: 1B.1	Meadows and seeps. Mesic meadows, usually free of taller vegetation. 1620-2590 m.	The habitats this species is associated with (i.e., mesic meadows and seeps) do not occur in the proposed Project footprint and this species was absent at the time of survey (June 2022).
<i>Thamnophis hammondi</i>	two-striped garter snake	None/ None	G4; S3S4; CDFW: SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	The aquatic habitats required by this species are absent from the Project Area. Therefore, this species is presumed absent from the Project Area.
<i>Thelypodium stenopetalum</i>	slender-petaled thelypodium	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Meadows and seeps. Seasonally moist alkaline clay soils; associated with seeps and springs in the pebble plains. 2045-2240 m.	The habitats this species is associated with (i.e., meadows, seeps, and springs in pebble plains) do not occur in the proposed Project footprint and this species was absent at the time of survey (June 2022).
<i>Viola pinetorum</i> ssp. <i>grisea</i>	grey-leaved violet	None/ None	G4G5T3; S3; CNPS: 1B.2	Subalpine coniferous forest, upper montane coniferous forest, meadows, and seeps. Dry mountain peaks and slopes. 1580-3700 m.	The only documented occurrence for this species is a 1886 collection from the "historic Bear Valley" area. Occurrence potential is low.

Coding and Terms

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

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

State Fully Protected: The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Global Rankings (Species or Natural Community Level):

- G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
- G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
- G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 = Secure – Common; widespread and abundant.

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

State Ranking:

- S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.
- S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.
- S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.
- S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.
- S5 = Secure – Common, widespread, and abundant in the State.

California Rare Plant Rankings (CNPS List):

- 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
- 1B = Plants rare, threatened, or endangered in California and elsewhere.
- 2A = Plants presumed extirpated in California, but common elsewhere.
- 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
- 3 = Plants about which more information is needed; a review list.
- 4 = Plants of limited distribution; a watch list.

Threat Ranks:

- .1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- .3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Appendix B. Site Photos



Photo 1. Northeast corner of the Project site; looking southwest at the existing Wolf Reservoir and booster station.



Photo 2. Southeast corner of the Project site; looking north at the existing Wolf Reservoir and booster station.



Photo 3. Proposed 12-inch pipeline upgrade within Luna Road; looking north along the Luna Road alignment from the intersection of Luna Road and Sheephorn Road.



Photo 4. Proposed 12-inch pipeline upgrade within Sheephorn Road; looking east along the Sheephorn Road alignment from the intersection of Luna Road and Sheephorn Road.



Photo 5. Proposed 12-inch pipeline upgrade within Siskiyou Drive; looking south along the Siskiyou Drive alignment from the intersection of Buffalo Trail and Siskiyou Drive.



Photo 6. Proposed 12-inch pipeline upgrade within Buffalo Trail; looking east along the Buffalo Trail alignment from the intersection of Buffalo Trail and Siskiyou Drive.



Photo 7. Proposed 8-inch pipeline upgrade within Siskiyou Drive; looking north along the Siskiyou Drive alignment from the intersection of Buffalo Trail and Siskiyou Drive.



Photo 8. Proposed 8-inch pipeline upgrade within Siskiyou Drive; looking west along the Siskiyou Drive alignment from the intersection of Shasta Road and Siskiyou Drive.

Appendix C. Regulatory Framework

Federal Regulations

Clean Water Act

The purpose of the Clean Water Act (CWA) of 1977 is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into “waters of the United States” (WOTUS) without a permit from the United States Army Corps of Engineers (USACE). The definition of waters of the United States includes rivers, streams, estuaries, territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 Code of Federal Regulations [CFR] 328.3 7b). The U.S. Environmental Protection Agency (EPA) also has authority over wetlands and may override a USACE permit. Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; in California this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

Federal Endangered Species Act (ESA)

The federal Endangered Species Act (ESA) of 1973 protects plants and wildlife that are listed by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) as endangered or threatened. Section 9 of the ESA (USA) prohibits the taking of endangered wildlife, where taking is defined as any effort to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 CFR 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law (16 United States Code [USC] 1538). Under Section 7 of the ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect an endangered species (including plants) or its Critical Habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity, provided the action will not jeopardize the continued existence of the species. The ESA specifies that the USFWS designate habitat for a species at the time of its listing in which are found the physical or biological features “essential to the conservation of the species,” or which may require “special Management consideration or protection...” (16 USC § 1533[a][3].2; 16 USC § 1532[a]). This designated Critical Habitat is then afforded the same protection under the ESA as individuals of the species itself, requiring issuance of an Incidental Take Permit prior to any activity that results in “the destruction or adverse modification of habitat determined to be critical” (16 USC § 1536[a][2]).

Interagency Consultation and Biological Assessments

Section 7 of ESA provides a means for authorizing the “take” of threatened or endangered species by federal agencies, and applies to actions that are conducted, permitted, or funded by a federal agency. The statute requires federal agencies to consult with the USFWS or National Marine Fisheries Service (NMFS), as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of Critical Habitat for these species. If a Proposed Project “may affect” a listed species or destroy or modify Critical Habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the potential effect.

Habitat Conservation Plans

Section 10 of the federal ESA requires the acquisition of an Incidental Take Permit (ITP) from the USFWS by non-

federal landowners for activities that might incidentally harm (or “take”) endangered or threatened wildlife on their land. To obtain a permit, an applicant must develop a Habitat Conservation Plan that is designed to offset any harmful impacts the proposed activity might have on the species.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 U.S.C. Sections 661 to 667e et seq.) applies to any federal Project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (The Eagle Act) (1940), amended in 1962, was originally implemented for the protection of bald eagles (*Haliaeetus leucocephalus*). In 1962, Congress amended the Eagle Act to cover golden eagles (*Aquila chrysaetos*), a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. The golden eagle, however, is accorded somewhat lighter protection under the Eagle Act than that of the bald eagle.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 implements international treaties between the United States and other nations created to protect migratory birds, any of their parts, eggs, and nests from activities, such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR Part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code (CFGC).

Executive Orders (EO)

Invasive Species – EO 13112 (1999): Issued on February 3, 1999, promotes the prevention and introduction of invasive species and provides for their control and minimizes the economic, ecological, and human health impacts that invasive species cause through the creation of the Invasive Species Council and Invasive Species Management Plan.

Migratory Bird – EO 13186 (2001): Issued on January 10, 2001, promotes the conservation of migratory birds and their habitats and directs federal agencies to implement the Migratory Bird Treaty Act. Protection and Enhancement of Environmental Quality – EO 11514 (1970a), issued on March 5, 1970, supports the purpose and policies of the National Environmental Policy Act (NEPA) and directs federal agencies to take measures to meet national environmental goals.

Migratory Bird Treaty Reform Act

The Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108-447) amends the Migratory Bird Treaty Act (16 U.S.C. Sections 703 to 712) such that nonnative birds or birds that have been introduced by humans to the United States or its territories are excluded from protection under the Act. It defines a native migratory bird as a species present in the United States and its territories as a result of natural biological or ecological processes. This list excluded two additional species commonly observed in the United States, the rock pigeon (*Columba livia*) and domestic goose (*Anser domesticus*).

Birds of Conservation Concern

Birds of Conservation Concern (BCC) is a USFWS list of bird species identified to have the highest conservation priority, and with the potential for becoming candidates for listing as federally threatened or endangered. The chief legal authority for BCC is the Fish and Wildlife Conservation Act of 1980 (FWCA). Other authorities include the FESA, the Fish and Wildlife Act of 1956, and the Department of the Interior U.S Code (16 U.S.C. § 701). The 1988 amendment to the FWCA (Public Law 100-653, Title VIII) requires the Secretary of the Interior, through the USFWS, to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973” (USFWS, 2008a).

State Regulations

California Fish and Game Code Sections 1600 through 1606 of the CFGC

This section requires that a Streambed Alteration Application be submitted to the CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” The CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the Department and the applicant is the Streambed Alteration Agreement. Often, Projects that require a Streambed Alteration Agreement also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the Streambed Alteration Agreement may overlap.

California Endangered Species Act

The California Endangered Species Act (CESA) (Sections 2050 to 2085) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats by protecting “all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation.” Animal species are listed by the CDFW as threatened or endangered, and plants are listed as rare, threatened, or endangered. However, only those plant species listed as threatened or endangered receive protection under the California ESA.

CESA mandates that state agencies do not approve a Project that would jeopardize the continued existence of these species if reasonable and prudent alternatives are available that would avoid a jeopardy finding. There are no state agency consultation procedures under the California ESA. For Projects that would affect a species that is federally and state listed, compliance with ESA satisfies the California ESA if the California Department of Fish and Wildlife (CDFW) determines that the federal incidental take authorization is consistent with the California ESA under Section 2080.1. For Projects that would result in take of a species that is state listed only, the Project sponsor must apply for a take permit, in accordance with Section 2081(b).

Fully Protected Species

Four sections of the California Fish and Game Code (CFGF) list 37 fully protected species (CFGF Sections 3511, 4700, 5050, and 5515). These sections prohibit take or possession "at any time" of the species listed, with few exceptions, and state that "no provision of this code or any other law will be construed to authorize the issuance of permits or licenses to 'take' the species," and that no previously issued permits or licenses for take of the species "shall have any force or effect" for authorizing take or possession.

Bird Nesting Protections

Bird nesting protections (Sections 3503, 3503.5, 3511, 3513 and 3800) in the CFGF include the following:

- Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.
- Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (new world vultures, hawks, eagles, ospreys, and falcons, among others), and Strigiformes (owls).
- Section 3511 prohibits the take or possession of Fully protected birds.
- Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that Project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.

Section 3800 prohibits the take of any non-game bird (i.e., bird that is naturally occurring in California that is not a gamebird, migratory game bird, or fully protected bird).

Native Plant Protection Act

The Native Plant Protect Act (NPPA) (1977) (CFGF Sections 1900-1913) was created with the intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as endangered or rare and to protect endangered and rare plants from take. CESA (CFGF 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the Fish and Game Code.

Appendix D. USFWS IPaC, CNDDDB, & CNPS Species Lists

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

San Bernardino County, California



Local office

Carlsbad Fish And Wildlife Office

☎ (760) 431-9440

📅 (760) 431-5901

2177 Salk Avenue - Suite 250

2177 Sunnyside Blvd 200
Carlsbad, CA 92008-7385

NOT FOR CONSULTATION

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 species¹ 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 Fisheries²).

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

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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

Birds

NAME	STATUS
<p>California Spotted Owl <i>Strix occidentalis occidentalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7266</p>	Proposed Endangered
<p>Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6749</p>	Endangered

Fishes

NAME	STATUS
<p>Unarmored Threespine Stickleback <i>Gasterosteus aculeatus</i> <i>williamsoni</i> Wherever found There is proposed critical habitat for this species. https://ecos.fws.gov/ecp/species/7002</p>	Endangered

Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743</p>	Candidate

Flowering Plants

NAME	STATUS
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<p>Ash-grey Paintbrush <i>Castilleja cinerea</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3702</p>	Threatened
<p>Bear Valley Sandwort <i>Arenaria ursina</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7317</p>	Threatened
<p>California Taraxacum <i>Taraxacum californicum</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7421</p>	Endangered
<p>Parish's Daisy <i>Erigeron parishii</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8446</p>	Threatened
<p>Pedate Checker-mallow <i>Sidalcea pedata</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1340</p>	Endangered
<p>San Bernardino Bluegrass <i>Poa atropurpurea</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4641</p>	Endangered
<p>San Bernardino Mountains Bladderpod <i>Lesquerella kingii</i> ssp. <i>bernardina</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/809</p>	Endangered

Slender-petaled Mustard *Thelypodium stenopetalum* Endangered
Wherever found
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/1658>

Southern Mountain Wild-buckwheat *Eriogonum kennedyi* Threatened
var. *austromontanum*
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
<https://ecos.fws.gov/ecp/species/7201>

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 Act¹ and the Bald and Golden Eagle Protection Act².

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 <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.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
<p>Allen's Hummingbird <i>Selasphorus sasin</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637</p>	Breeds Feb 1 to Jul 15
<p>Bald Eagle <i>Haliaeetus leucocephalus</i> 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.</p>	Breeds Jan 1 to Aug 31
<p>Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> 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/8</p>	Breeds Apr 1 to Aug 15
<p>Black-chinned Sparrow <i>Spizella atrogularis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447</p>	Breeds Apr 15 to Jul 31

Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher <i>Toxostoma redivivum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Cassin's Finch <i>Carpodacus cassinii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch <i>Carduelis lawrencei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Long-eared Owl <i>asio otus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Nuttall's Woodpecker <i>Picoides nuttallii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20

Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9656>

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>

Pinyon Jay *Gymnorhinus cyanocephalus*

Breeds Feb 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9420>

Probability of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

Breeding Season (■)

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

Survey Effort (|)

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

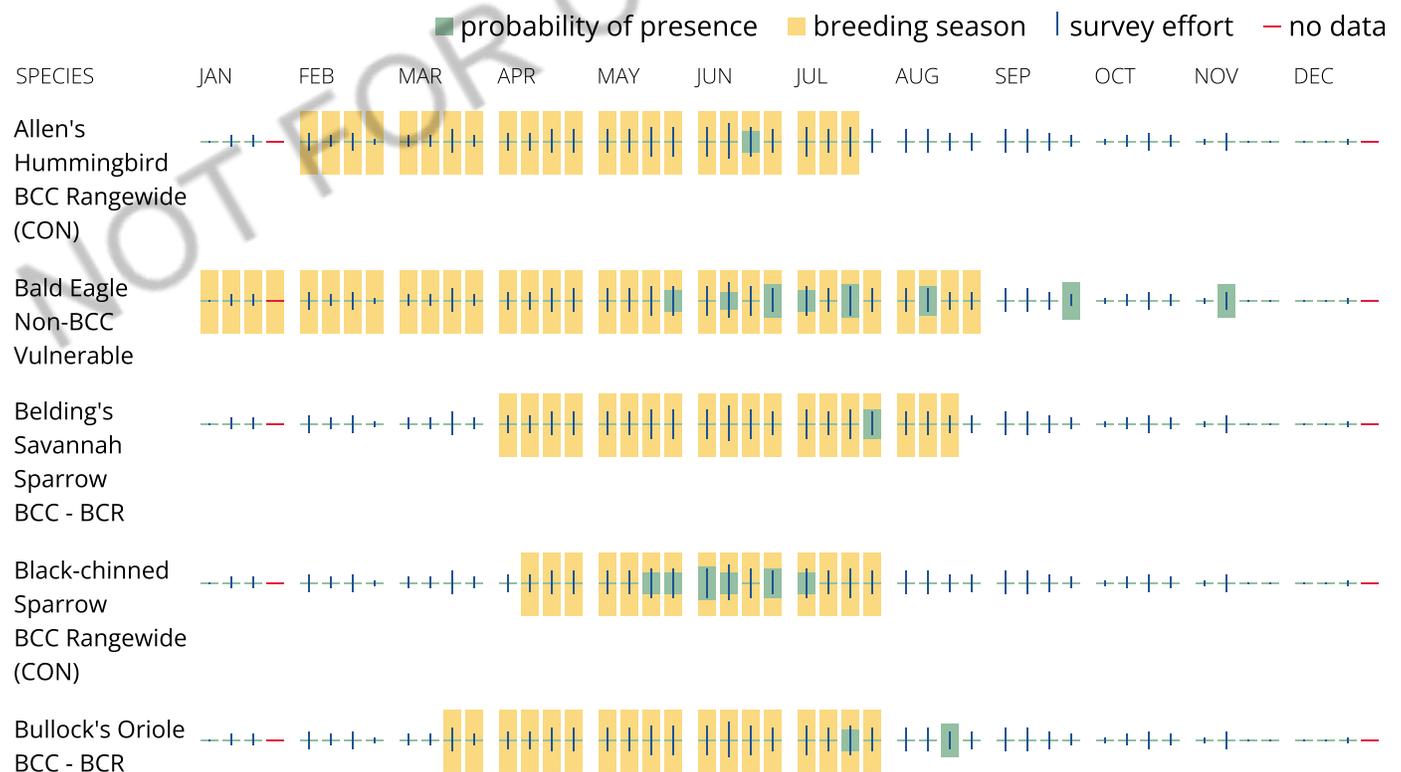
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

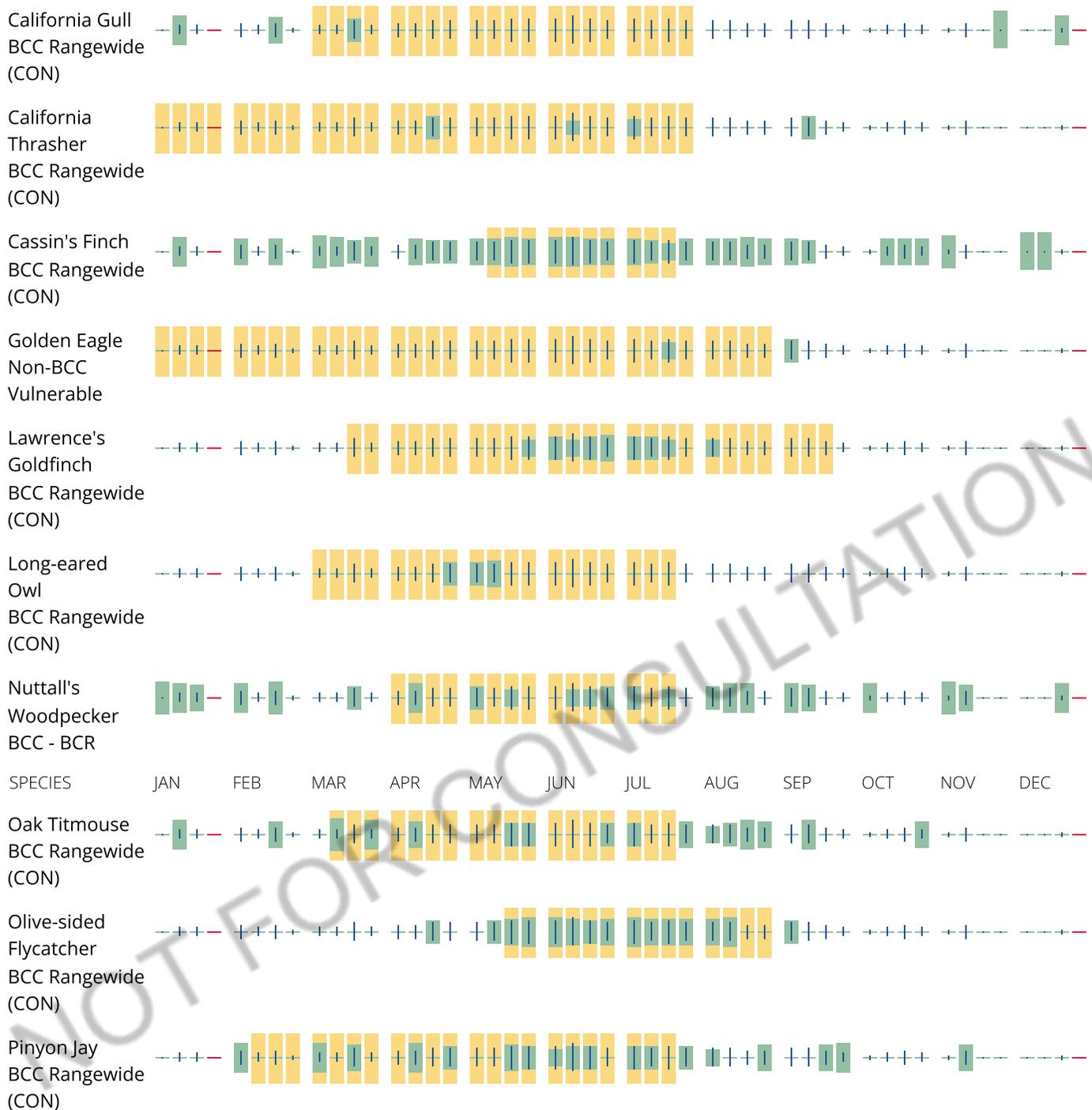
No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

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





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

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

What does IPaC use to generate the list of migratory birds that potentially occur 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 [Rapid Avian Information Locator \(RAIL\) Tool](#).

