TIERRA ROBLES

PLANNED DEVELOPMENT

SCH NO. 2012102051

Partial Recirculated Draft Environmental Impact Report

DECEMBER 2020

Kimley»Horn

DRAFT
PARTIAL RECIRCULATED ENVIRONMENTAL IMPACT REPORT

TIERRA ROBLES PLANNED DEVELOPMENT

Zone Amendment Z10-002
Tract Map 1996

SCH NO. 2012102051

LEAD AGENCY:

Department of Resource Management
Planning Division
1855 Placer Street, Suite 103
Redding, CA 96001
530-225-5532

TECHNICAL ASSISTANCE BY:

Kimley-Horn and Associates, Inc.
555 Capitol Mall, Suite 300
Sacramento, CA 95814

December 2020

TABLE OF CONTENTS

APPENDICES (Due to the voluminous nature of the Appendices, they are provided in their entirety on the thumb drive attached to the back cover of this document)

LIST OF FIGURES

LIST OF TABLES

This Page Intentionally Left Blank

1.0 Introduction

1.1 Purpose of this Document

Section 15088.5 of the California Environmental Quality Act (CEQA) Guidelines provides that all or a portion of a draft environmental impact report (DEIR) shall be recirculated for public review and comment when one or more new or more severe significant impacts are added to a DEIR after public notice is given of the availability of the DEIR but before certification. "Recirculation" simply means that the public is provided an opportunity to comment on the new or revised sections of the DEIR. Recirculation is not required unless significant new information is being added to the DEIR. Recirculation is not required where the new information merely clarifies or amplifies or makes insignificant modifications to the DEIR.

This document is the Partial Recirculated DEIR (RDEIR) for the proposed Tierra Robles Planned Development Project (State Clearinghouse No. 2012102051) (proposed project). As authorized under CEQA Guidelines Section 15088.5(c), the revisions to the DEIR are limited to a few portions of the DEIR and therefore, only those portions are included in the RDEIR. For that reason, the RDEIR includes only those sections in which changes have been made or which are new. The RDEIR includes the following sections: Introduction, Air Quality, Greenhouse Gases and Climate Change, Energy Consumption, Utilities and Service Systems, Traffic and Circulation, and Wildfire.

1.2 Reason for Recirculation

Since the DEIR was released for an extended 60-day public review (October 19, 2017 through December 18, 2017), there have been changes to the regulatory environment related to Air Quality, Greenhouse Gases and Climate Change, and Energy Consumption. These sections have been revised, and all pertinent changes are discussed in additional detail below. In addition, an update to Utilities and Service Systems was needed because the water supply analysis was revised to identify an alternative water source during dry years, and a discussion of the feasibility and reliability of that source is warranted. Revisions related to new mitigation for the provision of a mitigation measure for traffic impacts at the intersection of Deschutes Road and Cedro Lane in the Traffic and Circulation section also has warranted recirculation. Lastly, due to recent legislative changes to CEQA, a Wildfire section has been added. No changes to the Project Description have been made.

1.3 Organization of the Document and Summary of Changes

The RDEIR includes the following sections:

Revised Section 1.0 *Introduction*. This section discusses the purpose of this RDEIR, summarizes the revisions being made to the Tierra Robles DEIR, the public review process, and use of this document.

Revised Section 5.3 *Air Quality*. This section includes an updated analysis of potential air quality impacts. This section was revised to update the analysis based upon updated methods of analysis, updated thresholds in Appendix G of the State CEQA Guidelines, and to reflect new legislation and regulations regarding air quality analysis. Additionally, pursuant to recent case law (i.e., Sierra Club v.

County of Fresno), the potential for the Project's criteria air pollutant emissions to impact human health is addressed. This section is recirculated in its entirety.

Revised Section 5.7 *Greenhouse Gases and Climate Change*. This section includes an updated analysis of potential greenhouse gas and climate change impacts. This section was revised to update the analysis based upon updated methods of analysis, updated thresholds in Appendix G of the State CEQA Guidelines, and to reflect new CEQA case law since the Draft EIR was circulated in 2017. The RDEIR also includes additional discussion of feasible measures to reduce GHG emissions and new mitigation measures that have been added. This section is recirculated in its entirety.

Revised Section 5.16 *Traffic and Circulation*. This section has been updated to include an analysis of Vehicle Miles Traveled (VMT) as a result of updates to the State CEQA Guidelines that require this type of analysis for development projects. The analysis in this section includes a discussion of feasible mitigation measures to reduce potential impacts related total VMT generated by the project. The update analysis includes a new mitigation measure for a fair share payment for a traffic signal at the Deschutes Road/Cedro Lane intersection. This section is recirculated in its entirety.

Revised Section 5.17 *Utilities and Service Systems*. This section includes an updated analysis of potential water service impacts. This section was revised to provide an updated analysis regarding an alternative water supply during water shortages associated with a multiple dry year event. This section includes only the discussion related to water service impacts. Portions of this section, such as wastewater treatment and solid waste, not included in this section of the RDEIR remain unchanged from the 2017 Draft EIR.