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

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

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

How do I know if a bird is breeding, wintering or migrating in my 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 query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

National Wildlife Refuge lands

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

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

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](#).

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

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.



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Big Bear City (3411637) OR Big Bear Lake (3411628) OR Fawnskin (3411638) OR Moonridge (3411627))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i> Cienega Seca oxytheca	PDPGN0J042	None	None	G4?T2	S2	1B.3
<i>Acanthoscyphus parishii</i> var. <i>goodmaniana</i> Cushenbury oxytheca	PDPGN0J043	Endangered	None	G4?T1	S1	1B.1
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Anniella stebbinsi</i> Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
<i>Antennaria marginata</i> white-margined everlasting	PDAST0H1G0	None	None	G4G5	S1	2B.3
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arenaria lanuginosa</i> var. <i>saxosa</i> rock sandwort	PDCAR040E4	None	None	G5T5	S2	2B.3
<i>Astragalus albens</i> Cushenbury milk-vetch	PDFAB0F0A0	Endangered	None	G1	S1	1B.1
<i>Astragalus bernardinus</i> San Bernardino milk-vetch	PDFAB0F190	None	None	G3	S3	1B.2
<i>Astragalus lentiginosus</i> var. <i>sierrae</i> Big Bear Valley milk-vetch	PDFAB0FB9L	None	None	G5T2	S2	1B.2
<i>Astragalus leucolobus</i> Big Bear Valley woollypod	PDFAB0F4T0	None	None	G2	S2	1B.2
<i>Astragalus tidestromii</i> Tidestrom's milk-vetch	PDFAB0F8X0	None	None	G4	S2	2B.2
<i>Atriplex parishii</i> Parish's brittle scale	PDCHE041D0	None	None	G1G2	S1	1B.1
<i>Berberis fremontii</i> Fremont barberry	PDBER06060	None	None	G5	S3	2B.3
<i>Boecheria dispar</i> pinyon rockcress	PDBRA060F0	None	None	G3	S3	2B.3
<i>Boecheria lincolnensis</i> Lincoln rockcress	PDBRA061M3	None	None	G4G5	S3	2B.3
<i>Boecheria parishii</i> Parish's rockcress	PDBRA061C0	None	None	G2	S2	1B.2
<i>Boecheria shockleyi</i> Shockley's rockcress	PDBRA061V0	None	None	G3	S2	2B.2
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G2G3	S1S2	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



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<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
<i>Bombus morrisoni</i> Morrison bumble bee	IIHYM24460	None	None	G3	S1S2	
<i>Botrychium crenulatum</i> scalloped moonwort	PPOPH010L0	None	None	G4	S3	2B.2
<i>Calochortus palmeri var. palmeri</i> Palmer's mariposa-lily	PMLIL0D122	None	None	G3T2	S2	1B.2
<i>Calochortus plummerae</i> Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
<i>Calochortus striatus</i> alkali mariposa-lily	PMLIL0D190	None	None	G3	S2S3	1B.2
<i>Calyptridium pygmaeum</i> pygmy pussypaws	PDPOR09070	None	None	G1G2	S1S2	1B.2
<i>Carex occidentalis</i> western sedge	PMCYP039M0	None	None	G4	S3	2B.3
<i>Castilleja cinerea</i> ash-gray paintbrush	PDSCR0D0H0	Threatened	None	G1G2	S1S2	1B.2
<i>Castilleja lasiorhyncha</i> San Bernardino Mountains owl's-clover	PDSCR0D410	None	None	G2?	S2?	1B.2
<i>Chaetodipus fallax pallidus</i> pallid San Diego pocket mouse	AMAFD05032	None	None	G5T3T4	S3S4	SSC
<i>Charina umbratica</i> southern rubber boa	ARADA01011	None	Threatened	G2G3	S2S3	
<i>Claytonia peirsonii ssp. bernardinus</i> San Bernardino spring beauty	PDPOR03122	None	None	G2G3T1	S1	1B.1
<i>Claytonia peirsonii ssp. californacis</i> Furnace spring beauty	PDPOR03123	None	None	G2G3T1	S1	1B.1
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
<i>Cymopterus multinervatus</i> purple-nerve cymopterus	PDAP10U0Q0	None	None	G4G5	S2	2B.2
<i>Drymocallis cuneifolia var. cuneifolia</i> wedgeleaf woodbeauty	PDROS2D011	None	None	G2T1	S1	1B.1
<i>Dryopteris filix-mas</i> male fern	PPDRY0A0B0	None	None	G5	S2	2B.3
<i>Dudleya abramsii ssp. affinis</i> San Bernardino Mountains dudleya	PDCRA04013	None	None	G4T2	S2	1B.2
<i>Empidonax traillii extimus</i> southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S3	
<i>Ensatina eschscholtzii klauberi</i> large-blotched salamander	AAAAD04013	None	None	G5T2?	S3	WL



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



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<i>Eremogone ursina</i> Big Bear Valley sandwort	PDCAR040R0	Threatened	None	G1	S1	1B.2
<i>Erigeron parishii</i> Parish's daisy	PDAST3M310	Threatened	None	G2	S2	1B.1
<i>Eriogonum evanidum</i> vanishing wild buckwheat	PDPGN08780	None	None	G2	S1	1B.1
<i>Eriogonum kennedyi</i> var. <i>alpigenum</i> southern alpine buckwheat	PDPGN083B1	None	None	G4T3	S3	1B.3
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i> southern mountain buckwheat	PDPGN083B2	Threatened	None	G4T2	S2	1B.2
<i>Eriogonum microthecum</i> var. <i>johnstonii</i> Johnston's buckwheat	PDPGN083W5	None	None	G5T2	S2	1B.3
<i>Eriogonum microthecum</i> var. <i>lacus-ursi</i> Bear Lake buckwheat	PDPGN083WF	None	None	G5T1	S1	1B.1
<i>Eriogonum ovalifolium</i> var. <i>vineum</i> Cushenbury buckwheat	PDPGN084F8	Endangered	None	G5T1	S1	1B.1
<i>Erythranthe exigua</i> San Bernardino Mountains monkeyflower	PDSCR1B140	None	None	G2	S2	1B.2
<i>Erythranthe purpurea</i> little purple monkeyflower	PDSCR1B2B0	None	None	G2	S2	1B.2
<i>Euchloe hyantis andrewsi</i> Andrew's marble butterfly	IILEPA5032	None	None	G4G5T1	S2	
<i>Euphydryas editha quino</i> quino checkerspot butterfly	IILEPK405L	Endangered	None	G5T1T2	S1S2	
<i>Gasterosteus aculeatus williamsoni</i> unarmored threespine stickleback	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
<i>Gentiana fremontii</i> Fremont's gentian	PDGEN060Y0	None	None	G4	S2	2B.3
<i>Gilia leptantha</i> ssp. <i>leptantha</i> San Bernardino gilia	PDPLM040W1	None	None	G4T2	S2	1B.3
<i>Glaucomys oregonensis californicus</i> San Bernardino flying squirrel	AMAFB09021	None	None	G5T1T2	S1S2	SSC
<i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
<i>Heuchera parishii</i> Parish's alumroot	PDSAX0E1F0	None	None	G3	S3	1B.3
<i>Horkelia wilderae</i> Barton Flats horkelia	PDROS0W0J0	None	None	G1	S1	1B.1
<i>Hulsea vestita</i> ssp. <i>pygmaea</i> pygmy hulsea	PDAST4Z077	None	None	G5T1	S1	1B.3
<i>Hydroporus simplex</i> simple hydroporus diving beetle	IICOL55050	None	None	G1G3	S1S3	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



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<i>Icteria virens</i> yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
<i>Ivesia argyrocoma var. argyrocoma</i> silver-haired ivesia	PDROS0X021	None	None	G2T2	S2	1B.2
<i>Lewisia brachycalyx</i> short-sepaled lewisia	PDPOR04010	None	None	G4	S2	2B.2
<i>Lilium parryi</i> lemon lily	PMLIL1A0J0	None	None	G3	S3	1B.2
<i>Linanthus killipii</i> Baldwin Lake linanthus	PDPLM090N0	None	None	G1	S1	1B.2
<i>Malaxis monophyllos var. brachypoda</i> white bog adder's-mouth	PMORC1R010	None	None	G5T4T5	S1	2B.1
<i>Myotis evotis</i> long-eared myotis	AMACC01070	None	None	G5	S3	
<i>Myotis thysanodes</i> fringed myotis	AMACC01090	None	None	G4	S3	
<i>Myotis volans</i> long-legged myotis	AMACC01110	None	None	G4G5	S3	
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
<i>Navarretia peninsularis</i> Baja navarretia	PDPLM0C0L0	None	None	G3	S2	1B.2
<i>Neotamias speciosus speciosus</i> lodgepole chipmunk	AMAFB02172	None	None	G4T3T4	S2	
<i>Oncorhynchus mykiss irideus pop. 10</i> steelhead - southern California DPS	AFCHA0209J	Endangered	Candidate Endangered	G5T1Q	S1	
<i>Oreonana vestita</i> woolly mountain-parsley	PDAPI1G030	None	None	G3	S3	1B.3
<i>Oxytropis oreophila var. oreophila</i> rock-loving oxytrope	PDFAB2X0H3	None	None	G5T4T5	S2	2B.3
<i>Packera bernardina</i> San Bernardino ragwort	PDAST8H0E0	None	None	G2	S2	1B.2
<i>Pebble Plains</i> Pebble Plains	CTT47000CA	None	None	G1	S1.1	
<i>Perideridia parishii ssp. parishii</i> Parish's yampah	PDAPI1N0C2	None	None	G4T3T4	S2	2B.2
<i>Phlox dolichantha</i> Big Bear Valley phlox	PDPLM0D0P0	None	None	G2	S2	1B.2
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G4	S4	SSC
<i>Physaria kingii ssp. bernardina</i> San Bernardino Mountains bladderpod	PDBRA1N0W1	Endangered	None	G5T1	S1	1B.1



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



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<i>Piranga rubra</i> summer tanager	ABPBX45030	None	None	G5	S1	SSC
<i>Poa atropurpurea</i> San Bernardino blue grass	PMPOA4Z0A0	Endangered	None	G2	S2	1B.2
<i>Poliomintha incana</i> frosted mint	PDLAM1L020	None	None	G5	SH	2A
<i>Psychomastax deserticola</i> desert monkey grasshopper	IIORT15010	None	None	G2G3	S1	
<i>Pyrocoma uniflora var. gossypina</i> Bear Valley pyrrocoma	PDASTDT0K1	None	None	G5T1	S1	1B.2
<i>Rana muscosa</i> southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
<i>Rosa woodsii var. glabrata</i> Cushenbury rose	PDROS1J191	None	None	G5T1	S1	1B.1
<i>Saltugilia latimeri</i> Latimer's woodland-gilia	PDPLM0H010	None	None	G3	S3	1B.2
<i>Sidalcea hickmanii ssp. parishii</i> Parish's checkerbloom	PDMAL110A3	None	Rare	G3T1	S1	1B.2
<i>Sidalcea malviflora ssp. dolosa</i> Bear Valley checkerbloom	PDMAL110FH	None	None	G5T2	S2	1B.2
<i>Sidalcea pedata</i> bird-foot checkerbloom	PDMAL110L0	Endangered	Endangered	G1	S1	1B.1
<i>Sisyrinchium longipes</i> timberland blue-eyed grass	PMIRI0D0Y0	None	None	G3	S1	2B.2
<i>Southern California Threespine Stickleback Stream</i> Southern California Threespine Stickleback Stream	CARE2320CA	None	None	GNR	SNR	
<i>Sphenopholis obtusata</i> prairie wedge grass	PMPOA5T030	None	None	G5	S2	2B.2
<i>Streptanthus bernardinus</i> Laguna Mountains jewelflower	PDBRA2G060	None	None	G3G4	S3S4	4.3
<i>Streptanthus campestris</i> southern jewelflower	PDBRA2G0B0	None	None	G3	S3	1B.3
<i>Streptanthus juneae</i> June's jewelflower	PDBRA2G540	None	None	G2	S2	1B.2
<i>Symphotrichum defoliatum</i> San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
<i>Taraxacum californicum</i> California dandelion	PDAST93050	Endangered	None	G1G2	S1S2	1B.1
<i>Thamnophis hammondi</i> two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
<i>Thelypodium stenopetalum</i> slender-petaled thelypodium	PDBRA2N0F0	Endangered	Endangered	G1	S1	1B.1



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



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<i>Viola pinetorum ssp. grisea</i> grey-leaved violet	PDVIO04431	None	None	G4G5T3	S3	1B.2

Record Count: 104

CNPS Rare Plant Inventory



Search Results

115 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3411627:3411637:3411638:3411628]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED
Abronia nana var. covillei	Coville's dwarf abronia	Nyctaginaceae	perennial herb	May-Aug	None	None	G4T3	S3	4.2		1994-01-01
Acanthoscyphus parishii var. cienegensis	Cienega Seca oxytheca	Polygonaceae	annual herb	(May)Jun-Sep	None	None	G4?T2	S2	1B.3	Yes	1988-01-01
Acanthoscyphus parishii var. goodmaniana	Cushenbury oxytheca	Polygonaceae	annual herb	May-Oct	FE	None	G4?T1	S1	1B.1	Yes	1988-01-01
Acanthoscyphus parishii var. parishii	Parish's oxytheca	Polygonaceae	annual herb	Jun-Sep	None	None	G4? T3T4	S3S4	4.2	Yes	2007-04-05
Allium parishii	Parish's onion	Alliaceae	perennial bulbiferous herb	Apr-May	None	None	G3	S3	4.3		1974-01-01
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5? T3T4	S3S4	4.2		1994-01-01
Antennaria marginata	white-margined everlasting	Asteraceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S1	2B.3		1994-01-01
Arctostaphylos parryana ssp. tumescens	interior manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr	None	None	G4T3T4	S3S4	4.3	Yes	2001-01-01
Arenaria lanuginosa var. saxosa	rock sandwort	Caryophyllaceae	perennial herb	Jul-Aug	None	None	G5T5	S2	2B.3		2001-01-01
Astragalus albens	Cushenbury milk-vetch	Fabaceae	perennial herb	Mar-Jun	FE	None	G1	S1	1B.1	Yes	1974-01-01
Astragalus bernardinus	San Bernardino milk-vetch	Fabaceae	perennial herb	Apr-Jun	None	None	G3	S3	1B.2	Yes	2011-02-16
Astragalus bicristatus	crested milk-vetch	Fabaceae	perennial herb	May-Aug	None	None	G3	S3	4.3	Yes	1974-01-01
Astragalus lentiginosus var. sierrae	Big Bear Valley milk-vetch	Fabaceae	perennial herb	Apr-Aug	None	None	G5T2	S2	1B.2	Yes	1994-01-01
Astragalus leucolobus	Big Bear Valley woollypod	Fabaceae	perennial herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01
Astragalus tidestromii	Tidestrom's milk-vetch	Fabaceae	perennial herb	(Jan)Apr-Jul	None	None	G4	S2	2B.2		2009-01-06

Atriplex parishii	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G1G2	S1	1B.1		1988- 01-01
Berberis fremontii	Fremont barberry	Berberidaceae	perennial evergreen shrub	Mar-May	None	None	G5	S3	2B.3		1980- 01-01
Boechea dispar	pinyon rockcress	Brassicaceae	perennial herb	Mar-Jun	None	None	G3	S3	2B.3		1994- 01-01
Boechea lincolnensis	Lincoln rockcress	Brassicaceae	perennial herb	Mar-May	None	None	G4G5	S3	2B.3		1984- 01-01
Boechea parishii	Parish's rockcress	Brassicaceae	perennial herb	Apr-May	None	None	G2	S2	1B.2	Yes	1974- 01-01
Boechea peirsonii	San Bernardino rockcress	Brassicaceae	perennial herb	Mar-Aug	None	None	G1	S1	1B.2	Yes	1980- 01-01
Boechea shockleyi	Shockley's rockcress	Brassicaceae	perennial herb	May-Jun	None	None	G3	S2	2B.2		1974- 01-01
Botrychium crenulatum	scalloped moonwort	Ophioglossaceae	perennial rhizomatous herb	Jun-Sep	None	None	G4	S3	2B.2		1984- 01-01
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jul	None	None	G3T2	S2	1B.2	Yes	1994- 01-01
Calochortus plummerae	Plummer's mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G4	S4	4.2	Yes	1994- 01-01
Calochortus striatus	alkali mariposa- lily	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G3	S2S3	1B.2		1974- 01-01
Calyptidium pygmaeum	pygmy pussypaws	Montiaceae	annual herb	Jun-Aug	None	None	G1G2	S1S2	1B.2	Yes	2008- 10-10
Carex occidentalis	western sedge	Cyperaceae	perennial rhizomatous herb	Jun-Aug	None	None	G4	S3	2B.3		2001- 01-01
Carex scirpoidea ssp. pseudoscirpoidea	western single- spiked sedge	Cyperaceae	perennial rhizomatous herb	Jul-Sep	None	None	G5T5	S2	2B.2		2001- 01-01
Castilleja cinerea	ash-gray paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Jun-Aug	FT	None	G1G2	S1S2	1B.2	Yes	1974- 01-01
Castilleja lasiorhyncha	San Bernardino Mountains owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	May-Aug	None	None	G2?	S2?	1B.2	Yes	1980- 01-01
Castilleja montigena	Heckard's paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	May-Aug	None	None	G3	S3	4.3	Yes	1974- 01-01
Castilleja plagiotoma	Mojave paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Apr-Jun	None	None	G4	S4	4.3	Yes	1974- 01-01
Claytonia peirsonii ssp. bernardinus	San Bernardino spring beauty	Montiaceae	perennial herb	Mar-Apr	None	None	G2G3T1	S1	1B.1	Yes	2019- 10-30
Claytonia peirsonii ssp. californicis	Furnace spring beauty	Montiaceae	perennial herb	Mar-May	None	None	G2G3T1	S1	1B.1	Yes	2019- 10-30
Cleomella brevipes	short-pedicelled cleomella	Cleomaceae	annual herb	May-Oct	None	None	G4	S3	4.2		2001- 01-01

Cordylanthus eremicus ssp. eremicus	desert bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Oct	None	None	G3T3	S3	4.3	Yes	1980-01-01
Cymopterus multinervatus	purple-nerve cymopterus	Apiaceae	perennial herb	Mar-Apr	None	None	G4G5	S2	2B.2		2008-11-20
Delphinium parryi ssp. purpureum	Mt. Pinos larkspur	Ranunculaceae	perennial herb	May-Jun	None	None	G4T4	S4	4.3	Yes	1974-01-01
Diplacus johnstonii	Johnston's monkeyflower	Phrymaceae	annual herb	May-Aug	None	None	G4	S4	4.3	Yes	2001-01-01
Drymocallis cuneifolia var. cuneifolia	wedgeleaf woodbeauty	Rosaceae	perennial herb	Jun-Aug	None	None	G2T1	S1	1B.1	Yes	2011-11-22
Dryopteris filix-mas	male fern	Dryopteridaceae	perennial rhizomatous herb	Jul-Sep	None	None	G5	S2	2B.3		1974-01-01
Dudleya abramsii ssp. affinis	San Bernardino Mountains dudleya	Crassulaceae	perennial herb	Apr-Jul	None	None	G4T2	S2	1B.2	Yes	1988-01-01
Eremogone ursina	Big Bear Valley sandwort	Caryophyllaceae	perennial herb	May-Aug	FT	None	G1	S1	1B.2	Yes	1974-01-01
Erigeron breweri var. jacinteus	San Jacinto Mountains daisy	Asteraceae	perennial rhizomatous herb	Jun-Sep	None	None	G5T3	S3	4.3	Yes	1994-01-01
Erigeron parishii	Parish's daisy	Asteraceae	perennial herb	May-Aug	FT	None	G2	S2	1B.1	Yes	1974-01-01
Eriogonum evanidum	vanishing wild buckwheat	Polygonaceae	annual herb	Jul-Oct	None	None	G2	S1	1B.1		1994-01-01
Eriogonum kennedyi var. alpigenum	southern alpine buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G4T3	S3	1B.3	Yes	1994-01-01
Eriogonum kennedyi var. austromontanum	southern mountain buckwheat	Polygonaceae	perennial herb	Jun-Sep	FT	None	G4T2	S2	1B.2	Yes	1974-01-01
Eriogonum microthecum var. johnstonii	Johnston's buckwheat	Polygonaceae	perennial deciduous shrub	Jul-Sep	None	None	G5T2	S2	1B.3	Yes	1974-01-01
Eriogonum microthecum var. lacus-ursi	Bear Lake buckwheat	Polygonaceae	perennial shrub	Jul-Aug	None	None	G5T1	S1	1B.1	Yes	2005-01-01
Eriogonum microthecum var. lapidicola	Inyo Mountains buckwheat	Polygonaceae	perennial deciduous shrub	Jul-Sep	None	None	G5T4	S2S3	4.3		1994-01-01
Eriogonum ovalifolium var. vineum	Cushenbury buckwheat	Polygonaceae	perennial herb	May-Aug	FE	None	G5T1	S1	1B.1	Yes	1974-01-01
Eriogonum umbellatum var. minus	alpine sulfur-flowered buckwheat	Polygonaceae	perennial herb	Jun-Sep	None	None	G5T4	S4	4.3	Yes	1974-01-01

<i>Eriophyllum lanatum</i> var. <i>obovatum</i>	southern Sierra woolly sunflower	Asteraceae	perennial herb	Jun-Jul	None	None	G5T4	S4	4.3	Yes	1974-01-01
<i>Erythranthe exigua</i>	San Bernardino Mountains monkeyflower	Phrymaceae	annual herb	May-Jul	None	None	G2	S2	1B.2		1974-01-01
<i>Erythranthe purpurea</i>	little purple monkeyflower	Phrymaceae	annual herb	May-Jun	None	None	G2	S2	1B.2		1974-01-01
<i>Frasera neglecta</i>	pine green-gentian	Gentianaceae	perennial herb	May-Jul	None	None	G4	S4	4.3	Yes	1980-01-01
<i>Fritillaria pinetorum</i>	pine fritillary	Liliaceae	perennial bulbiferous herb	May-Jul(Sep)	None	None	G4	S4	4.3	Yes	2001-01-01
<i>Funastrum utahense</i>	Utah vine milkweed	Apocynaceae	perennial herb	(Mar)Apr-Jun(Sep-Oct)	None	None	G4	S4	4.2		1980-01-01
<i>Galium angustifolium</i> ssp. <i>gabrielense</i>	San Antonio Canyon bedstraw	Rubiaceae	perennial herb	Apr-Aug	None	None	G5T3	S3	4.3	Yes	1974-01-01
<i>Galium angustifolium</i> ssp. <i>gracillimum</i>	slender bedstraw	Rubiaceae	perennial herb	Apr-Jun(Jul)	None	None	G5T4	S4	4.2	Yes	1994-01-01
<i>Galium jepsonii</i>	Jepson's bedstraw	Rubiaceae	perennial rhizomatous herb	Jul-Aug	None	None	G3	S3	4.3	Yes	1974-01-01
<i>Galium johnstonii</i>	Johnston's bedstraw	Rubiaceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974-01-01
<i>Gentiana fremontii</i>	Fremont's gentian	Gentianaceae	annual herb	Jun-Aug	None	None	G4	S2	2B.3		1974-01-01
<i>Gilia leptantha</i> ssp. <i>leptantha</i>	San Bernardino gilia	Polemoniaceae	annual herb	Jun-Aug	None	None	G4T2	S2	1B.3	Yes	2001-01-01
<i>Gilia leptantha</i> ssp. <i>pinetorum</i>	pine gilia	Polemoniaceae	annual herb	May-Jul	None	None	G4T4	S4	4.3	Yes	2001-01-01
<i>Heuchera caespitosa</i>	urn-flowered alumroot	Saxifragaceae	perennial rhizomatous herb	May-Aug	None	None	G3	S3	4.3	Yes	1974-01-01
<i>Heuchera parishii</i>	Parish's alumroot	Saxifragaceae	perennial rhizomatous herb	Jun-Aug	None	None	G3	S3	1B.3	Yes	1974-01-01
<i>Horkelia wilderae</i>	Barton Flats horkelia	Rosaceae	perennial herb	May-Sep	None	None	G1	S1	1B.1	Yes	1974-01-01
<i>Hulsea vestita</i> ssp. <i>parryi</i>	Parry's sunflower	Asteraceae	perennial herb	Apr-Aug	None	None	G5T4	S4	4.3	Yes	1994-01-01
<i>Hulsea vestita</i> ssp. <i>pygmaea</i>	pygmy hulsea	Asteraceae	perennial herb	Jun-Oct	None	None	G5T1	S1	1B.3	Yes	2001-01-01
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	Rosaceae	perennial herb	Jun-Aug	None	None	G2T2	S2	1B.2	Yes	1974-01-01
<i>Johnstonella holoptera</i>	winged cryptantha	Boraginaceae	annual herb	Mar-Apr	None	None	G4G5	S4	4.3		1980-01-01

Juncus duranii	Duran's rush	Juncaceae	perennial rhizomatous herb	Jul-Aug	None	None	G3	S3	4.3	Yes	1974- 01-01
Lewisia brachycalyx	short-sepaled lewisia	Montiaceae	perennial herb	(Feb)Apr- Jun(Jul)	None	None	G4	S2	2B.2		1984- 01-01
Lilium humboldtii ssp. ocellatum	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar- Jul(Aug)	None	None	G4T4?	S4?	4.2	Yes	1980- 01-01
Lilium parryi	lemon lily	Liliaceae	perennial bulbiferous herb	Jul-Aug	None	None	G3	S3	1B.2		1974- 01-01
Linanthus killipii	Baldwin Lake linanthus	Polemoniaceae	annual herb	May-Jul	None	None	G1	S1	1B.2	Yes	1974- 01-01
Malaxis monophyllos var. brachypoda	white bog adder's-mouth	Orchidaceae	perennial bulbiferous herb	Jun-Aug	None	None	G5T4T5	S1	2B.1		1974- 01-01
Muilla coronata	crowned muilla	Themidaceae	perennial bulbiferous herb	Mar- Apr(May)	None	None	G3	S3	4.2		1988- 01-01
Navarretia peninsularis	Baja navarretia	Polemoniaceae	annual herb	(May)Jun- Aug	None	None	G3	S2	1B.2		1994- 01-01
Nemacladus gracilis	slender nemacladus	Campanulaceae	annual herb	Mar-May	None	None	G4	S4	4.3		1974- 01-01
Oreonana vestita	woolly mountain- parsley	Apiaceae	perennial herb	Mar-Sep	None	None	G3	S3	1B.3	Yes	1974- 01-01
Oxytropis oreophila var. oreophila	rock-loving oxytrope	Fabaceae	perennial herb	Jun-Sep	None	None	G5T4T5	S2	2B.3		2001- 01-01
Packera bernardina	San Bernardino ragwort	Asteraceae	perennial herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974- 01-01
Packera ionophylla	Tehachapi ragwort	Asteraceae	perennial herb	Jun-Jul	None	None	G4	S4	4.3	Yes	1974- 01-01
Perideridia parishii ssp. parishii	Parish's yampah	Apiaceae	perennial herb	Jun-Aug	None	None	G4T3T4	S2	2B.2		1974- 01-01
Phacelia exilis	Transverse Range phacelia	Hydrophyllaceae	annual herb	May-Aug	None	None	G4Q	S4	4.3	Yes	1994- 01-01
Phacelia mohavensis	Mojave phacelia	Hydrophyllaceae	annual herb	Apr-Aug	None	None	G4Q	S4	4.3	Yes	1994- 01-01
Phlox dolichantha	Big Bear Valley phlox	Polemoniaceae	perennial herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974- 01-01
Physaria kingii ssp. bernardina	San Bernardino Mountains bladderpod	Brassicaceae	perennial herb	May-Jun	FE	None	G5T1	S1	1B.1	Yes	1974- 01-01
Poa atropurpurea	San Bernardino blue grass	Poaceae	perennial rhizomatous herb	(Apr)May- Jul(Aug)	FE	None	G2	S2	1B.2	Yes	1974- 01-01
Podistera nevadensis	Sierra podistera	Apiaceae	perennial herb	Jul-Sep	None	None	G4	S4	4.3	Yes	1980- 01-01
Poliomintha incana	frosted mint	Lamiaceae	perennial shrub	Jun-Jul	None	None	G5	SH	2A		1994- 01-01

Pyrocoma uniflora var. gossypina	Bear Valley pyrocoma	Asteraceae	perennial herb	Jul-Sep	None	None	G5T1	S1	1B.2	Yes	1980-01-01
Rosa woodsii var. glabrata	Cushenbury rose	Rosaceae	perennial shrub	(Apr)May-Aug	None	None	G5T1	S1	1B.1	Yes	2016-08-26
Rupertia rigida	Parish's rupertia	Fabaceae	perennial herb	Jun-Aug	None	None	G4	S4	4.3		1974-01-01
Saltugilia latimeri	Latimer's woodland-gilia	Polemoniaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2	Yes	2004-01-01
Sedum niveum	Davidson's stonecrop	Crassulaceae	perennial rhizomatous herb	Jun-Aug	None	None	G3	S3	4.2		1974-01-01
Sidalcea hickmanii ssp. parishii	Parish's checkerbloom	Malvaceae	perennial herb	(May)Jun-Aug	None	CR	G3T1	S1	1B.2	Yes	1974-01-01
Sidalcea malviflora ssp. dolosa	Bear Valley checkerbloom	Malvaceae	perennial herb	May-Aug	None	None	G5T2	S2	1B.2	Yes	2012-06-13
Sidalcea pedata	bird-foot checkerbloom	Malvaceae	perennial herb	May-Aug	FE	CE	G1	S1	1B.1	Yes	1974-01-01
Sidotheca caryophylloides	chickweed oxytheca	Polygonaceae	annual herb	Jul-Sep(Oct)	None	None	G4	S4	4.3	Yes	1980-01-01
Sisyrinchium longipes	timberland blue- eyed grass	Iridaceae	perennial herb	Jun-Aug	None	None	G3	S1	2B.2		2008-03-20
Sphenopholis obtusata	prairie wedge grass	Poaceae	perennial herb	Apr-Jul	None	None	G5	S2	2B.2		1974-01-01
Streptanthus bernardinus	Laguna Mountains jewelflower	Brassicaceae	perennial herb	May-Aug	None	None	G3G4	S3S4	4.3	Yes	1980-01-01
Streptanthus campestris	southern jewelflower	Brassicaceae	perennial herb	(Apr)May-Jul	None	None	G3	S3	1B.3		1994-01-01
Streptanthus juneae	June's jewelflower	Brassicaceae	perennial herb	Jun-Aug	None	None	G2	S2	1B.2	Yes	2020-12-09
Symphyotrichum defoliatum	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov	None	None	G2	S2	1B.2	Yes	2004-01-01
Taraxacum californicum	California dandelion	Asteraceae	perennial herb	May-Aug	FE	None	G1G2	S1S2	1B.1	Yes	1974-01-01
Thelypodium stenopetalum	slender-petaled thelypodium	Brassicaceae	perennial herb	May-Sep	FE	CE	G1	S1	1B.1	Yes	1974-01-01
Trichostema micranthum	small-flowered bluecurls	Lamiaceae	annual herb	Jun-Sep	None	None	G4	S3	4.3		1974-01-01
Viola pinetorum ssp. grisea	grey-leaved violet	Violaceae	perennial herb	Apr-Jul	None	None	G4G5T3	S3	1B.2	Yes	1994-01-01
Yucca brevifolia							GNR	SNR	CBR		2011-12-13

Showing 1 to 115 of 115 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website <https://www.rareplants.cnps.org> [accessed 5 April 2023].

APPENDIX 3

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

WOLF RESERVOIR & BOOSTER REPLACEMENT PROJECT

Assessor's Parcel Number 0310-731-04
Big Bear Lake Area, San Bernardino County, California

For Submittal to:

City of Big Bear Lake, Department of Water and Power
41972 Garstin Drive
Big Bear Lake, CA 92315

and

United States Bureau of Reclamation
1243 N. Street
Fresno, CA 93727

Prepared for:

Tom Dodson
Tom Dodson & Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405

Prepared by:

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

August 3, 2023
CRM TECH Contract No. 4005

Title: Historical/Archaeological Resources Survey Report: Wolf Reservoir & Booster Replacement Project, Assessor's Parcel Numbers 0310-731-04, Big Bear Lake Area, San Bernardino County, California

Author(s): Terri Jacquemain, Historian/Report Writer
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Date: August 3, 2023

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United States Bureau of Reclamation
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(559) 262-0300

Prepared for: Tom Dodson
Tom Dodson & Associates
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San Bernardino, CA 92405
(909) 882-3612

USGS Quadrangle: Moonridge, Calif., 7.5' quadrangle (Section 26, T2N R1E, San Bernardino Baseline and Meridian)

Project Size: Approximately 0.45 acres

Keywords: San Bernardino Mountains, Bear Valley, Moonridge area; Phase I historical/archaeological resources survey; Site 4005-1H (temporary designation): circa 1963 Wolf Reservoir (water tank and associated pumphouse); no "historic properties" or "historical resources"

EXECUTIVE SUMMARY

Between April and August 2023, at the request of Tom Dodson & Associates, CRM TECH performed a cultural resources study on an approximately 0.45-acre parcel in the unincorporated community of Moonridge, San Bernardino County, California. The subject property of the study, Assessor Parcel Number 0310-731-04, is the site of the City of Big Bear Lake Department of Water and Power's Wolf Reservoir, located at the northeast corner of Wolf Road and Coyote Court, near the Big Bear Lake city limits, in the northeast quarter of Section 26, T2N R1E, San Bernardino Baseline and Meridian.