Revised Section 5.18 *Energy Consumption*. This section includes an updated analysis of potential energy consumption impacts. This section was revised to update the analysis based upon updated energy modeling completed for the project as part of the greenhouse gas emissions calculations. This section is recirculated in its entirety.

New Section 5.19 *Wildfire*. This section has been added and includes the thresholds provided in Appendix G of the State CEQA Guidelines. In 2018, subsequent to the release of the Draft EIR, the State CEQA Guidelines were updated. As part of that update, Appendix G was revised to include wildfire as a separate topic of discussion. As such, this section is included in this RDEIR. This section includes much of the wildfire discussion in analysis previously included in Section 5.8 of the 2017 Draft EIR as well as additional analysis consistent with the current Appendix G checklist in the State CEQA Guidelines. The discussion in this section includes the analysis from a new emergency evacuation analysis prepared for the proposed Project.

1.4 Public Review

The information in this report is subject to review by the County, responsible agencies, trustee agencies, and other interested agencies, as well as the public for a period of 45 days. The RDEIR is available for public review at the following locations:

Shasta County Department of Resource Management
Planning Division
1855 Placer Street, Suite 103

Redding, CA 96001

Shasta Public Libraries – Redding Branch
1100 Parkview Avenue
Redding, CA 96001

Shasta Public Libraries – Anderson Branch
3200 West Center Street
Anderson, CA 96007

Electronic copies of the RDEIR and other project related documents and technical studies are also available by clicking on the "Tierra Robles Partial Recirculated Draft EIR" link at:

www.co.shasta.ca.us/index/drm/planning/eir/tierra-robles

Future notifications regarding scheduled Planning Commission and Board of Supervisors hearings on this proposed project will be circulated. Please send your comments and direct any questions to the attention of Paul Hellman, Director of Resource Management, at the Shasta County Department of Resource Management, Planning Division, 1855 Placer Street, Suite 103, Redding, CA 96001. Phone: (530) 225-5532. E-mail: phellman@co.shasta.ca.us.

1.5 Limitation on Comments

CEQA Guidelines Section 15088.5(f)(2) states that:

> When the EIR is revised only in part and the lead agency is recirculating only the revised sections or portions of the EIR, the lead agency may request that reviewers limit their comments to the revised sections or portions of the recirculated EIR. The lead agency need only respond to (i) comments received during the initial circulation period that relate to sections or portions of the document that were not revised and recirculated, and (ii) comments received during the recirculation period that relate to the sections or portions of the earlier EIR that were revised and recirculated. The lead agency's request that reviewers limit the scope of their comments shall be included either within the text of the revised EIR or by an attachment to the revised EIR.

In keeping with this provision, the County requests that commenters limit their written comments to the revisions and new material presented in the RDEIR, which consists of **Section 1.0 Introduction, Section 5.3 Air Quality**, **Section 5.7 Greenhouse Gases and Climate Change**, **Section 5.16 Traffic and Circulation**, **Section 5.17 Utilities and Service Systems, Section 5.18 Energy Consumption,** and **Section 5.19 Wildfire**. The Final EIR will include written responses to the comments received on the portions of the previously circulated DEIR that have not been recirculated, as well as the comments received on the RDEIR.

1.6 Use of this Document

The RDEIR will be combined with the previously circulated DEIR as part of the Final EIR. The Final EIR will also include the comments received on the portions of the DEIR that have not been recirculated, as well

as the comments received on the RDEIR, along with written responses to those comments. Section 1.0 Introduction, Section 5.3 Air Quality, Section 5.7 Greenhouse Gases and Climate Change, Section 5.16 Traffic and Circulation, Section 5.17 Utilities and Service Systems, Section 5.18 Energy Consumption, and Section 5.19 Wildfire of the RDEIR will replace the corresponding sections of the DEIR in total. As noted above, Section 5.17 Utilities and Service Systems replaces only the water service impacts analysis, the other portions of this section such as wastewater treatment and solid waste remain unchanged from the DEIR and the analysis for those topics remains in effect from the DEIR.

The Shasta County Planning Commission and Board of Supervisors will consider the Final EIR as part of their deliberations on the proposed project. If the Board of Supervisors approves the proposed project, they will be required to certify the Final EIR and adopt CEQA findings, a statement of overriding considerations, and a mitigation monitoring and reporting program as required by CEQA.

The RDEIR is not the Final EIR. The Final EIR will include other revisions and clarifications in response to the comments received on the DEIR and the RDEIR, or as needed to otherwise clarify the Final EIR.

1.7 Project Location and Project Description

This section is provided for information purposes only and provides a brief summary of the project components. All other components of the proposed project are described in detail in **Section 3.0 Project Description** of the DEIR. This section is meant to assist the reader to understand the basic elements of proposed project and how those elements may contribute impacts to air quality, greenhouse gases and climate change, traffic and circulation, utilities and service systems, energy consumption, and wildfire. This section also provides the reader with a summary of the project that can be compared to the project alternatives.

1.7.1 Project Location

The proposed project is located approximately five miles east of the City of Redding, between the unincorporated communities of Bella Vista and Palo Cedro. The 715.4-acre project site is bounded by Old Alturas Road to the north and Boyle Road to the south and is located 1.6 miles west of Deschutes Road.

1.7.2 Project Description

The project applicant is proposing a residential subdivision (Tierra Robles Planned Development) on the 715.4-acre Chatham Ranch property. Project approval would allow the applicant to subdivide the property into 166 one-family residential lots, along with separate parcels for open space uses. No changes are proposed from the Draft EIR circulated in October 2017. The following actions are being requested as part of the proposed project:

- A Zone Amendment (Z10-002) to change the current zoning from Rural Residential 5-acre minimum (RR-BA-5), Rural Residential 3-acre minimum (RR-BA-3), and Unclassified (U), to a Planned Development (PD) zone district for the site.

- A Tract Map (TR 1996) is requested to divide the approximate 715.4-acre property into 166 one-family residential lots ranging from 1.19 acres to 6.81 acres in size, and six open space parcels totaling 192.7 acres.

- A community services district or homeowners association would provide urban or suburban services within the unincorporated project area. The Tierra Robles Community Services District (TRCSD) or Tierra Robles Homeowners Association (TRHOA) would oversee implementation of the Tierra Robles Design Guidelines; Tierra Robles Oak Woodland Management Plan; Tierra Robles Wildland Fuel/Vegetation Management Plan, Open Space Management, and Resource Management Area Management and Oversight; Road Maintenance; Storm Drain Maintenance; and Waste Water Collection, Treatment and Dispersal Facilities.

As discussed above, the proposed project would include 166 one-family residential lots ranging from 1.19 acres to 6.81 acres in size on approximately 471.92 acres (total residential parcel area). Depending on overall market conditions at the time of project implementation, the new residential lots would be developed in six phases that are roughly equal in size. Although the actual size of the homes would vary, an average residence would be approximately 3,550 square feet with an average of 3.5 bedrooms. *Table 1-1, PROJECT ACREAGE AND LOTTING SUMMARY*, below provides the breakdown of residential lots, roadways, secondary disposal area, bridges, and open space parcels. Although every approved residential lot would be entitled to an accessory dwelling unit (ADU) pursuant to Government Code §65852.2, it is assumed that approximately 9 percent, or 15 lots, would have ADU's based on historical County trends. ADU's could be constructed within the established residential development envelope up to a maximum of 1,200 square feet in area.

Table 1-1

PROJECT ACREAGE AND LOTTING SUMMARY

Land Use	Acreage	Description
Rural Residential	1.00-1.99 acres	45 residential lots
	2.00-2.99 acres	65 residential lots
	3.00-3.99 acres	25 residential lots
	4.00-4.99 acres	16 residential lots
	5.00-4.99 acres	10 residential lots
	6.00+ acres	5 residential lots
Total	***471.92 acres***	***166 residential lots***
Roadway Right-of-Way (Internal)	46.48 acres	15 Roadway Segments
Roadway Right-of-Way (Offsite)	5.23 acres	North Connection to Old Alturas Road
Secondary Disposal Area	4.36 acres	Lot No. 73
Bridges	N/A	2 Crossings of Clough Creek
Six Open Space Parcels	154.90 acres	1 open space lot – east
	7.08 acres	1 open space lot – north west
	14.58 acres	1 open space lot – south
	2.62 acres	1 open space lot – north center
	3.05 acres	1 open space lot – north center
	8.45 acres	1 open space lot – along Clough Creek
Total	***192.68 acres***	
TOTAL PROPOSED PROJECT	**720.67 acres**	

Source: S2 ~ J2 Engineering. December 2016.

This Page Intentionally Left Blank

5.3 AIR QUALITY

NOTE TO READER: This section of the Partial Recirculated Draft EIR (RDEIR) includes an updated analysis of potential air quality impacts. This section was revised to update the analysis based upon updated methods of analysis, updated thresholds in Appendix G of the State CEQA Guidelines, and to reflect new legislation and regulations regarding air quality analysis. This section is recirculated in its entirety.

This section examines the air quality in the project area, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the proposed project. Air quality impacts were assessed in accordance with methodologies recommended by the California Air Resources Board (CARB) and the Shasta County Air Quality Management District (SCAQMD). Where quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). Air quality technical data (model outputs) is included in Appendix RDEIR-A-1, *Air Quality/Greenhouse Gas Emissions Data*.