This study is part of the environmental review process for the proposed replacement of the existing 100,000-gallon Wolf Reservoir and associated pumphouse with a 603,000-gallon water tank and new booster pump station. The study is required by the United States Bureau of Reclamation (USBR) and the City of Big Bear Lake Department of Water and Power (BBLDWP), as the federal and local lead agencies for the undertaking, in compliance with Section 106 of the National Historic Preservation Act and the California Environmental Quality Act (CEQA).

The purpose of the study is to provide the USBR and the BBLDWP with the necessary information and analysis to determine whether the undertaking would have an effect on any "historic properties," as defined by 36 CFR 800.16(l), or "historical resources" as defined by Calif. PRC §5020.1(j), that may exist in or near the Area of Potential Effects (APE). In order to identify such resources, CRM TECH conducted a historical/ archaeological resources records search, pursued historical and geoarchaeological research, contacted Native American representatives, and carried out an intensive-level field survey.

Throughout the course of the study, the only feature of prehistoric or historical origin found in the APE was the existing Wolf Reservoir itself, which was installed at this location in 1963. Since it meets the generally established 50-years age threshold for potential "historic properties" or "historical resources," Wolf Reservoir was recorded into the California Historical Resources Inventory and designated temporarily as Site 4005-1H, pending assignment of a permanent identification number. It does not, however, appear to meet any of the criteria for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not qualify as a "historic property" under Section 106 provisions or a "historical resource" under CEQA.

No other cultural resources were encountered in or near the APE during this study, and the subsurface sediments in the APE appear to be relatively low in sensitivity for potentially significant archaeological deposits of prehistoric origin. Based on these findings, CRM TECH recommends to the USBR and the BBLDWP a conclusion that no "historic properties" or "historical resources" will be affected by the undertaking. No further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the undertaking, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
INTRODUCTION	1
SETTING.....	4
Current Natural Setting.....	4
Cultural Setting.....	5
Archaeological Context	5
Ethnohistorical Context	5
Historical Context	7
RESEARCH METHODS	9
Records Search.....	9
Geoarchaeological Analysis.....	10
Native American Consultation.....	10
Historical Background Research.....	10
Field Survey	10
RESULTS AND FINDINGS	11
Records Search.....	11
Geoarchaeological Analysis.....	11
Native American Consultation.....	13
Historical Background Research.....	14
Field Survey	15
MANAGEMENT CONSIDERATIONS	15
CONCLUSION AND RECOMMENDATIONS	17
REFERENCES	18
APPENDIX 1: Personnel Qualifications	21
APPENDIX 2: Correspondence with Native American Representatives.....	26
APPENDIX 3: California Historical Resources Inventory Record Forms.....	41

LIST OF FIGURES

Figure 1. Project vicinity.....	1
Figure 2. Project location.....	2
Figure 3. Aerial image of the APE.....	3
Figure 4. Overview of the APE.....	4
Figure 5. Previous cultural resources studies.....	12
Figure 6. The APE and vicinity in 1857-1858.....	14
Figure 7. The APE and vicinity in 1899	15
Figure 8. The APE and vicinity in 1945-1954.....	15
Figure 9. Circa 1963 Wolf Reservoir water tank and pumphouse.....	16

INTRODUCTION

Between April and August 2023, at the request of Tom Dodson & Associates, CRM TECH performed a cultural resources study on an approximately 0.45-acre parcel in the unincorporated community of Moonridge, San Bernardino County, California (Fig. 1). The subject property of the study, Assessor Parcel Number 0310-731-04, is the site of the City of Big Bear Lake Department of Water and Power’s Wolf Reservoir, located at the northeast corner of Wolf Road and Coyote Court, near the Big Bear Lake city limits, in the northeast quarter of Section 26, T2N R1E, San Bernardino Baseline and Meridian (Figs. 2, 3).

This study is part of the environmental review process for the proposed replacement of the existing 100,000-gallon Wolf Reservoir and associated pumphouse with a 603,000-gallon water tank and new booster pump station. The study is required by the United States Bureau of Reclamation (USBR) and the City of Big Bear Lake Department of Water and Power (BBLDWP), as the federal and local lead agencies for the undertaking, in compliance with Section 106 of the National Historic Preservation Act and the California Environmental Quality Act (CEQA).

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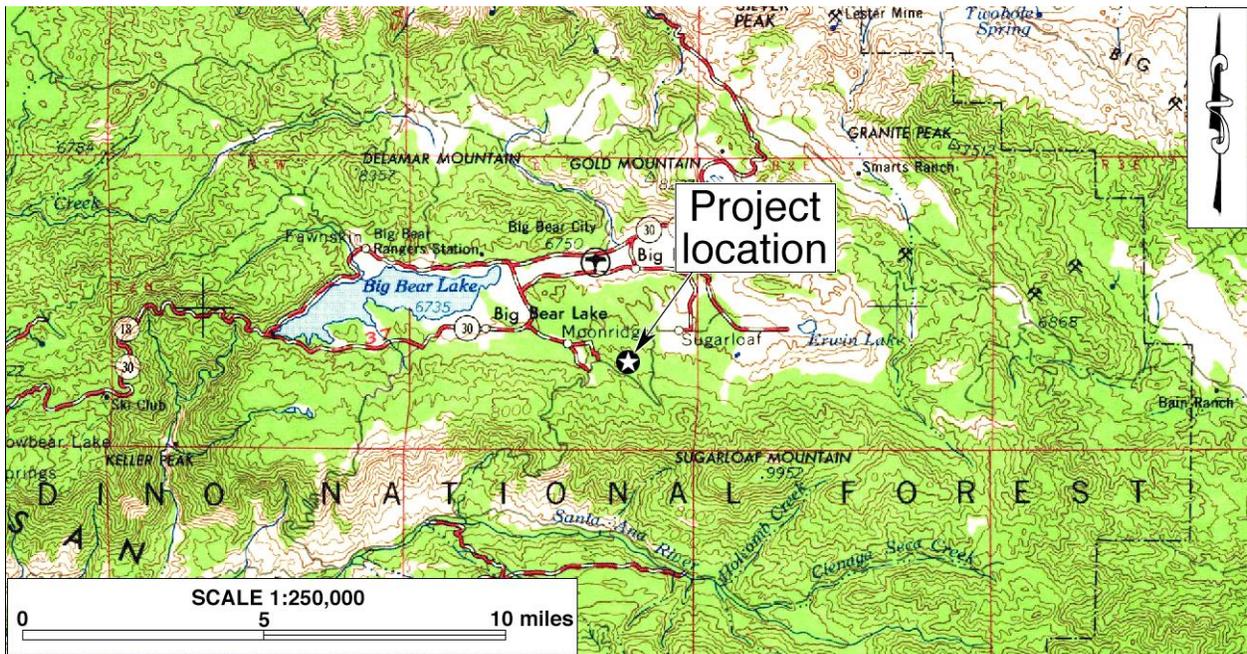


Figure 1. Project vicinity. (Based on USGS San Bernardino, Calif., 120'x60' quadrangle [USGS 1969])

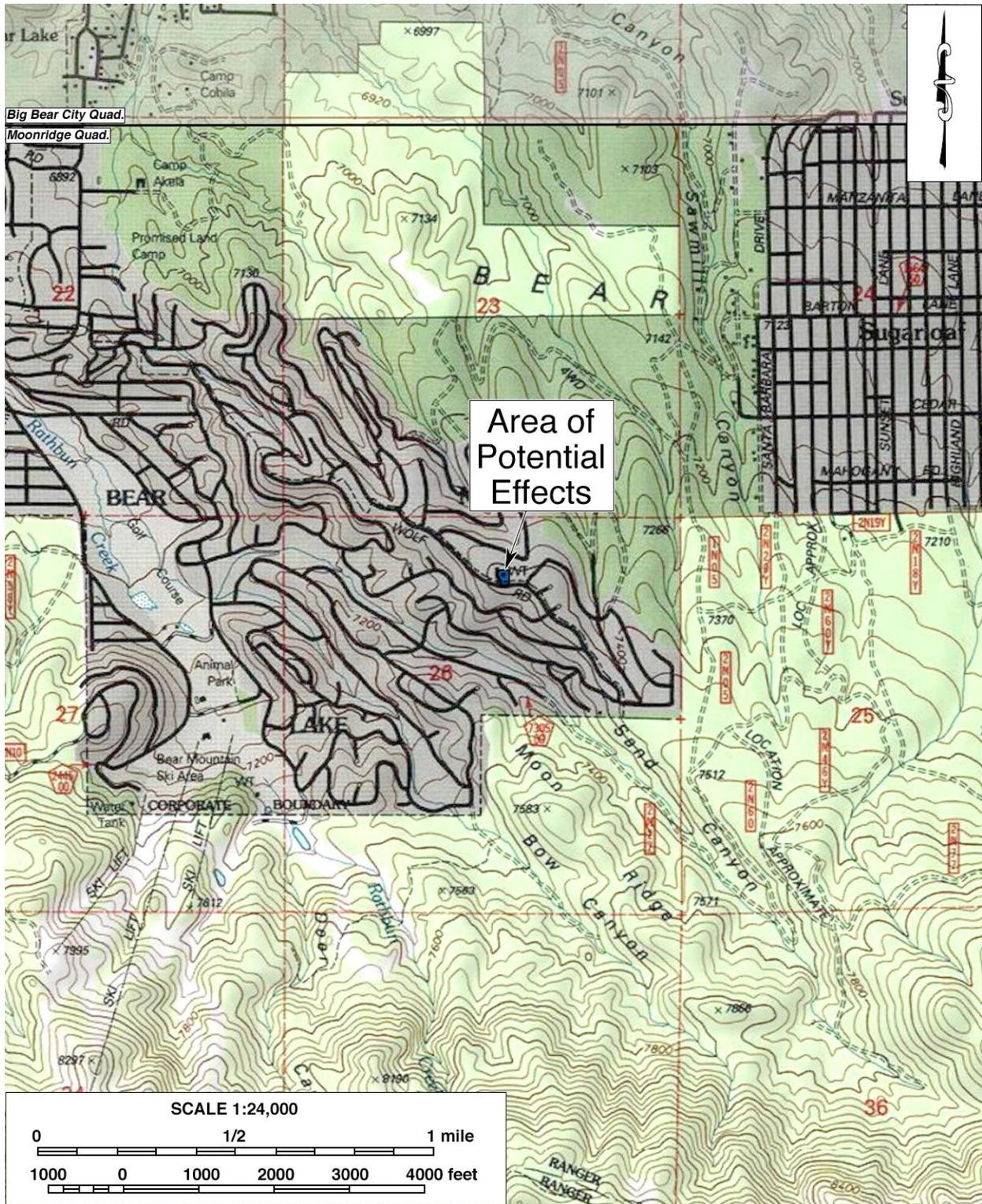


Figure 2. Project location. (Based on USGS Big Bear City and Moonridge, Calif., 7.5' quadrangles [USGS 1996a; 1996b]).



Figure 3. Aerial image of the APE. (Based on Google Earth imagery)

SETTING

CURRENT NATURAL SETTING

Situated in the central portion of Big Bear Valley and deep in the San Bernardino Mountains, the project vicinity enjoys an alpine climate and a forest-dominated environment, in sharp contrast to the Mediterranean climate and desert environment in most of southern California. Temperatures in Big Bear Valley average low around nine degrees Fahrenheit in January to an average high of 89 degrees in July, much closer to the national average than to that of the nearby San Bernardino-Riverside region (NOAA 2018). The average annual precipitation reaches more than 18 inches of rainfall and 35 inches of snowfall (*ibid.*).

The Wolf Reservoir is located in a residential neighborhood in the community of Moonridge, a part of the BBLDWP water service area, and approximately three miles southeast of Big Bear Lake. The reservoir site shares a forest setting with the surrounding residential properties. The existing water tank and pumphouse both rest on concrete foundations and stand in the northwestern portion of the APE, accessed by a paved road that arcs through the property between Coyote Court and Wolf Road. Elevations in the APE range roughly from 7,420 to 7,435 feet above sea level over relatively level terrain. Gravelly sand covers the ground surface around the structures, while surface soils elsewhere are composed of sandy alluvium mixed with quartzite and granitic cobbles. Vegetation in the vicinity includes pine, fir, and oak trees, along with manzanita, sage, and other smaller grasses and shrubs (Fig. 4).



Figure 4. Overview of the current natural setting of the APE. (Photograph taken on April 21, 2023; view to the northeast)

CULTURAL SETTING

Archaeological Context

The earliest evidence of human occupation in inland southern California was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 before present (B.P.; Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the Cajon Pass area of the San Bernardino Mountains, typically on top of knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural history of southern California has been summarized into numerous chronologies, including those developed by Chartkoff and Chartkoff (1984), Warren (1984), and others. Specifically, the prehistory of the inland region has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of the recognized cultural horizons vary among different parts of the region, the general framework for the prehistory can be broken into three primary periods:

- **Paleoindian Period (ca. 18,000-9,000 B.P.):** Native people of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leave diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- **Archaic Period (ca. 9,000-1,500 B.P.):** Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- **Late Prehistoric Period (ca. 1,500 B.P.-contact):** Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

Ethnohistorical Context

Big Bear Valley lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. Together with that of the Vanyume people, a linguistic subgroup, Serrano territory also includes part of the San Gabriel Mountains, much of the San Bernardino Valley, and the Mojave River valley in the southern portion of the Mojave Desert, reaching as far east as the

Cady, Bullion, Sheep Hole, and Coxcomb Mountains. The name “Serrano” was derived from a Spanish term meaning “mountaineer” or “highlander.” The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based mainly on these sources.

Prior to European contact, Serrano subsistence was defined by the surrounding landscape and primarily based on the gathering of wild and cultivated foods and hunting, exploiting nearly all of the resources available. They settled mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. Loosely organized into exogamous clans led by hereditary heads, the clans were in turn affiliated with one of two exogamous moieties, the Wildcat (*Tukutam*) or the Coyote (*Wahiiam*).

At least two Serrano clans lived in or near Big Bear Valley during prehistoric and protohistoric times, according to Strong (1929:11). The Yuhavetum (or Yuhaaviatam) clan’s territory stretched from Big Bear Valley to the present-day Highland area in the San Bernardino Valley. The Pervetum clan’s territory extended from the vicinity of Big Bear Valley to the headwaters of the Santa Ana River, across Sugarloaf Mountain. The two clans often intermarried, and while the core of the unit was patrilineage, women retained their own lineage names after marriage.

In Serrano oral tradition, the Big Bear Valley area is known as Yuhaaviat, or “Pine Place,” and is remembered as the point of origin for the nearby Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians; Ramos 2009). It is well-documented in ethnographic literature that Big Bear Valley figures prominently in the Serrano creation story. As Kroeber (1925:619) notes:

Kukitat [younger brother of Pakrokitat, creator of Man], feeling death approach, gave instructions for his cremation; but the suspected coyote, although sent away on a pretended errand, returned in time to squeeze through badger’s legs in the circle of the mourners and make away with Kukitat’s heart. This happened at *Hatauva* (compare Luiseño Tova, where Wiyot died) in Bear Valley.

In a newspaper article, James Ramos, former Chairman of the Yuhaaviatam of San Manuel Nation, generally corroborates Kroeber’s account and provides the accurate spelling of the deities’ names in the Serrano language, Kruktat and Pakruktat (Ramos 2009). In addition, he identifies the location of Hatauva as being in the general vicinity of a white quartz dome known to tribal members as Aapahunane’t, or Eye of God, to the east of Baldwin Lake (*ibid.*).

The Serrano had a variety of technological skills that they used to acquire food, shelter, and clothing as well as to create ornaments and decorations. Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink. Much of this material cultural, elaborately decorated, does not survive in the archaeological record. As usual, the main items found archaeologically relate to subsistence activities.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was minimal until the 1810s, when a mission *asistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano in the western portion of their traditional territory were removed to the nearby missions. In the eastern portion, a series of punitive expeditions in 1866-1870 resulted in the death or displacement of almost all remaining Serrano population in the San Bernardino Mountains. Today, most Serrano descendants are affiliated with the Yuhaaviatam of San Manuel Nation, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

Historical Context

In 1772, a small force of Spanish soldiers under the command of Pedro Fages, military *comandante* of Alta California, became the first Europeans to set foot in the San Bernardino Mountains, followed shortly afterwards by the famed explorer Francisco Garcés in 1776 (Beck and Haase 1974:15). During the next 70 years, however, the Spanish and Mexican colonization activities in Alta California, concentrated predominantly in the coastal regions, left little physical impact on the San Bernardinos. Aside from occasional explorations and punitive expeditions against livestock raiders, the mountainous hinterland of California remained largely beyond the attention of the missionaries, the *rancheros*, and the provincial authorities. The name “San Bernardino” was bestowed on the region in the 1810s, when the mission *asistencia* and an associated rancho were established under that name in present-day Loma Linda (Lerch and Haenszel 1981).

For the Big Bear Valley area, the historic period began in 1845, when Benjamin “Benito” Wilson, a prominent early settler in southern California, and a group of young *Californios* “discovered” the valley while avenging an Indian raid and named it aptly for the large number of grizzly bears they observed (Drake 1949:12). After the U.S. annexation of Alta California in 1848, the rich resources offered by the San Bernardino Mountains brought about drastic changes, spurred by the influxes of settlers from the eastern United States. Beginning in the early 1850s, the dense forest covering the mountainside became the scene—and victim—of a booming lumber industry, which brought the first wagon roads and industrial establishments into the San Bernardinos. However, the lumber industry was concentrated on the western end of the mountain range, with less impact to the area east of Running Springs and Green Valley (Robinson 1989:23). In Big Bear Valley, lumbering was largely limited to a number of small sawmills in support of local construction (*ibid.*:44-45).