5.3.1 ENVIRONMENTAL SETTING

NORTHERN SACRAMENTO VALLEY AIR BASIN

The proposed project is located five miles east of the City of Redding, between the unincorporated communities of Bella Vista and Palo Cedro, which is in Shasta County at the northern end of the Northern Sacramento Valley Air Basin (NSVAB). The NSVAB consists of a total of seven counties: Sutter, Yuba, Colusa, Butte, Glenn, Tehama, and Shasta. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada range. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains form a substantial physical barrier to locally created pollution as well as that transported northward on prevailing winds from the Sacramento metropolitan area.[1]

The environmental conditions of Shasta County are conducive to potentially adverse air quality conditions. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas. Growth and urbanization in Shasta County have also contributed to an increase in emissions.

AIR POLLUTANTS OF CONCERN

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state laws. These regulated air pollutants are known as “criteria air pollutants” and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO_X), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), lead, and fugitive dust are primary air pollutants. Of these, CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions

[1] *Northern Sacramento Valley Planning Area 2018 Triennial Air Quality Attainment Plan,* Sacramento Valley Air Quality Engineering and Enforcement Professionals, 2018.

in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Sources and health effects commonly associated with criteria pollutants are summarized in Table 5.3-1, CRITERIA AIR POLLUTANTS SUMMARY OF COMMON SOURCES AND EFFECTS.

Table 5.3-1
CRITERIA AIR POLLUTANTS SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between volatile organic compounds (VOC) and nitrous oxides (NOx) in the presence of sunlight. VOCs are also commonly referred to as reactive organic gases (ROGs). Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles, and dyes.
Particulate Matter (PM_{10} & $PM_{2.5}$)	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned; when gasoline is extracted from oil; or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.

Source: CAPCOA (California Air Pollution Control Officers Association). 2013. Health Effects. [online]: *http://www.capcoa.org/health-effects/*. Accessed on January 14, 2016.

TRANSPORT OF OZONE

Ozone is found at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O_3). While upper atmospheric ozone protects the earth from the sun's harmful rays, ground level ozone is the main component of smog. Tropospheric, or ground level ozone, is not emitted directly into the air but is created by chemical reactions between nitrogen oxides (NO_x) and reactive organic gases (ROG) in the presence of sunlight. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for the optimum conditions for ozone formation. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often impacts a widespread area.

Ozone can also be transported long distances by wind. For this reason, even rural areas can experience

high ozone levels.[2] In the Northern Sacramento Valley Planning Area (NSVPA), ozone is a seasonal problem typically occurring during the months of May through October. Sources of NO_X and ROG emissions include motor vehicles, power plants, factories, chemical solvents, combustion products from various fuels, and consumer products.

The NSVPA air quality management districts experience transport ozone from the Broader Sacramento Area, which comprise all of the Sacramento Metropolitan Air Quality Management District (AQMD) and Yolo-Solano AQMD, and a portion of El Dorado, Placer, and Sutter Counties. Emissions that were originally created in the Broader Sacramento Area can be transported northward via prevailing winds to affect the pollution levels of the NSVPA. The California Air Resources Board (CARB) has also identified that air pollution is transported from the Broader Sacramento Area to the Upper Sacramento Valley.[3] On most summer days, the so-called "delta breeze" blows from the Carquinez Strait northeast towards Sacramento. Reaching Sacramento, the delta breeze turns northward and continues into the northern Sacramento Valley and the foothills of the northern Sierra Nevada. It is possible under the right conditions that Bay Area emissions could also be carried to the Northern Sacramento Valley and to the foothills of the northern Sierra Nevada. The impacts of transported Broader Sacramento Area air pollution to districts in the Upper Sacramento Valley are variable.

Transport from the Broader Sacramento Area dominates the air quality in the Upper Sacramento Valley, as far north as Butte and Tehama counties. However, violations in Shasta County, at the northern end of the Sacramento Valley, are occasionally entirely due to local emissions, sometimes entirely due to transport, and sometimes a mixture of both.

According to CARB, motor vehicles are by far the largest source of ozone precursor emissions in the NSVPA. Despite an increase in number of vehicle miles traveled, motor vehicle emissions are reduced by increasingly stringent motor vehicle emission controls and cleaner burning gasoline.[4]

AMBIENT AIR QUALITY

Criteria Air Pollutant Monitoring Data

Ambient air quality in Shasta County, and thus at the project site, can be inferred from ambient air quality measurements conducted at air quality monitoring stations. Existing levels of ambient air quality and historical trends and projections in the region are documented by measurements made by the SCAQMD, which is the air pollution regulatory agency for the portion of the NSVAB in Shasta County. These measurements are affected by pollutants generated by the urbanized land uses in Shasta County as well as by land uses in the entire NSVAB and beyond.

Ozone, PM_{10}, and $PM_{2.5}$ are the primary pollutants affecting the NSVAB. The nearest air quality monitoring site to the project site that monitors ambient concentrations of ozone and airborne particulates is located on the roof of the Redding Health Department in Redding, approximately 7 miles west of the project site. Table 5.3-2, AMBIENT AIR QUALITY MONITORING DATA, summarizes the published data since 2016 for each year that the monitoring data is provided.