Mining in Big Bear Valley dates back to at least 1855, when gold was discovered near Baldwin Lake (Robinson 1989:47). Then in 1860, William F. Holcomb hit “pay dirt” on a hillside above Big Bear Valley, and later again in the valley now bearing his name, triggering a gold rush that brought 1,000 prospectors to the San Bernardino Mountains by that fall (Holcomb 1900:273-276; Robinson 1989:48-50). Mining boom towns replete with saloons, dance halls, gambling dens, and bagnios as well as stores, hotels, restaurants, and even a brewery soon sprang up in the mountain valleys (Robinson 1989:48-51). By the late 19th century, mining was big business, with Elias J. “Lucky” Baldwin’s Gold Mountain Mining Company usurping individual prospectors as the dominant force in the industry (Drake 1949:19; Robinson 1989:57-71). Still, the much-anticipated “mother lode” was never found, and by the late 1940s mining was no longer the leading industry in the valley (Core 1980:11-12; Robinson 1989:57, 61-62, 70-71).

Around the same time as the Bear-Holcomb Valley gold rush, the San Bernardino Mountains' reputation as a premium summer grazing ground for sheep and cattle also grew, with Big Bear Valley at the epicenter (Robinson 1989:85). Some of the most prominent figures in early local history, including Augustus "Gus" Knight, Sr., James W. Smart, John R. Metcalf, and the Talmadge brothers, were also among those at the forefront of the cattle industry (*ibid.*:85-86). Beef sales from the valley peaked in 1921 before going into decline afterwards, as increasing resort and residential development drove up real estate value and shrank the availability of pastureland (Drake 1949:25; Robinson 1989:88, 93-94).

Along with its colorful history in lumber, gold, and cattle, Big Bear Valley owes much of its growth over the past century to the creation of Big Bear Lake, a reservoir built for the purpose of irrigating the vast citrus groves in the eastern San Bernardino Valley. Frank E. Brown and Edward G. Judson, founders of the Redlands colony, organized the Bear Valley Land and Water Company in 1883 and completed construction of the Big Bear dam in 1884 (Robinson 1989:170). The reservoir was filled during the following winter (Hall 1888:188; Hinckley 1974:41). The project's much-celebrated success was cut short over the next five years as the company's successors attempted to expand the irrigation scheme into Riverside County and became overextended (Robinson 1989:173).

A financial panic in 1893 was later compounded in the late 1890s by drought so severe that Big Bear Lake completely dried up in the summers of 1898, 1899, and 1900 (Hinckley 1983:1). As a remedy, in 1903 citrus growers in the Redlands-Highland area incorporated as the Bear Valley Mutual Water Company and took over the Bear Valley system (*ibid.*:1-2; Robinson 1989:173). Between 1910 and 1912, the new water company constructed the second Big Bear dam that is still in use today (Hinckley 1974:43; 1983:11). The new dam, although only 20 feet higher than the first, substantially increased the size of the reservoir and nearly tripled its capacity (Robinson 1989:174).

By the 1890s, excessive logging and sheep grazing in the San Bernardino Mountains had given rise to a forest conservation movement among residents of the San Bernardino Valley to protect the watershed. In 1893, the movement succeeded in persuading the U.S. government to create the San Bernardino Forest Reserve, later renamed the San Bernardino National Forest, and over the next few decades effectively brought an end to logging and sheep grazing in the San Bernardino Mountains (Robinson 1989:96-99; Robinson and Risher 1990:9).

Meanwhile, Big Bear Lake proved a powerful lure for vacationers and sportsmen, who would commandeer the log cabins left by construction crews (Atchley 1980:21-22). In 1887, the state authorities stocked the lake with thousands of Lake Tahoe trout, signaling the beginning of its development as a recreational property (*ibid.*:22). Three decades later, in 1916, the Bear Valley Mutual Water Company officially dedicated the lake surface to the free use by the public for hunting, fishing, and boating (Hinckley 1983:43, 79), thereby guaranteeing Big Bear Valley's future as one of the most popular mountain resorts in southern California.

The first commercial resort established on the lakeshore was Gus Knight, Jr., and John Metcalf's Bear Valley Hotel, which opened for business in 1888 (Atchley 1980:22-23). After the Redlands-based Pine Knot Resort Company purchased the hotel in 1906 and renamed it the Pine Knot Lodge, a small community bearing the same name began to form around the lodge (Robinson 1989:181-182). Knight would later develop the Wild Rose Park and Knight's Camp near Baldwin Lake (*ibid.*), and in the meantime became a tireless promoter for the construction of new and better roads

between the San Bernardino Valley and his resorts. His efforts helped bring about the roads through City Creek Canyon (1892), Mill Creek Canyon (1888), and Santa Ana Canyon (1899), and culminated with the completion of Rim of the World Drive in 1915 (Atchley 1980:23-26; Robinson 1989:179-183).

The completion of Rim of the World Drive brought about an exponential rise in the number of resorts in Big Bear Valley from two in 1913 to 52 in 1921 (Drake 1949:26; Robinson 1989:183-185). Winter snow in the mountains held its own attraction and brought a new set of residents and visitors as the Big Bear Valley area became a year-round getaway. A popular but rudimentary ski jump built in 1932 to the south of Pine Knot spurred the formation of the Big Bear Lake Park District two years later, which in turn brought about the first ski lift in the valley in 1949 (Robinson 1989:193-194). Since then, winter sports have become one of Big Bear Valley's leading attractions.

Adding to the allure, in the early 20th century Hollywood moviemakers found Big Bear Valley to be a suitable scenic backdrop for films such as *Paint Your Wagon*, *The Parent Trap*, *Bonanza*, *Kissin' Cousins*, and *Dr. Dolittle* (Atchley 1980:24-25). In 1916, the Bear Valley Mutual Water Company started a land boom in Big Bear Valley when it created a subsidiary, the Bear Valley Development Company, to subdivide, sell, and lease the company's land holdings around the reservoir (Hinckley 1983:42). Other landowners in the valley, such as the Knights and the Talmadges, soon joined in to take advantage of the increasing popularity of Big Bear Lake (Robinson 1989:187).

The boom continued into the 1920s, with summer homes springing up at the rate of 50 to 100 per year (Robinson 1989:189). In 1938, Pine Knot and its surrounding area came to be known as the community of Big Bear Lake, while a smaller cluster of homes and hostleries between Big Bear and Baldwin Lakes became Big Bear City (*ibid.*:193). Close to the project location, scattered residential buildings and roadways were evident prior to 1938, but development in the area evidently began in earnest after the end of World War II (NETR Online 1938-1969). In 1980, Big Bear Lake became the first incorporated city in the San Bernardino Mountains, while less urbanized communities in the eastern portion of the valley, including Moonridge, remain unincorporated at the present time.

RESEARCH METHODS

RECORDS SEARCH

On May 18, 2023, CRM TECH archaeologist Nina Gallardo conducted the cultural resources record search for this study at the South Central Coastal Information Center (SCCIC), California State University, Fullerton, which is the official repository for San Bernardino County in the California Historical Resources Information System. During the records search, Gallardo examined the SCCIC's digital maps, records, and databases for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the project location. Previously identified cultural resources included properties designated as California Historical Landmarks, Points of Historical Interest, and San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

GEOARCHAEOLOGICAL ANALYSIS

As part of the research procedures, CRM TECH archaeologist Frank Raslich pursued geoarchaeological research to assess the APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through a standard surface archaeological survey. Sources consulted for this purpose included primarily topographic and geologic maps and reports pertaining to the APE and the surrounding area. Findings from these sources were used to develop a geomorphologic history of the APE and address geoarchaeological sensitivity of the vertical APE.

NATIVE AMERICAN CONSULTATION

On April 14, 2023, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. Following the NAHC's recommendations and previously established consultation protocol, CRM TECH further contacted a total of 21 Native American representatives in the region in writing on May 26, 2023, for additional information on tribal cultural resources in the project vicinity. Follow-up telephone solicitations were carried out between June 30 and July 14, 2023. The responses and correspondence between CRM TECH and the Native American representatives are summarized below and attached to the report in Appendix 2.

HISTORICAL BACKGROUND RESEARCH

Historical background research for this study was conducted by CRM TECH historian Terri Jacquemain. Sources consulted during the research included published literature in local history, historical maps of the Big Bear Valley area, and aerial/satellite photographs of the project vicinity. Among the maps consulted for this study were U.S. General Land Office (GLO) land survey plat maps dated 1858 and USGS topographic maps dated 1902-1996, which are accessible at the websites of the USGS and the U.S. Bureau of Land Management. The aerial and satellite photographs, taken between 1938 and 2022, are available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software. Additionally, specific information regarding the existing reservoir facility was provided by the City of Big Bear Lake Department of Water and Power.

FIELD SURVEY

On April 21, 2023, CRM TECH field director Daniel Ballester and project archaeologist Hunter O'Donnell conducted the intensive-level field survey of the APE by walking a series of parallel north-south transects spaced 15 meters (approx. 50 feet) apart, keeping to the transects as closely as possible around the structures. In this way, the ground surface in the APE was closely and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). The survey was carried out with few limitations beyond pavement and structural obstructions. Ground visibility was good (85-90%) with only small patches of vegetal duff obscuring a few areas.

RESULTS AND FINDINGS

RECORDS SEARCH

According to SCCIC records, the APE had not been surveyed for cultural resources prior to this study, and no cultural resources had been recorded within or adjacent to its boundaries. Within the one-mile scope of the records search, SCCIC records identify a total of 25 previous studies that were completed between 1976 and 2012 (Fig. 5). As a result of these and similar studies nearby, five historical/archaeological resources were previously recorded within the scope of the records search, including three archaeological sites of prehistoric (i.e., Native American) origin, one archaeological site from the historic period, and a historic-period building (see Table 1).

Primary No.	Trinomial	Description
36-002414	CA-SBR-2414	“Lithic workshop” (destroyed)
36-004345	CPHI No. SBr-4345	Lithic scatter
36-004346	CPHI No. SBr-4346	Lithic production site
36-012988		Wooden shed
36-012989		Historic-era refuse scatter

The prehistoric sites included a “lithic workshop” that has since been destroyed during golf course construction, a lithic flake scatter, and lithic production site. The historic-period resources consisted of a wooden shed and a refuse scatter containing glass shards, rusted metal cans, can fragments, lumber, and nails dating generally from the 1930s to the modern era. All five of these historical/archaeological cultural resources were found in the outer reaches of the one-mile radius, and none of them demonstrates any potential for direct or indirect impacts from the undertaking. Therefore, they require no further consideration during this study.

GEOARCHAEOLOGICAL ANALYSIS

According to Bortugno and Spittler (1986), the APE is situated well-dissected alluvial fan sediments (*Qod*), with surface soils from Pleistocene as well as Holocene ages. These soils are further described as being well to very well dissected fan deposits with very mature, thick textural B horizons (*ibid.*). Considering their relatively young age and alluvial origin, the subsurface sediments in the APE exhibit some potential to contain buried prehistoric cultural remains. However, geospatial analyses of known prehistoric sites in the vicinity suggest that longer-term residential settlements of the Serrano population were more likely to occur in sheltered areas near the base of hills and/or on elevated terraces, hills, and finger ridges near permanent or reliable sources of water. This is corroborated by the ethnographic literature that identifies foothills as the preferred settlement environment for Native Americans of the inland region (Bean and Smith 1978).

While the surrounding area was likely used for resource procurement, travel, and occasional camping during these activities in prehistoric times, the geographic setting of the APE would not have provided an ideal setting for long-term habitation. Based on the ethnographic understanding of prehistoric Serrano settlement pattern, the APE fits more closely the profile of a resource procurement area, while the finger ridges in the foothills to the north, northwest, and southeast of the project location would have been more favorable locations for villages and other long-term

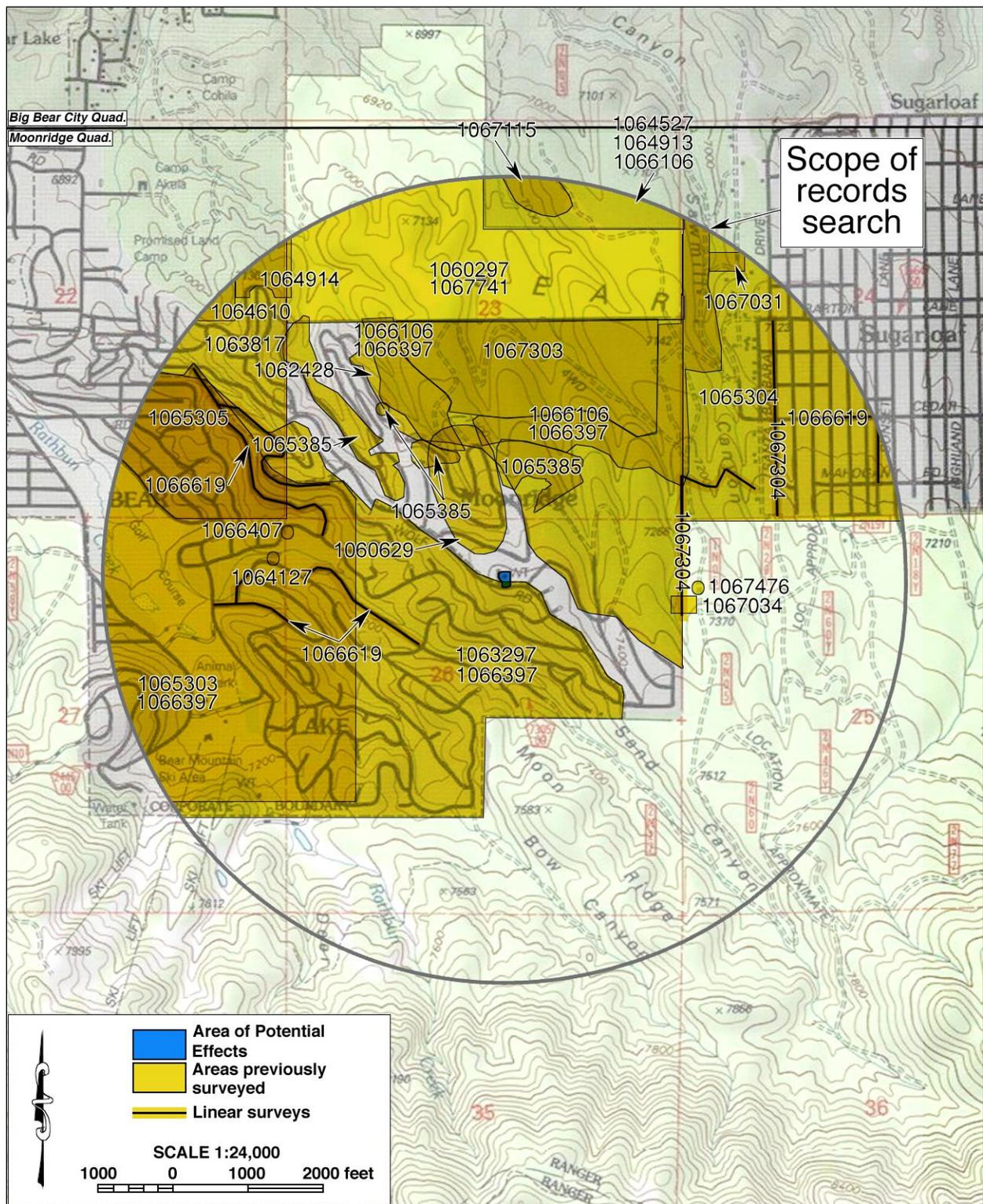


Figure 5. Previous cultural resources studies in the vicinity of the APE, listed by SCCIC file number. Locations of historical/archaeological resources are not shown as a protective measure.

settlement. Furthermore, the ground surface within the APE has been extensively disturbed by past construction activities associated with the existing reservoir facility, which appears to have involved artificial fill soil of unknown depth, as evidenced by broken pieces of asphalt eroding out of the surface. Based on these considerations, the subsurface sediments in the APE appear to be relatively low in sensitivity for potentially significant archaeological deposits of prehistoric origin.

NATIVE AMERICAN CONSULTATION

In response to CRM TECH's inquiry, the Native American Heritage Commission (NAHC) reported in a letter dated May 19, 2023, that the Sacred Lands File search identified no Native American cultural resources in the project vicinity. However, noting that the absence of specific information would not necessarily indicate the absence of such resources, the NAHC recommended that local Native American groups be consulted for further information and provided a referral list of 32 individuals associated with 21 tribal organizations in the region (see App. 2).

Upon receiving the NAHC's reply, CRM TECH initiated consultation with all 21 tribes on the NAHC's referring list (see App. 2). In some cases, CRM TECH contacted the designated tribal spokespersons on cultural resources issues in lieu of the individuals on the list, as recommended in the past by the appropriate tribal government staff. The 21 Native American representatives contacted during this study are listed below:

- Patricia Garcia-Plotkin, Tribal Historic Preservation Officer, Agua Caliente Band of Cahuilla Indians
- Amanda Vance, Chairperson, Augustine Band of Cahuilla Mission Indians
- Michael Mirelez, Director of Cultural Affairs, Cabazon Band of Mission Indians
- BobbyRay Esparza, Cultural Coordinator, Cahuilla Band of Indians
- Andrew Salas, Gabrieleño Band of Mission Indians–Kizh Nation
- Anthony Morales, Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Gabrielino/Tongva Nation
- Christina Conley, Gabrieleno Tongva Indians of California Tribal Council
- Charles Alvarez, Gabrielino-Tongva Tribe
- Ray Chapparosa, Chairperson, Los Coyotes Band of Cahuilla and Cupeño Indians
- Ann Brierty, Tribal Historic Preservation Officer, Morongo Band of Mission Indians
- Shasta Gaughen, Pala Band of Mission Indians
- Paul Macarro, Pechanga Band of Indians
- Jill McCormick, Historic Preservation Officer, Quechan Tribe of the Fort Yuma Reservation
- John Gomez, Jr., Cultural Resource Coordinator, Ramona Band of Cahuilla Indians
- Cheryl Madrigal, Rincon Band of Luiseno Indians
- Vanessa Minott, Tribal Administrator, Santa Rosa Band of Cahuilla Indians
- Mark Cochrane, Co-Chairperson, Serrano Nation of Mission Indians
- Joseph Ontiveros, Cultural Resources Director, Soboba Band of Luiseño Indians
- Alesia Reed, Cultural Committee member, Torres-Martinez Desert Cahuilla Indians
- Alexandra McCleary, Senior Cultural Lands Manager, Yuhaaviatam of San Manuel Nation

As of this time, 13 tribal representatives have responded to the inquiry (see App. 2). Six of them, representing the Agua Caliente Band, the Gabrieleno Tongva Indians of California Tribal Council, the Los Coyotes Band, the Quechan Tribe, the Rincon Band, and the Soboba Band, deferred to other tribes located in closer proximity to the APE. Three additional tribes, namely the Cabazon Band, the Pechanga Band, and the Kizh Nation, deferred specifically to the Serrano groups, especially the Yuhaaviatam of San Manuel Nation.