[2] U.S., Environmental Protection Agency, *Ground-Level Ozone Basics*, 2018. Available at: https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics; accessed on February 12, 2019.
[3] California Air Resources Board, *Ozone Transport: 2001 Review*, April 2001.
[4] Ibid.

Table 5.3-2
AMBIENT AIR QUALITY MONITORING DATA

Pollutant Standards	2016[1]	2017[1]	2018[1]
Ozone (O_3)			
1-hour Maximum Concentration (ppm)	0.084	0.082	0.089
8-hour Maximum Concentration (ppm)	0.074	0.075	0.077
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	0	0
NAAQS 8-hour (>0.070 ppm)	5	3	1
Particulate Matter Less Than 10 Microns (PM_{10})			
National 24-hour Maximum Concentration	28.4	88.9	166.1
State 24-hour Maximum Concentration	27.6	84.8	160.5
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 µg/m3)	0	0	1
CAAQS 24-hour (>50 µg/m3)	0	2	7
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)			
National 24-hour Maximum Concentration	12.6	67.3	131.0
State 24-hour Maximum Concentration	12.6	67.3	131.0
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 µg/m3)	0	1	5

NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; ppm = parts per million; µg/m3 = micrograms per cubic meter; NM = not measured

Source: California Air Resources Board, *Aerometric Data Analysis and Management System (ADAM) Air Quality Data Statistics,* 2020. [online]: http://www.arb.ca.gov/adam/index.html. Accessed on January 17, 2020.

Notes:

[1] Measurements taken at the Redding Health Department Monitoring Station located at 2630 Hospital Lane, Redding, California 96001.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining and chrome-plating operations; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute affects such as eye watering,

respiratory irritation (a cough), running nose, throat pain, and headaches. To date, CARB has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds.

Most recently, CARB identified diesel particulate matter (DPM) as a toxic air contaminant. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine.[5] Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Residential areas are considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Children are considered more susceptible to health effects of air pollution due to their immature immune systems and developing organs.[6] As such, schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. The project site is located in an area of large-lot single family homes. The nearest residential land uses would be those surrounding the project site on the western and southern boundaries. No schools, hospitals, or senior care homes exist in the immediate area.

5.3.2 REGULATORY SETTING

FEDERAL AND STATE

Ambient Air Quality Standards

The proposed project has the ability to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, development activities under the proposed project fall under the ambient air quality standards promulgated at the local, state, and federal levels. The federal Clean Air Act of 1971 and the Clean Air Act Amendments (1977) established the national ambient air quality standards (NAAQS), which are promulgated by the U.S. Environmental Protection Agency (EPA). The State of California has also adopted its own California ambient air quality standards (CAAQS), which are promulgated by CARB. Implementation of the project would occur in the Shasta County portion of the NSVAB, which is under the air quality regulatory jurisdiction of the SCAQMD and is subject to the rules and regulations adopted by

[5] EPA (U.S. Environmental Protection Agency). 2002. *Health Assessment Document for Diesel Engine Exhaust.* [online]: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29060. Accessed on January 14, 2016.
[6] OEHHA (Office of Environmental Health Hazard Assessment). 2007. *Air Toxicology and Epidemiology: Air Pollution and Children's Health*. [online]: http://oehha.ca.gov/public_info/facts/airkids.html. Accessed on January 14, 2016.

the air district to achieve the NAAQS and CAAQS. As shown in Table 5.3-3, AIR QUALITY STANDARDS, these pollutants include O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 5.3-3
AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	—
	8 Hour	0.070 ppm (137µg/m^3)	0.070 ppm (137µg/m^3)
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	N/A
Particulate Matter – Fine ($PM_{2.5}$)	24 Hour	N/A	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (665 µg/m^3)	75 ppb (196 µg/m^3)
	3 Hour	—	N/A
	24 Hour	0.04 ppm (105 µg/m^3)	N/A
Lead	Calendar Quarter	N/A	1.5 µg/m^3
	30 Day Average	1.5 µg/m^3)	N/A
Visibility-Reducing Particles	8 Hour (10:00 to 18:00 PST)	—	N/A
Sulfates	24 Hour	25 µg/m^3	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 µg/m^3)	N/A

Source: California Air Resources Board, Ambient Air Quality Standards, 2016. [online]: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed on January 17, 2020.
mg/m^3=milligrams per cubic meter; ppm=parts per million; ppb=parts per billion; µg/m^3=micrograms per cubic meter

Air Quality Attainment Plans

In 1994, the air districts in the NSVPA, which includes the SCAQMD jurisdiction, prepared an Air Quality Attainment Plan for ozone. This plan was updated in 1997, 2000, 2003, 2006, 2009, 2012, 2015 and again in 2018. Like the preceding plans, the 2018 plan focuses on the adoption and implementation of control measures for stationary sources, area-wide sources, indirect sources, and public information and education programs. The 2018 plan also addresses the effect that pollutant transport has on the NSVPA's ability to meet and attain the state standards.