Among the other four native American groups who reposed to the inquiry, the Augustine Band stated that they were unaware of any cultural resources that might be affected by this undertaking. The tribe requested to be notified of any discovery of Native American cultural resources in the APE, as did the Gabrieleño/Tongva San Gabriel Band. The Morongo Band, which is partially of Serrano heritage, requested to review additional documentation for the undertaking, including this report, as a part of future government-to-government consultations under provisions of California Assembly Bill 52 (see App. 2 for details). The Yuhaaviatam of San Manuel Nation, who have well-known ancestral ties to the Big Bear Valley area, informed CRM TECH that the APE was not located near any known sensitive cultural resources.

HISTORICAL BACKGROUND RESEARCH

Research sources indicate that the APE has a low potential for cultural resources dating to the historic period, as it remained undeveloped until the existing water tank was installed on the property in 1963 (Figs. 6-8; NETR 1938; 1969; BBLDWP 2017). At the time, the Big Bear Valley area was

experiencing renewed growth as prosperity in the first decades after World War II brought increases in both seasonal and permanent residents.

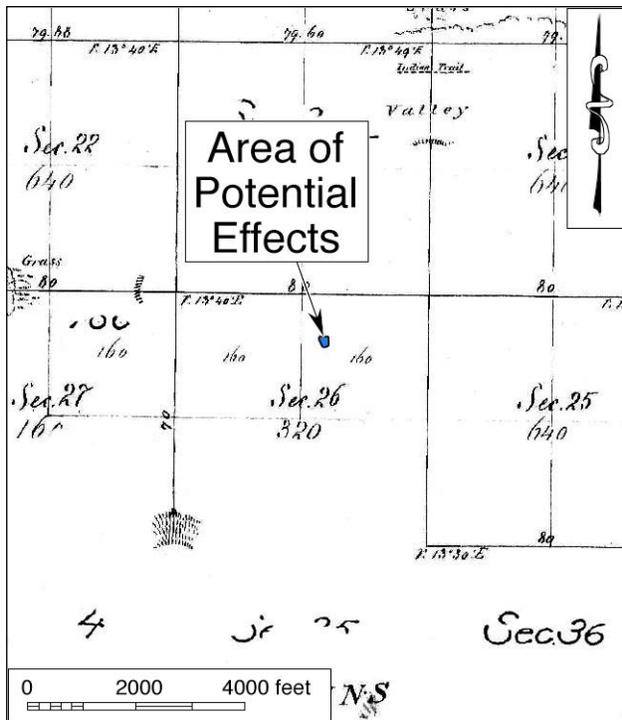


Figure 6. The APE and vicinity in 1857-1858. (Source: GLO 1858)

Previously, when the U.S. government conducted the first systematic land survey in Big Bear Valley in the 1850s, the surveyors noted no man-made features near the APE except an “Indian trail” running roughly a mile to the north (Fig. 6). During the ensuing 40 years, a few meandering roads appeared, particularly near a lumber processing operation known as Lakeview Mill on the western end of Baldwin Lake, roughly 2.5 miles to the north of the APE (Fig. 7). By the 1940s-1950s, while the core areas of Big Bear City, Sugarloaf, and Moonridge expanded, the APE and its vicinity remained completely undeveloped (Fig. 8; NETR Online 1938).

When the Wolf Reservoir was installed, it stood nearly alone in the forested area, but

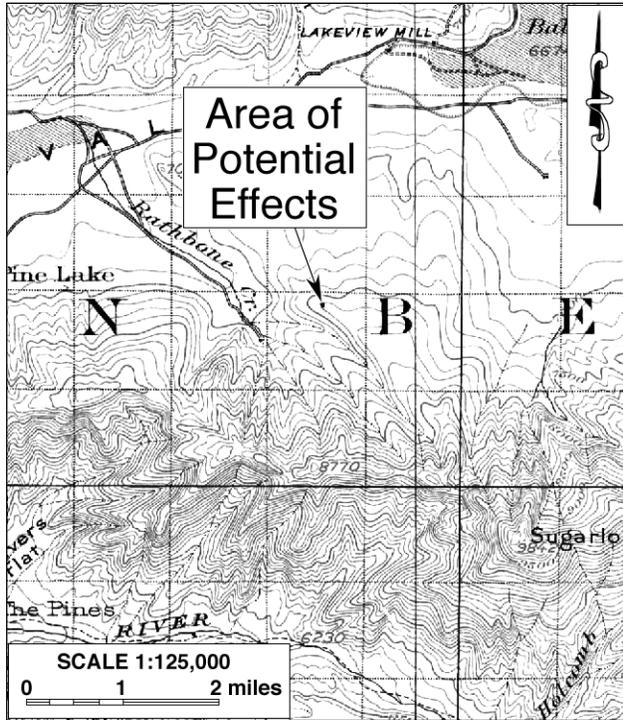


Figure 7. The APE and vicinity in 1899. (Source: USGS 1902)

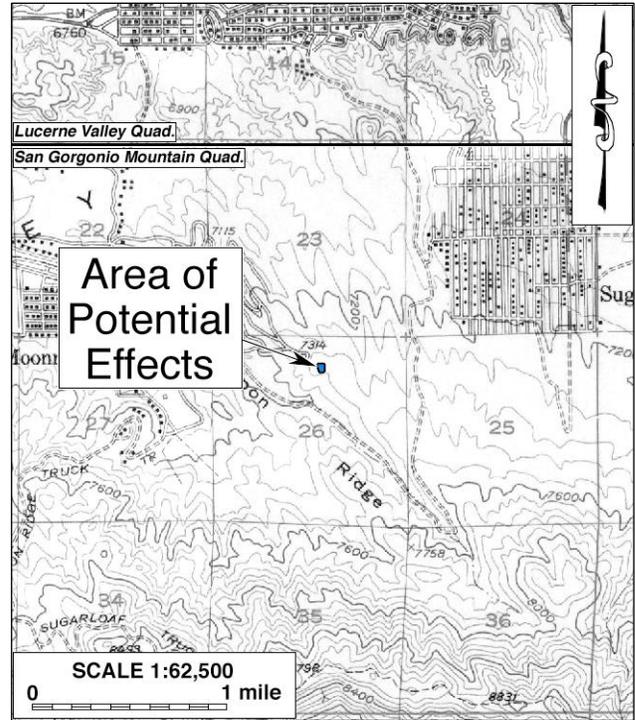


Figure 8. The APE and vicinity in 1945-1954. (Source: USGS 1947; 1954)

in the next few years a number of dirt roads were laid out in a wavy loose grid to form the embryo of the residential neighborhood in existence today, and some of the parcels were cleared (NETR Online 1969). The gradual development continued into the 1980s and beyond as more roads, many of them now paved, were added and became populated by residential properties (NETR Online 1983-2020; Google Earth 1991-2023).

FIELD SURVEY

The existing water tank and pumphouse at Wolf Reservoir were recorded during the field survey and designated temporarily as Site 4005-1H, pending assignment as a permanent identification number in the California Historical Resources Inventory. The tank is round with a conical vent on top and measures 33 feet across and 24 feet in height (Fig. 9). Its current appearance is that of a well-maintained steel tank with what appear to be recently installed pipe connection and a coat of green paint. The pumphouse is a small rectangular wood structure with a medium-pitched side gable roof and appears compatible to its 1960s origin. A detailed description of these features and other details are included in the record forms attached to this study as Appendix 3. No other potential “historic properties”/“historical resources” were encountered throughout the course of the survey.

MANAGEMENT CONSIDERATIONS

The purpose of this study is to identify any “historic properties” or “historical resources” that may exist within the APE. “Historic properties,” as defined by the Advisory Council on Historic



Figure 9. Circa 1963 Wolf Reservoir water tank and pumphouse. (Photograph taken on April 21, 2023; view to the northwest)

Preservation, include “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior” (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

For CEQA-compliance considerations, the State of California’s Public Resources Code (PRC) establishes the definitions and criteria for “historical resources,” which require similar protection to what NHPA Section 106 mandates for “historic properties.” “Historical resources,” according to PRC §5020.1(j), “includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural,

engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.”

More specifically, CEQA guidelines state that the term “historical resources” applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that “generally a resource shall be considered by the lead agency to be ‘historically significant’ if the resource meets the criteria for listing on the California Register of Historical Resources” (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- (2) Is associated with the lives of persons important in our past.
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- (4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

In summary of the research results presented above, the circa 1963 water tank and pumphouse at the existing Wolf Reservoir facility, recorded during this study under the temporary designation of Site 4005-1H, comprise the only potential “historic properties” or “historical resources” encountered within the APE. The original construction of the reservoir in 1963 was predicated on continued population growth in Big Bear Valley after improved roads and post-World War II prosperity brought new seasonal and permanent residents to the Big Bear Lake area. It does not, however, demonstrate a particularly unique, significant, or close association with that pattern of events or any other established theme in national, state, regional, or local history, nor have any specific events or persons of recognized historic significance been identified in association with the reservoir.

As common infrastructure elements of standard design and construction, the facility does not embody the distinctive characteristics of a style, type, period, or method of construction, nor is it known to represent the work of an important designer or builder or possess high artistic values. Dating to the late historic period, Wolf Reservoir holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and archival records. Based on these considerations, the present study concludes that Site 4005-1H does not appear eligible for listing in the National Register of Historic Places or the California Register of Historical Resources and thus does not meet the definition of a “historic property” under Section 106 provisions or as a “historical resource” under CEQA guidelines.

CONCLUSION AND RECOMMENDATIONS

Section 106 of the National Historic Preservation Act mandates that federal agencies consider the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that a project

that may cause a substantial adverse change in the significance of a “historical resource” is a project that may have a significant effect on the environment (PRC §21084.1). “Substantial adverse change,” according to PRC §5020.1(q), “means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.”

As stated above, the existing 1960s-era water tank and pumphouse at Site 4005-1H are the only features of historical or prehistoric origin identified in the APE, and it does not constitute a “historic property” or “historical resource” under Section and CEQA provisions. Meanwhile, the subsurface sediments in the APE appear to be relatively low in sensitivity for potentially significant archaeological deposits of prehistoric origin. Based these findings, and, pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH presents the following recommendations to the USBR and the BBLDWP:

- No “historic properties” or “historical resources” are present within or adjacent to the APE, and thus no “historic properties” or “historical resources” will be affected by the project.
- No further cultural resources investigation will be necessary for the project unless construction plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered inadvertently during earth-moving operations associated with the undertaking, all work within 50 feet of the discovery should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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- Ramos, James
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 1989 *The San Bernardinos: The Mountain Country from Cajon Pass to Oak Glen, Two Centuries of Changing Use*. Big Santa Anita Historical Society, Arcadia, California.
- Robinson, John W., and Bruce D. Risher
 1989 San Bernardino National Forest: A Century of Federal Stewardship. *San Bernardino County Museum Quarterly* XXXVII(4).
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 1929 *Aboriginal Society in Southern California*. University of California Publications in American Archaeology and Ethnology 26. Reprinted by Malki Museum Press, Banning, Calif., 1972.
- USGS (United States Geological Survey, U.S. Department of the Interior)
 1902 Map: San Gorgonio, Calif. (30', 1:125,000); surveyed in 1899.
 1947 Map: Lucerne Valley, Calif. (15', 1:62,500); aerial photographs taken in 1945.
 1954 Map: San Gorgonio Mountain, Calif. (15', 1:62,500); aerial photographs taken in 1952, field-checked in 1954.
 1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.
 1996a Map: Big Bear City, Calif. (7.5', 1:24,000); 1971 edition photorevised in 1994.
 1996b Map: Moonridge, Calif. (7.5', 1:24,000); aerial photographs taken in 1969, photorevised in 1994.
- Warren, Claude N.
 1984 The Desert Region. In Michael J. Moratto (ed.): *California Archaeology*; pp. 339-430. Academic Press, Orlando, Florida.

**APPENDIX 1
PERSONNEL QUALIFICATIONS**

**PRINCIPAL INVESTIGATOR/HISTORIAN
Bai “Tom” Tang, M.A.**

Education

- 1988-1993 Graduate Program in Public History/Historic Preservation, University of California, Riverside.
- 1987 M.A., American History, Yale University, New Haven, Connecticut.
- 1982 B.A., History, Northwestern University, Xi’an, China.
- 2000 “Introduction to Section 106 Review,” presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
- 1994 “Assessing the Significance of Historic Archaeological Sites,” presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.
- 1993-2002 Project Historian/Architectural Historian, CRM TECH, Riverside, California.
- 1993-1997 Project Historian, Greenwood and Associates, Pacific Palisades, California.
- 1991-1993 Project Historian, Archaeological Research Unit, University of California, Riverside.
- 1990 Intern Researcher, California State Office of Historic Preservation, Sacramento.
- 1990-1992 Teaching Assistant, History of Modern World, University of California, Riverside.
- 1988-1993 Research Assistant, American Social History, University of California, Riverside.
- 1985-1988 Research Assistant, Modern Chinese History, Yale University.
- 1985-1986 Teaching Assistant, Modern Chinese History, Yale University.
- 1982-1985 Lecturer, History, Xi’an Foreign Languages Institute, Xi’an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California’s Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., Registered Professional Archaeologist #28576644

Education

- 1991 Ph.D., Anthropology, University of California, Riverside.
1981 B.S., Anthropology, University of California, Riverside; with honors.
1980-1981 Education Abroad Program, Lima, Peru.
- 2002 “Section 106—National Historic Preservation Act: Federal Law at the Local Level,”
UCLA Extension Course #888.
2002 “Recognizing Historic Artifacts,” workshop presented by Richard Norwood,
Historical Archaeologist.
2002 “Wending Your Way through the Regulatory Maze,” symposium presented by the
Association of Environmental Professionals.
1992 “Southern California Ceramics Workshop,” presented by Jerry Schaefer.
1992 “Historic Artifact Workshop,” presented by Anne Duffield-Stoll.

Professional Experience

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002 Project Archaeologist/Field Director, CRM TECH, Riverside, California.
1996-1998 Project Director and Ethnographer, Statistical Research, Inc., Redlands, California.
1992-1998 Assistant Research Anthropologist, University of California, Riverside.
1992-1995 Project Director, Archaeological Research Unit, U.C. Riverside.
1993-1994 Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C.
Riverside, Chapman University, and San Bernardino Valley College.
1991-1992 Crew Chief, Archaeological Research Unit, U.C. Riverside.
1984-1998 Project Director, Field Director, Crew Chief, and Archaeological Technician for
various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange
Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural
Diversity.

Cultural Resources Management Reports

Principal investigator for, author or co-author of, and contributor to numerous cultural resources
management study reports since 1986.

Memberships

Society for American Archaeology; Society for California Archaeology; Pacific Coast
Archaeological Society; Coachella Valley Archaeological Society.

HISTORIAN/ARCHITECTURAL HISTORIAN
Terri Jacquemain, M.A.

Education

- 2004 M.A., Public History and Historic Resource Management, University of California, Riverside.
2002 B.S., Anthropology, University of California, Riverside.

Professional Experience

- 2003- Historian/Report Writer, CRM TECH, Riverside/Colton, California.
2002-2003 Teaching Assistant, Religious Studies Department, University of California, Riverside.
1997-1999 Reporter, *Inland Valley Daily Bulletin*, Ontario, California.
1991-1997 Reporter, *The Press-Enterprise*, Riverside, California.

Memberships

California Council for the Promotion of History.

PROJECT ARCHAEOLOGIST/NATIVE AMERICAN LIAISON
Nina Gallardo, B.A.

Education

- 2004 B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience

- 2004- Project Archaeologist, CRM TECH, Riverside/Colton, California.

Cultural Resources Management Reports

Co-author of and contributor to numerous cultural resources management reports since 2004.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Frank J. Raslich, M.A.

Education

- 2016 Ph.D. candidate, Michigan State University, East Lansing.
2010 M.A., Anthropology, Michigan State University, East Lansing.
2005 B.A., Anthropology, University of Michigan, Flint.
- 2019 “Grant and Research Proposal Writing for Archaeologists”; SAA Online Seminar.
2014 Bruker Industries Tracer S1800 pXRF Training; presented by Dr. Bruce Kaiser, Bruker Scientific.

Professional Experience

- 2022-2022 Project Archaeologist/Report Writer, CRM Tech, Colton, California.
Archaeological Monitor, Agua Caliente Band of Cahuilla Indians, Palm Springs, California.
- 2014-2022 Board of Directors, Zibiwing Center of Anishinabe Culture and Lifeways, Saginaw Chippewa Indian Tribe of Michigan.
- 2008-2021 Archaeological Consultant, Saginaw Chippewa Indian Tribe of Michigan.
2019 Archaeologist, Sault Tribe of Chippewa Indians and Little Traverse Bay Band of Odawa Indians.
- 2016-2018 Adjunct Lecturer, Michigan State University, East Lansing.
2017-2018 Adjunct Lecturer, University of Michigan, Flint.
- 2009-2017 Teaching Assistant, Michigan State University, East Lansing.
2008-2014 Research Assistant, Intellectual Property Issues in Cultural Heritage, Simon Fraser University, British Columbia, Canada.
- 2010-2013 Research Assistant, Michigan State University, East Lansing.
2009-2011 Archaeologist/Crew Chief, Saginaw Chippewa Indian Tribe of Michigan.

Publications

- 2017 Preliminary Results of a Handheld X-Ray Fluorescence (pXRF) Analysis on a Marble Head Sarcophagus Sculpture from the Collection of the Kresge Art Center, Michigan State University. Submitted to Jon M. Frey, Department of Art, Art History, and Design. Michigan State University, East Lansing.
- 2013 Geochemical Analysis of the Dickenson Group of the Upper Peninsula, Michigan: A study of an Accreted Terrane of the Superior Province. *Geological Society of America Abstracts with Programs* 45:4(53).

PROJECT ARCHAEOLOGIST/FIELD DIRECTOR
Daniel Ballester, M.S., RPA (Registered Professional Archaeologist)

Education

- 2013 M.S., Geographic Information System (GIS), University of Redlands, California.
- 1998 B.A., Anthropology, California State University, San Bernardino.
- 1997 Archaeological Field School, University of Las Vegas and University of California, Riverside.
- 1994 University of Puerto Rico, Rio Piedras, Puerto Rico.

Professional Experience

- 2002- Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
- 2011-2012 GIS Specialist for Caltrans District 8 Project, Garcia and Associates, San Anselmo, California.
- 2009-2010 Field Crew Chief, Garcia and Associates, San Anselmo, California.
- 2009-2010 Field Crew, ECorp, Redlands.
- 1999-2002 Project Archaeologist, CRM TECH, Riverside, California.
- 1998-1999 Field Crew, K.E.A. Environmental, San Diego, California.
- 1998 Field Crew, A.S.M. Affiliates, Encinitas, California.
- 1998 Field Crew, Archaeological Research Unit, University of California, Riverside.

PROJECT ARCHAEOLOGIST
Hunter C. O'Donnell, B.A.

Education

- 2016- M.A. Program, Applied Archaeology, California State University, San Bernardino.
- 2015 B.A. (*cum laude*), Anthropology, California State University, San Bernardino.
- 2012 A.A., Social and Behavioral Sciences, Mt. San Antonio College, Walnut, California.
- 2011 A.A., Natural Sciences and Mathematics, Mt. San Antonio College, Walnut, California.

Professional Experience

- 2017- Project Archaeologist, CRM TECH, Colton, California.
- 2016-2018 Graduate Research Assistant, Applied Archaeology, California State University, San Bernardino.
- 2016-2017 Cultural Intern, Cultural Department, Pechanga Band of Luiseño Indians, Temecula, California.
- 2015 Archaeological Intern, U.S. Bureau of Land Management, Barstow, California.
- 2015 Peer Research Consultant: African Archaeology, California State University, San Bernardino.

APPENDIX 2

**CORRESPONDENCE WITH
NATIVE AMERICAN REPRESENTATIVES***

* Twenty-one local Native American representatives were contacted during this study; a sample letter is included.

SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Boulevard, Suite 100

West Sacramento, CA 95691

(916)373-3710

(916)373-5471 (Fax)

nahc@nahc.ca.gov

Project: City of Big Bear Lake Department of Water and Power Wolf Reservoir and Booster Replacement (CRM TECH No. 4005)

County: San Bernardino

USGS Quadrangle Name: Moonridge, Calif.

Township 2 North **Range** 1 East **SB BM; Section(s):** 26

Company/Firm/Agency: CRM TECH

Contact Person: Nina Gallardo

Street Address: 1016 E. Cooley Drive, Suite A/B

City: Colton, CA

Zip: 92324

Phone: (909) 824-6400

Fax: (909) 824-6405

Email: ngallardo@crmtech.us

Project Description: The primary component of the project is to replace the existing 100,000-gallon Wolf Reservoir and its booster station on an approximately half-acre site (APN 0310-731-04) at the northeast corner of Coyote Court and Wolf Road, in the unincorporated community of Moonridge, San Bernardino County, California.

April 14, 2023

NATIVE AMERICAN HERITAGE COMMISSION

May 19, 2023

Nina Gallardo
CRM TECHVia Email to: ngallardo@crmtech.us

Re: Proposed City of Big Bear Lake Department of Water and Power Wolf Reservoir and Booster Replacement Project, San Bernardino County

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

*Cameron Vela*Cameron Vela
Cultural Resources Analyst

Attachment

CHAIRPERSON
Laura Miranda
LuiseñoVICE CHAIRPERSON
Reginald Pagaling
ChumashSECRETARY
Sara Dutschke
MiwokCOMMISSIONER
Isaac Bojorquez
Ohlone-CostanoanCOMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki,
NomlakiCOMMISSIONER
Wayne Nelson
LuiseñoCOMMISSIONER
Stanley Rodriguez
KumeyaayCOMMISSIONER
[Vacant]COMMISSIONER
[Vacant]EXECUTIVE SECRETARY
Raymond C.
Hitchcock
Miwok/NisenanNAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

**Native American Heritage Commission
Native American Contact List
San Bernardino County
5/19/2023**

Agua Caliente Band of Cahuilla Indians

Reid Milanovich, Chairperson
5401 Dinah Shore Drive Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919
laviles@aguacaliente.net

Gabrieleno/Tongva San Gabriel Band of Mission Indians

Anthony Morales, Chairperson
P.O. Box 693 Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Agua Caliente Band of Cahuilla Indians

Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Gabrielino /Tongva Nation

Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., Gabrielino
#231
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Augustine Band of Cahuilla Mission Indians

Amanda Vance, Chairperson
84-001 Avenue 54 Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Gabrielino Tongva Indians of California Tribal Council

Christina Conley, Cultural
Resource Administrator
P.O. Box 941078 Gabrielino
Simi Valley, CA, 93094
Phone: (626) 407 - 8761
christina.marsden@alumni.usc.edu

Cabazon Band of Mission Indians

Doug Welmas, Chairperson
84-245 Indio Springs Parkway Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Gabrielino Tongva Indians of California Tribal Council

Robert Dorame, Chairperson
P.O. Box 490 Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Cahuilla Band of Indians

Daniel Salgado, Chairperson
52701 U.S. Highway 371 Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Gabrielino-Tongva Tribe

Charles Alvarez,
23454 Vanowen Street Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Gabrieleno Band of Mission Indians - Kizh Nation

Andrew Salas, Chairperson
P.O. Box 393 Gabrieleno
Covina, CA, 91723
Phone: (844) 390 - 0787
admin@gabrielenoindians.org

Los Coyotes Band of Cahuilla and Cupeño Indians

Ray Chapparosa, Chairperson
P.O. Box 189 Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed City of Big Bear Lake Department of Water and Power Wolf Reservoir and Booster Replacement Project, San Bernardino County.

**Native American Heritage Commission
Native American Contact List
San Bernardino County
5/19/2023**

Morongo Band of Mission Indians

Ann Brierty, THPO
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5259
Fax: (951) 572-6004
abrierty@morongo-nsn.gov

Cahuilla
Serrano

Morongo Band of Mission Indians

Robert Martin, Chairperson
12700 Pumarra Road
Banning, CA, 92220
Phone: (951) 755 - 5110
Fax: (951) 755-5177
abrierty@morongo-nsn.gov

Cahuilla
Serrano

Pala Band of Mission Indians

Alexis Wallick, Assistant THPO
PMB 50, 35008 Pala Temecula Road
Pala, CA, 92059
Phone: (760) 891 - 3537
awallick@palatribe.com

Cupeno
Luiseno

Pala Band of Mission Indians

Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Road
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Cupeno
Luiseno

Pechanga Band of Indians

Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Luiseno

Pechanga Band of Indians

Mark Macarro, Chairperson
P.O. Box 1477
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Luiseno

Quechan Tribe of the Fort Yuma Reservation

Jordan Joaquin, President,
Quechan Tribal Council
P.O.Box 1899
Yuma, AZ, 85366
Phone: (760) 919 - 3600
executivesecretary@quechantribe.com

Quechan

Quechan Tribe of the Fort Yuma Reservation

Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee
P.O. Box 1899
Yuma, AZ, 85366
Phone: (928) 210 - 8739
culturalcommittee@quechantribe.com

Quechan

Quechan Tribe of the Fort Yuma Reservation

Jill McCormick, Historic Preservation Officer
P.O. Box 1899
Yuma, AZ, 85366
Phone: (928) 261 - 0254
historicpreservation@quechantribe.com

Quechan

Ramona Band of Cahuilla

John Gomez, Environmental Coordinator
P. O. Box 391670
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramona-nsn.gov

Cahuilla

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed City of Big Bear Lake Department of Water and Power Wolf Reservoir and Booster Replacement Project, San Bernardino County.

**Native American Heritage Commission
Native American Contact List
San Bernardino County
5/19/2023**

Ramona Band of Cahuilla

Joseph Hamilton, Chairperson
P.O. Box 391670 Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov

**Serrano Nation of Mission
Indians**

Mark Cochrane, Co-Chairperson
P. O. Box 343 Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

Rincon Band of Luiseno Indians

Cheryl Madrigal, Tribal Historic
Preservation Officer
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov

**Soboba Band of Luiseno
Indians**

Joseph Ontiveros, Cultural
Resource Department
P.O. BOX 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Rincon Band of Luiseno Indians

Bo Mazzetti, Chairperson
One Government Center Lane Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

**Soboba Band of Luiseno
Indians**

Isaiah Vivanco, Chairperson
P. O. Box 487 Cahuilla
San Jacinto, CA, 92581 Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

**San Manuel Band of Mission
Indians**

Alexandra McCleary, Cultural
Lands Manager
26569 Community Center Drive Serrano
Highland, CA, 92346
Phone: (909) 633 - 0054
alexandra.mccleary@sanmanuel-
nsn.gov

**Torres-Martinez Desert Cahuilla
Indians**

Cultural Committee,
P.O. Box 1160 Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
Cultural-
Committee@torresmartinez-
nsn.gov

**Santa Rosa Band of Cahuilla
Indians**

Lovina Redner, Tribal Chair
P.O. Box 391820 Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
Isaul@santarosa-nsn.gov

**Serrano Nation of Mission
Indians**

Wayne Walker, Co-Chairperson
P. O. Box 343 Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed City of Big Bear Lake Department of Water and Power Wolf Reservoir and Booster Replacement Project, San Bernardino County.

May 26, 2023

RE: City of Big Bear Lake Department of Water and Power
Proposed Wolf Reservoir and Booster Replacement Project
Approximately One-Half Acre of Land (APN 0310-731-04)
In the City of Big Bear Lake, San Bernardino County, California
CRM TECH Contract #4005

Dear Tribal Representative:

I am writing to bring your attention to an ongoing CEQA- and Section 106-compliance study for the proposed Wolf Reservoir and Booster Replacement Project within the City of Big Bear Lake Department of Water and Power's (DWP) service district. The Area of Potential Effect (APE) for the undertaking encompasses about a half-acre located on the northeast corner of Coyote Court and Wolf Road (Assessor's Parcel Number 0310-731-04) and currently occupied by the existing DWP reservoir and booster station. The accompanying map, based on the USGS Big Bear City and Moonridge, Calif., 7.5' quadrangles, depicts the APE in Section 26, T2N R1E; SBBM.

The Native American Heritage Commission reports in a letter dated May 19, 2023, that the results of the Sacred Lands File search were negative but recommends contacting local Native American groups for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the APE. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agencies, namely the City of Big Bear Lake Department of Water and Power and the U.S Bureau of Reclamation.

We would also like to clarify that, as the cultural resources consultant for the project, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the project area that we should be aware of and to help us assess the sensitivity of the APE. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo
CRM TECH Project Archaeologist/Native American liaison
Email: ngallardo@crmtech.us
Encl.: NAHC response letter and project location map

From: THPO Consulting <ACBCI-THPO@aguacaliente.net>
Sent: Friday, May 26, 2023 2:47 PM
To: 'ngallardo@crmtech.us'
Subject: RE: NA Scoping Letter for the Proposed City of BBL DWP Wolf Reservoir and Booster Replacement Project, in the City of Big Bear Lake, SB Co. (CRM # 4005)

Greetings, Nina

A records check of the Tribal Historic Preservation Office's cultural registry revealed that this project is not located within the Tribe's Traditional Use Area. Therefore, we defer to the other tribes in the area. This letter shall conclude our consultation efforts.

Thank you,

Jeremy Cummings
Cultural Resources Analyst
jcummings@aguacaliente.net
C: (760) 985-4293 | D: (760) 699-1143
5401 Dinah Shore Drive, Palm Springs, CA 92264

From: Jill McCormick <historicpreservation@quechantribe.com>
Sent: Tuesday, May 30, 2023 3:53 PM
To: ngallardo@crmtech.us
Subject: RE: [EXTERNAL]:NA Scoping Letter for the Proposed City of BBL DWP Wolf Reservoir and Booster Replacement Project, in the City of Big Bear Lake, SB Co. (CRM # 4005)

This email is to inform you that we do not wish to comment on this project. We defer to the more local Tribes and support their determinations on this matter.

Thank you,
H. Jill McCormick, M.A.

Quechan Indian Tribe
Historic Preservation Officer
P.O. Box 1899
Yuma, AZ 85366-1899
Office: 760-572-2423
Cell: 928-261-0254
E-mail: historicpreservation@quechantribe.com



AUGUSTINE BAND OF CAHUILLA INDIANS
84-481 Avenue 54, Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: Victoria Martin
Tribal Secretary: Geramy Martin

Date: 05/30/2023

Dear: Nina Gallardo
CRM TECH Project Archaeologist/Native American liaison

Subject: City of Big Bear Lake Department of Water and Power Proposed Wolf Reservoir and Booster Replacement Project Approximately One-Half Acre of Land (APN 0310-731-04) In the City of Big Bear Lake, San Bernardino County, California CRM TECH Contract #4005

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources have resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time, we are unaware of specific cultural resources that may be affected by the proposed project, however, in the event, you should discover any cultural resources during the development of this project please contact our office immediately for further evaluation.

Very truly yours,

Geramy Martin

Geramy Martin, Tribal Secretary
Augustine Band of Cahuilla Indians

From: Deneen Pelton <DPelton@rincon-nsn.gov>
Sent: Friday, June 2, 2023 3:37 PM
To: ngallardo@crmtech.us
Cc: Cheryl Madrigal; Shuuluk Linton
Subject: Wolf Reservoir and Booster Replacement Project

Greetings,

This email is written on behalf of Rincon Band of Luiseño Indians, (“Rincon Band” or “Band”), a federally recognized Indian Tribe and sovereign government. The Band has received the notification for the above referenced project. The location identified within project documents is not within the Band’s specific Area of Historic Interest (AHI). At this time, we have no additional information to provide. We recommend that you directly contact a Tribe that is closer to the project and may have pertinent information.

Thank you for submitting this project for Tribal review. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749-1092 or via electronic mail at crd@rincon-nsn.gov.

Thank you for the opportunity to protect and preserve our cultural assets.

Deneen Pelton, Cultural Resources Department Coordinator
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office: 760-749-1092 ext. 322
Fax: 760-888-2016
Email: dpelton@rincon-nsn.gov

From: Tribal Historic Preservation Office <thpo@morongo-nsn.gov>
Sent: Monday, June 26, 2023 3:05 PM
To: ngallardo@crmtech.us
Cc: Ann Brierty; Laura Chatterton; Joan Schneider
Subject: RE: NA Scoping Letter for the Proposed City of BBL DWP Wolf Reservoir and Booster Replacement Project, in the City of Big Bear Lake, SB Co. (CRM # 4005)

The Morongo Band of Mission Indians (Tribe/MBMI) Tribal Historic Preservation Office is in receipt of your letter regarding the above referenced project. Thank you for reaching out to Tribe at an early stage. The proposed Project is located within the ancestral territory and traditional use area of the Cahuilla and Serrano people of the Morongo Band of Mission Indians.

Tribal cultural resources are non-renewable resources and therefore of high importance to the Morongo Tribe and tribal participation (a.k.a. tribal monitors) is recommended during the cultural resource surveys and future construction phases(s) of the Project. We look forward to working with the Lead Agency and your company to protect these irreplaceable resources out of respect for ancestors of the Morongo people who left them there, and for the people of today and for generations

to come. Projects within this area are highly sensitive for cultural resources regardless of the presence or absence of remaining surface artifacts and features. At the appropriate stage of the Project, our office will request government-to-government consultation under Assembly Bill (AB) 52 (California Public Resources Code § 21080.3.1) with the Lead Agency. At that time, the following will be requested from the Lead Agency to ensure meaningful consultation:

- * A records search conducted at the appropriate California Historical Resources Information System (CHRIS) center with at least a 1.0-mile search radius from the project boundary. If this work has already been done, please furnish copies of the cultural resource documentation (reports and site records) generated through this search so that we can compare and review with our records to begin productive consultation.
- * Tribal participation (a.k.a. tribal monitors) during the pedestrian survey and testing, if this fieldwork has not already taken place. In the event that archaeological crews have completed this work, our office requests a copy of the current Phase I study or other cultural assessments (including the cultural resources inventory).
- * Shape files of the Projects area of effect (APE)
- * Geotechnical Report
- * Currently proposed Project design and Mass Grading Maps

This letter neither initiates nor concludes consultation. Upon the invitation for consultation from the lead agency and receipt of the requested documents, the MBMI THPO may further provide recommendations and/or mitigation measures. Please keep in mind that MBMI requests that copies of all cultural data such as reports and confidential data (DPRs) and confidential portions of reports be sent to Tribal THPO.

The lead contact for this Project is Bernadette Ann Brierty, Tribal Historic Preservation Officer (THPO). Laura Chatterton, Morongo Cultural Resource Specialist will be assisting the Tribe in the review of this project. Should you have any questions, please do not hesitate to contact us at lchatterton@morongo-nsn.gov thpo@morongo-nsn.gov, ABrierty@morongo-nsn.gov, or (951) 663-2842. The Tribe looks forward to meaningful government-to-government consultation with the Lead Agency.