The Air Quality Attainment Plan provides local guidance for air basins to achieve attainment of ambient air quality standards. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Areas for which there is insufficient data available are designated unclassified. The attainment status for the Shasta County portion

of the NSVAB is included in Table 5.3-4, FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SHASTA COUNTY. The region is nonattainment for the state ozone standard.

Table 5.3-4
FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SHASTA COUNTY

Pollutant	Federal	State
8-Hour Ozone (O_3)	Unclassified/Attainment	Nonattainment
Coarse Particulate Matter (PM_{10})	Unclassified	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassified/Attainment	Attainment
Carbon Monoxide (CO)	Unclassified/Attainment	Unclassified
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_2)	Unclassified	Attainment

Source: California Air Resources Board, *State and Federal Area Designation Maps*, 2018. [online]: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed on January 17, 2020.

Toxic Air Contaminant Regulations

In 1983, the California legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the federal Clean Air Act (42 United States Code Section 7412[b]) is a TAC. Under state law, the California Environmental Protection Agency, acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as toxic air contaminants. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for eleven TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.
Since the last update to the TAC list in December 1999, CARB has designated 244 compounds as toxic air contaminants.[7] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from

[7] CARB (California Air Resources Board). 1999. *Final Staff Report: Update to the Toxic Air Contaminant List*.

TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

California Diesel Risk Reduction Plan

In September 2000, CARB adopted the Diesel Risk Reduction Plan (DRRP), which recommends many control measures to reduce the risks associated with DPM and achieve a goal of an 85 percent reduction of DPM generated by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. Ongoing efforts by CARB to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce DPM emissions. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

Since the initial adoption of the DRRP in September 2000, CARB has adopted numerous rules related to the reduction of DPM from mobile sources, as well as the use of cleaner-burning fuels. Transportation sources addressed by these rules include public transit buses, school buses, on-road heavy-duty trucks, and off-road heavy-duty equipment.

On-Road Heavy-Duty Diesel Vehicles (In Use) Regulation

CARB's On-Road Heavy-Duty Diesel Vehicles (In Use) Regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks were required to be retrofitted with particulate matter filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses, as well as to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.

LOCAL

Shasta County Air Quality Management District (SCAQMD)

The SCAQMD is designated by law to adopt and enforce regulations to achieve and maintain ambient air quality standards. The SCAQMD, along with other air districts in the NSVAB, has committed to jointly prepare the NSVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. In addition, the SCAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs, and it regulates agricultural burning. Other responsibilities include monitoring air quality, preparing clean air plans, and responding to citizen complaints concerning air quality. All projects in Shasta County are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Descriptions of specific rules applicable to future construction resulting from implementation of the proposed project may include, but are not limited to:

- SCAQMD Rule 2:1A, Authorities to Construct/Permits to Operate, allows any person to use construction equipment for construction activities, and must obtain a permit to operate prior to installation activities.

- SCAQMD Rule 2:2, Emissions Reduction Credit and Banking Rule, provides for a mechanism for permitted and non-permitted emissions sources to deposit, transfer, and use emission reduction

credits (ERCs) as offsets as allowed by applicable laws and regulations. The provisions of Rule 2:2 apply to the deposit, transfer, and use of ERCs from stationary sources and open biomass burning sources of air pollution emissions. ERCs are typically required when stationary source pollutants exceed 25 tons per year.

- SCAQMD Rule 3:2, Specific Air Contaminants, controls the amount of air contaminants allowed to be discharged into the atmosphere.

- SCAQMD Rule 3:15, Cutback and Emulsified Asphalt, requires cutback and emulsified asphalt application to be conducted in accordance with Rule 3:15.

- SCAQMD Rule 3:16, Fugitive, Indirect, or Non-Traditional Sources, controls the emission of fugitive dust during earth-moving, construction, demolition, bulk storage, and conditions resulting in wind erosion.

- SCAQMD Rule 3:23, Fireplace and Solid Fuel Heating Device Usage, established emission and performance requirements equivalent to EPA Phase II devices for wood-heating devices used for the first time in existing buildings and those used in all new residential and commercial building projects constructed after March 1, 1994, within the boundaries of Shasta County.

- SCAQMD Rule 3:28, Stationary Internal Combustion Engines, limits the emissions of NO_X and CO from stationary internal combustion engines.

- SCAQMD Rule 3:31, Architectural Coatings, controls the architectural coatings and solvents used at the project site.

- SCAQMD Rule 3:32, Adhesives and Sealants, limits the emissions of volatile organic compounds (VOCs) from adhesives and sealants and associated primers, and from related surface preparation solvents, cleanup solvents, and strippers.

- SCAQMD Rule 3:33, Wood Products Coating Operations, limits the emissions of volatile organic compounds (VOCs) from coatings and strippers used on wood products and from products used in surface preparation and cleanup.

Shasta County General Plan

The *Shasta County General Plan*, as amended through September 2004, provides the following air quality objectives and policies relative to the proposed project:

- *AQ-1.* To protect and improve the County's air quality in accordance with Federal and State clean air laws in order to: (1) safeguard human health, and (2) minimize crop, plant, and property damage.

- *AQ-1a.* The County shall require builders/developers to limit fireplace installations in new development to low-emitting fireplaces conforming to a maximum emission limit of 7.5 grams per hour of total particulate matter by being equipped with an EPA-certified insert or by being individually certified to meet the above emission standard.

- *AQ-1d.* The County shall require residential development projects and projects categorized as sensitive receptors to be located an adequate distance from existing and potential sources of toxic emissions such as freeways, major arterial, industrial sites, and hazardous material locations.

- *AQ-2c.* Land use decisions, where feasible, should contribute to the improvement of air quality. New projects shall be required to reduce their respective air quality impacts to below levels of significance or proceed as indicated in Policy AQ-2e.

- *AQ-2d.* Shasta County shall ensure that air quality impacts identified during CEQA review are: (1) consistently and fairly mitigated, and (2) mitigation measures are feasible.

- *AQ-2e.* Shasta County will cooperate with the AQMD in assuring that new projects with stationary sources of emissions of non-attainment pollutants or their precursors that exceed 25 tons per year shall provide appropriate emission offsets. A comparable program which offsets indirect emissions of these pollutants exceeding 25 tons per year from development projects shall also be utilized to mitigate air pollution impacts. An Environmental Impact Report will be required for all projects that have unmitigated emissions of non-attainment pollutants exceeding 25 tons per year.

- *AQ-2f***.** Shasta County shall require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the AQMD in order to mitigate both direct and indirect emissions of non-attainment pollutants.

- *AQ-2g.* Significance thresholds as proposed by the AQMD for emissions shall be utilized when appropriate for: (1) Reactive Organic Gases (ROG) and Oxides of Nitrogen (NOx), both of which are precursors of ozone, and (2) inhalable particulate matter (PM10) in determining mitigation of air quality impacts.

- *AQ-4b.* The County's development standards shall require the paving of roads as a part of new development permits to the extent necessary to meet access and air quality objectives. These requirements shall be designed to help mitigate potentially significant adverse air quality impacts created by particulate emissions on both an individual and cumulative basis.

- *AQ-8a.* The County will encourage new development projects to reduce air quality impacts from area sources and energy consumption requirements for heating and cooling.

- *AQ-8b.* The County will encourage use of energy conservation features and low-emission equipment for all new residential and commercial development.

5.3.3 THRESHOLDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with the State CEQA Guidelines, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project.

The following significance thresholds related to air quality have been derived from Appendix G of the State CEQA Guidelines:

- *Conflict with or obstruct implementation of any applicable air quality plan.* Refer to Impact 5.3-1, below.
- *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).* Refer to Impact 5.3-2, below.
- *Expose sensitive receptors to substantial pollutant concentrations.* Refer to Impact 5.3-3, below.
- *Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.* Refer to Impact 5.3-4, below.

SCAQMD thresholds have been used to determine air quality impacts in this analysis. To assist in the evaluation of air quality impacts, the SCAQMD has adopted air quality thresholds for determination of impact significance for projects subject to CEQA review. These thresholds are consistent with New Source Review Rule 2:1 adopted by the SCAQMD Board in 1993 as required by the California Clean Air Act. The thresholds of significance are summarized in Table 5.3-5, SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS OF SIGNIFICANCE.

Table 5.3-5
SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS OF SIGNIFICANCE

Threshold	Emissions (pounds per day)		
	NO_X	ROG	PM_{10}
Level A Thresholds	25	25	80
Level B Thresholds	137	137	137
Source: Shasta County Air Quality Management District.			

The SCAQMD and the Shasta County General Plan recommend that projects apply Standard Mitigation Measures (SMM) and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level A thresholds and that projects apply SMM, BAMM, and special BAMM when a project exceeds Level B thresholds. Projects that cannot mitigate emissions to levels below the Level B thresholds are considered significant.

Based on these standards, the effects of the proposed project have been categorized as either a "*less than significant"* impact or a "*potentially significant"* impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "*significant and unavoidable"* impact.

5.3.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the SCAQMD. Where quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. CalEEMod contains default values for much of the information needed to calculate emissions. However, project specific, user supplied information can also be used when it is available. Vehicle trip generation rates and trip distances for proposed land use were adjusted to reflect project-specific data obtained from the traffic analysis prepared for the proposed project. The CalEEMod model was run to calculate daily emissions during the summer and winter months.