Respectfully,

Laura Chatterton, Cultural Resource Specialist
Tribal Historic Preservation Office, Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA 92220
O: (951) 755.5256
M: (951) 663.7570

From: Bonnie Bryant <Bonnie.Bryant@sanmanuel-nsn.gov>
Sent: Thursday, July 6, 2023 3:22 PM
To: ngallardo@crmtech.us
Cc: Ryan Nordness
Subject: City of BBL DWP Wolf Reservoir and Booster Replacement Project

Greetings, Ms. Gallardo,

Thank you for contacting the Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) concerning the proposed project area. YSMN appreciates the opportunity to review the project documentation received by the Cultural Resources Management Department on May 26, 2023. The proposed project is not located near any known sensitive cultural resources. Thank you again for your correspondence. If you have any additional questions or comments, please reach out to me at your earliest convenience.

Respectfully,

Bonnie Bryant, Cultural Resources Tech
Bonnie.Bryant@sanmanuel-nsn.gov
O:(909) 864-8933 x 50-2033
M:(909) 633-6615
26569 Community Center Dr Highland, California 92346

From: Dorothy Willis <dwillis@loscoyotesband.org>
Sent: Wednesday, July 12, 2023 10:06 AM
To: ngallardo@crmtech.us
Subject: RE: VMGS

Hey Nina,

My apologies, I've had this in my To Do Pile for too long – I've been really involved with Trailer Abatement and Reservation Clean up – literally out there coordinating dumpsters and physically doing the clean up with our Road / Maintenance Crew so I've been a little behind with office duties.

I also received your voicemail this morning, I'm sorry, email is always easiest for me ??

I have reviewed the Big Bear Lake Dept of Water and Power proposed Wolf Reservoir and Booster Replacement Project, I did not receive any official response from the tribe, so it will be one of those, where we defer to the local tribe. Have a great day!!

Thank you!!!
Dorothy

From: Gabrieleno Administration <admin@gabrielenoindians.org>
Sent: Wednesday, July 12, 2023 11:51 AM
To: ngallardo@crmtech.us
Subject: Re: NA Scoping Letter for the Proposed City of BBL DWP Wolf Reservoir and Booster Replacement Project, in the City of Big Bear Lake, SB Co. (CRM # 4005)

Hello Nina

Thank you for your email. We would like to defer the project to the Serrano Tribe.

Admin Specialist

Gabrieleno Band of Mission Indians - Kizh Nation PO Box 393 Covina, CA 91723

Office: 844-390-0787

website: www.gabrielenoindians.org

TELEPHONE LOG

Name	Tribe/Affiliation	Date/Time of Calls	Note
Patricia Garcia-Plotkin, Tribal Historic Preservation Officer	Agua Caliente Band of Cahuilla Indians	None	Jeremy Cummings, Cultural Resources Analyst, responded on behalf of the tribe by e-mail on May 26, 2023 (copy attached).
Amanda Vance, Chairperson	Augustine Band of Cahuilla Mission Indians	None	Geramy Martin, Tribal Secretary, responded on behalf of the tribe in a letter dated May 30, 2023 (copy attached).
Michael Mirelez, Director of Cultural Affairs	Cabazon Band of Mission Indians	9:35 am, June 30 2023	Mr. Mirelez stated that Cabazon would defer to the wishes of the Yuhaaviatam of San Manuel Nation and the Soboba Band of Luiseno Indians for this location.
BobbyRay Esparza, Cultural Coordinator	Cahuilla Band of Indians	9:39 am, June 30, 2023; 8:39 am, July 12, 2023	Left messages; no response to date.
Andrew Salas, Chairperson	Gabrieleño Band of Mission Indians–Kizh Nation	9:42 am, June 30, 2023 8:42 am, July 12, 2023	Left messages; no response to date.
Anthony Morales, Chairperson	Gabrieleno/Tongva San Gabriel Band of Mission Indians	9:45 am, June 30, 2023 9:38 am, July 12, 2023 1:20pm, July 14, 2023	Mr. Morales believes the area to be within the shared ancestral territory of both Gabrieleno and Serrano people, based on oral traditions. Therefore, he considers the project location to be culturally and spiritually sensitive to the tribe. He requested notification if any Native American cultural resources are discovered during the undertaking.
Sandonne Goad, Chairperson	Gabrielino/Tongva Nation	9:47 am, June 30, 2023 9:41 am, July 12, 2023	Voice mailbox was full.
Christina Conley, Tribal Consultant and Administrator	Gabrieleno Tongva Indians of California Tribal Council	9:50 am, June 30, 2023 9:55 am, June 30, 2023	Ms. Conley stated that the tribe would defer to the other Native American groups in closer proximity to the project location.
Charles Alvarez, Chairperson	Gabrielino-Tongva Tribe	9:58 am, June 30, 2023 9:44 am, July 12, 2023	Invalid telephone number.
Ray Chapparosa, Chairperson	Los Coyotes Band of Cahuilla and Cupeno Indians	10:02 am, June 30, 2023 9:49 am, July 12, 2023	Left messages; no response to date.

Name	Tribe/Affiliation	Date/Time of Calls	Note
Ann Brierty, Tribal Historic Preservation Officer	Morongo Band of Mission Indians	None	Laura Chatterton, Cultural Resource Specialist, responded on behalf of the tribe by e-mail on June 26, 2023(copy attached).
Shasta Gaughen, Tribal Historic Preservation Officer	Pala Band of Mission Indians	10:05 am, June 30, 2023 9:52 am, July 12, 2023	Left messages; no response to date.
Paul Macarro, Cultural Resource Coordinator	Pechanga Band of Indians	10:07 am; June 30, 2023 2:57 pm, June 30, 2023	Mr. Macarro stated that the APE was outside of the tribe's ancestral lands and that the tribe would defer to the Yuhaaviatam of San Manuel Nation for further consultation.
H. Jill McCormick, Tribal Historic Preservation Officer	Ft. Yuma Quechan Indian Tribe	None	Ms. McCormick responded by e-mail on May 30, 2023 (copy attached)
John Gomez, Jr., Cultural Resource Coordinator	Ramona Band of Cahuilla	10:19 am, June 30, 2023 10:09 am, July 12, 2023	Left message; no response to date.
Cheryl Madrigal, Tribal Historic Preservation Officer	Rincon Band of Luiseño Indians	None	Deneen Pelton, Cultural Resources Department Coordinator, responded on behalf of the tribe by e-mail on June 2, 2023 (copy attached).
Vanessa Minott, Tribal Administrator	Santa Rosa Band of Cahuilla Indians	11:10 am, June 30, 2023 10:19 am, July 12, 2023	Left message; no response to date.
Mark Cochrane, Co-Chairperson	Serrano Nation of Mission Indians	11:15 am, June 30, 2023 10:21 am, July 12, 2023	Left messages; no response to date.
Joseph Ontiveros, Cultural Resources Director and THPO	Soboba Band of Luiseño Indians	11:17 am, June 30, 2023	Jessica Valdez, Cultural Resource Specialist, stated that Soboba would defer to the nearest tribe to the project location.
Alesia Reed, Cultural Committee	Torres Martinez Desert Cahuilla Indians	11:23 am, June 30, 2023 10:25 am, July 12, 2023	Ms. Reed stated that she would review the letter as soon as possible and respond if the tribe had any comments. No further response has been received.
Alexandra McCleary, Senior Cultural Lands Manager	Yuhaaviatam of San Manuel Nation (formerly San Manuel Band of Mission Indians)	10:22 am, June 30, 2023	Bonnie Bryant, Cultural Resource Technician, responded on behalf of the tribe by e-mail on July 6, 2023 (copy attached).

APPENDIX 3

**CALIFORNIA HISTORICAL RESOURCES INVENTORY
RECORD FORMS**

Site 4005-1H

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6Z

Other Listings
Review Code _____ Reviewer _____ Date _____

*Resource Name or # (Assigned by recorder) CRM TECH 4005-1H

- P1. Other Identifier:** City of Big Bear Lake Wolf Reservoir and Pumphouse
- *P2. Location:** **Not for Publication** **Unrestricted** ***a. County** San Bernardino
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
- *b. USGS 7.5' Quad** Moonridge, Calif. **Date** 1996
T2N; R1E; NE 1/4 of NW 1/4 of Sec 26; S.B. B.M.
- c. Address** N/A **City** Big Bear Lake **Zip** 92315
- d. UTM:** (Give more than one for large and/or linear resources) **Zone** 11; 514,021 mE/ 3,788,062 mN
UTM Derivation: USGS Quad GPS (NAD 83)
- e. Other Locational Data:** (e.g., parcel #, directions to resource, etc., as appropriate) APN 0310-731-04; at the northeast corner of Coyote Court and Wolf Road
- *P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries): Wolf Reservoir is a circular, 100,000-gallon capacity steel tank measuring 33 feet across and 24 feet in height. An enclosed ladder attached on the eastern side reaches the top of the tank, where a small area enclosed by metal handrails and a conical vent are placed. The tank rests on a thick round concrete slab foundation and sports recently applied dark green paint. A few feet south, a rectangular wood-frame pumphouse of modernized character rests on a concrete pad and is surmounted by a side-gable roof sheathed in brown composition shingles ending in medium-wide eaves and exposed rafter tails. The exterior walls are clad in wide horizontal board siding painted tan.
- *P3b. Resource Attributes:** (List attributes and codes) HP22: Reservoir
- *P4. Resources Present:** Building Structure Object Site District Element of District
 Other (isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



- P5b. Description of Photo** (view, date, accession number): Photo taken on April 21, 2023; view to the west
- *P6. Date Constructed/Age and Sources:** Historic Prehistoric Both
1963 (see Item A11)
- *P7. Owner and Address:** City of Big Bear Lake, 41972 Garstin Drive, Big Bear Lake, CA 92315
- *P8. Recorded by** (Name, affiliation, & address): Daniel Ballester and Hunter O'Donnell, CRM TECH, 1016 East Cooley Drive, Suite A/B, Colton, CA 92324
- *P9. Date Recorded:** April 21, 2023
- *P10. Survey Type** (describe): Intensive-level survey for Section 106 and CEQA compliance

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Terri Jacquemain, Frank Raslich, Daniel Ballester, and Hunter O'Donnell (2023): Historical/Archaeological Resources Survey Report: Wolf Reservoir & Booster Replacement Project, Assessor's Parcel Numbers 0310-731-04, City of Big Bear Lake, San Bernardino County, California

- *Attachments:** None Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Resource Record Milling Station Record Rock Art Record
 Artifact Record Photograph Record Other (List): _____

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 4

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) CRM TECH 4005-1H

B1. Historic Name: Wolf Reservoir and Pumphouse B2. Common Name: Same
B3. Original Use: Water tank and booster pump B4. Present Use: Same

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alterations, and date of alterations) The City of Big Bear Lake Department of Water and Power provided the year of construction as 1963 in the annual report for the 2016-2017 fiscal year. Since its completion, the water tank and the pumphouse have been subject to constant maintenance and upkeep, including modernization of the pumphouse exterior, apparent new tank connections, and recent paint work.

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: See Item P3a

B9a. Architect: Unknown b. Builder: _____

*B10. Significance: Theme Post-WWII water infrastructure development

Area Bear Valley/Moonridge Period of Significance 1945-1970

Property Type Civic infrastructure Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.) The original construction of the reservoir in 1963 was predicated on continued population growth in Big Bear Valley after improved roads and post-World War II prosperity brought new seasonal and permanent residents to the Big Bear Lake area. It does not, however, demonstrate a particularly unique, significant, or close association with that pattern of events or any other established theme in national, state, regional, or local history, nor have any specific events or persons of recognized historic significance been identified in association with the reservoir.

As common infrastructure elements of standard design and construction, the facility does not embody the distinctive characteristics of a style, type, period, or method of construction, nor is it known to represent the work of an
(Continued on p. 4)

B11. Additional Resource Attributes: (List attributes and codes) _____

B12. References: See Item P11.

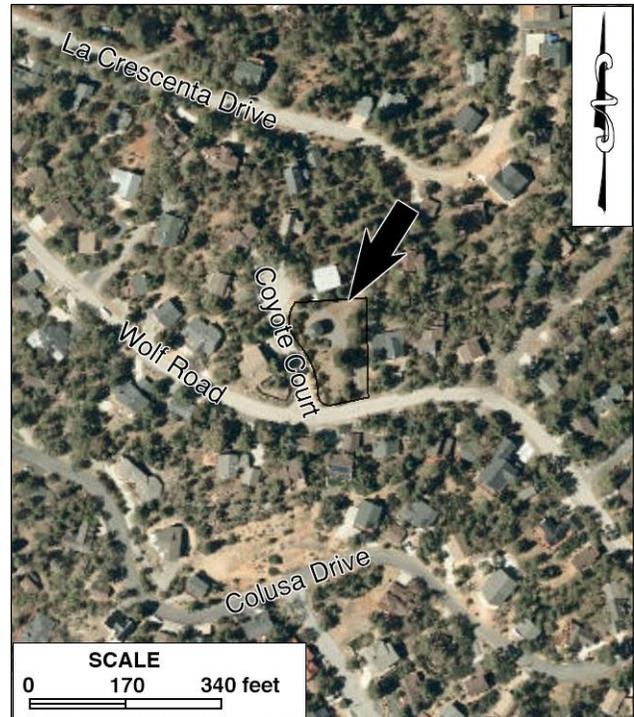
B13. Remarks: _____

*B14. Evaluator: Terri Jacquemain

*Date of Evaluation: August 3, 2023

(This space reserved for official comments.)

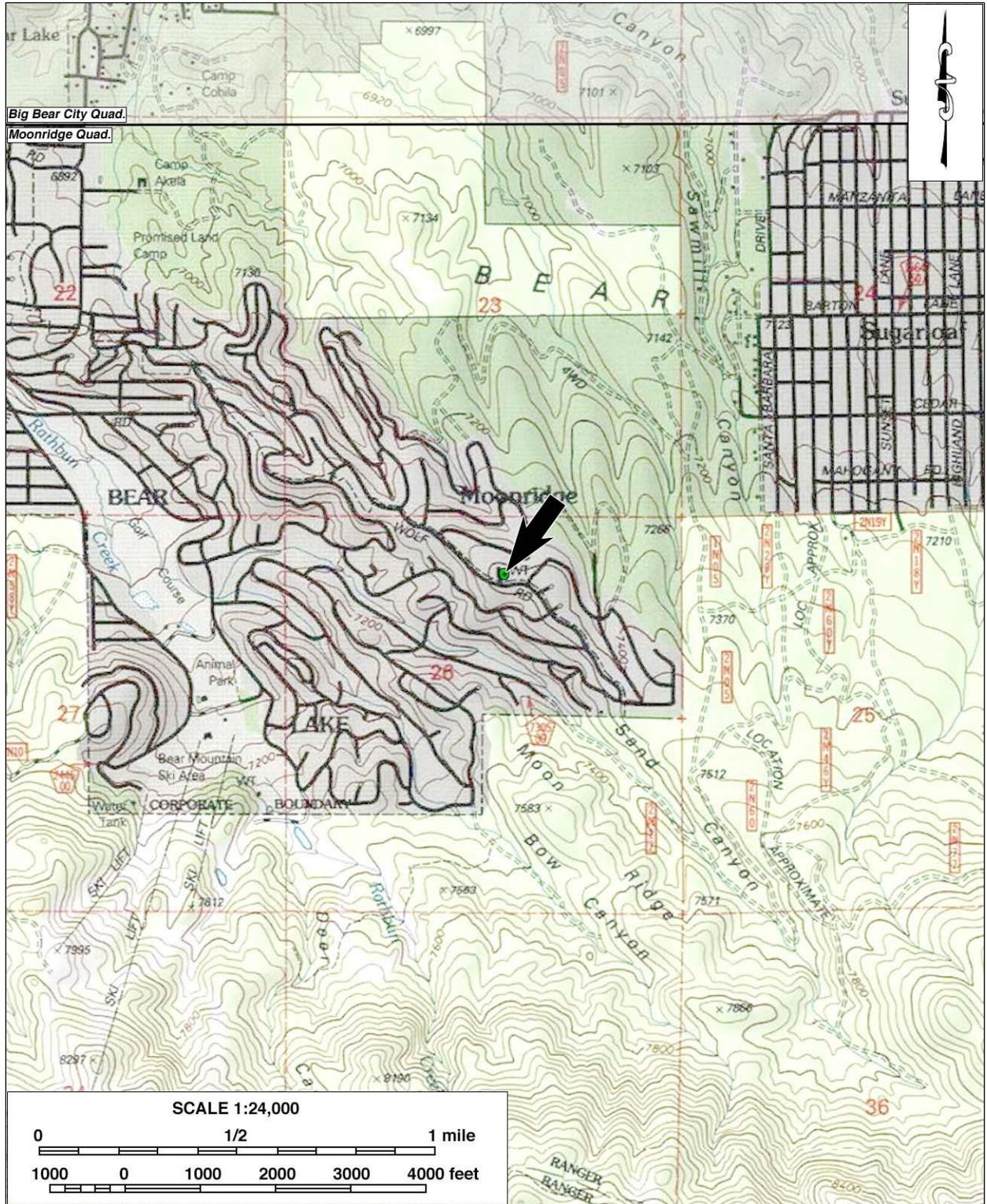
(Sketch Map with north arrow required.)



LOCATION MAP

Trinomial _____

*Map Name: Big Bear City & Moonridge, Calif. *Scale: 1:24,000 *Date of Map: 1996



Recorded by: Daniel Ballester and Hunter O'Donnell

*Date: April 21, 2023 Continuation Update

***B10. Significance (continued):** important designer or builder or possess high artistic values. Dating to the late historic period, Wolf Reservoir holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and archival records. Based on these considerations, Wolf Reservoir does not appear eligible for listing in the National Register of Historic Places or the California Register of Historical Resources.