As discussed above, the significance of construction and operational emissions are assessed based on whether the SCAQMD's Level A and Level B thresholds are exceeded. The SCAQMD has set its Level B CEQA significance thresholds for NO_X and ROG (VOC) at 25 tons per year (expressed as 137 pounds per day) based on the FCAA, which defines a major stationary source as having the potential to emit 25 tons per year or more of a combination of pollutants. The thresholds correlate with the trigger levels for the federal New Source Review (NSR) Program and SCAQMD Rule 2:1 (New Source Review) for new or modified sources. The NSR Program was created by the FCAA to ensure that stationary sources of air pollution are constructed or modified in a manner that is consistent with attainment of health-based federal ambient air quality standards. The federal ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect public health. Therefore, projects that do not exceed the SCAQMD's mass emissions thresholds would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and no criteria pollutant health impacts.

A formal health risk assessment is necessary for projects anticipated to emit state or federal identified toxic air contaminants (TACS)/hazardous air pollutants (HAPs). For typical land use projects that do not propose stationary source of emissions (e.g., smoke stacks), diesel fueled particulates (diesel PM) are the primary TAC of concern. Land uses that generate substantial amounts of diesel PM include warehouses, distribution centers, etc. The proposed project does not propose any major sources of stationary emissions or warehouses, distribution centers, or other uses requiring substantial amounts of diesel traffic. Therefore, a formal health risk assessment was not conducted for this EIR.

Air quality impacts are analyzed below according to topic. Mitigation measures directly correspond with an identified impact.

IMPACT 5.3-1 ***Implementation of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan.***

Significance: Less Than Significant Impact.

Impact Analysis: Under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these

standards by the earliest practical date. As previously stated, the Shasta County portion of the NSVAB is classified nonattainment for the state ozone standard (refer to Table 5.3-4).

The NSVPA *2018 Air Quality Attainment Plan* is the most recent and the only applicable air quality planning document covering Shasta County.[8] Air quality attainment plans are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls describing how the state will attain ambient air quality standards. State law makes CARB the lead agency for all purposes related to the Air Quality Attainment Plan. Local air districts prepare air quality attainment plans and submit them to CARB for review and approval. The NSVPA *2018 Air Quality Attainment Plan* includes forecast ROG and NOX emissions (ozone precursors) for the entire region through the year 2020. These emissions are not appropriated by county or municipality.

The consistency of the proposed project with the NSVPA *2018 Air Quality Attainment Plan* is determined by its consistency with air pollutant emission projections in the plan. Implementation of the project could increase vehicle miles traveled, and thus ROG and NO_X emissions, which could conflict with air quality planning efforts associated with the NSVPA *2018 Air Quality Attainment Plan*. As previously stated, the plan cites projected O_3 precursor emissions (ROG and NO_X) through the year 2020. For the purposes of this analysis, the emissions resulting from proposed project operations were quantified and compared with the NSVPA *2018 Air Quality Attainment Plan* 2020 ozone precursor emissions projections.

The NSVPA *2018 Air Quality Attainment Plan* includes control strategies necessary to attain the California ozone standard at the earliest practicable date, as well as developed emissions inventories and associated emissions projections for the region showing a downtrend for both ROG and NO_X. The proposed project would result in long-term emissions from area and mobile emission sources. As discussed in Impact Analysis 5.3-2, below, the ozone precursor emissions, ROG and NO_X, would increase as a result of the project. The upward trend in ozone precursor emissions is not reflective of the projected ozone emissions reductions documented in the NSVPA *2018 Air Quality Attainment Plan*, which projects a 16 percent reduction in ROG emissions and a 32 percent reduction in NO_X emissions from area and mobile sources in the NSVPA by the year 2020 (the latest year projected in the NSVPA *2018 Air Quality Attainment Plan*).

However, while operation of the project would result in an increase of O_3 precursor emissions, this increase would only total approximately 0.008 tons of ROG and 0.013 tons of NO_X daily (refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA). The addition of these project emissions to the area and mobile source projections documented in the NSVPA *2018 Air Quality Attainment Plan* for year 2020 results in a 0.01 percent increase in ROG emissions and a 0.01 percent increase in NO_X emissions compared with existing projections in the NSVPA. The NVSPA projected a population of 199,814 people in Shasta County in the year 2020.[9] The California Department of Finance reported a population total for Shasta County of 178,045 as of January 1, 2020.[10] As such, the proposed project is well within the growth projections of the NSVPA with regard to meeting its attainment goals.

It is the intent of the NSVPA *2018 Air Quality Attainment Plan* to achieve ozone attainment status, and while O_3 precursor emissions are projected to increase as a result of project development, this increase is minimal to the point of being insubstantial, as such development would represent a 0.01 percent increase

[8] SVBAPCC (Sacramento Valley Basinwide Air Pollution Control Council). 2018. *Northern Sacramento Valley Planning Area 2018 Triennial Air Quality Attainment Plan*.
[9] Northern Sacramento Valley Planning Area 2015 Triennial Air Quality Plan (page 3). https://www.fraqmd.org/files/cc5597e19/2015+Triennial+AQAP.pdf Accessed October 22, 2020.
[10] California Department of Finance, E-1 City, Counties, and State Population Estimates; http://www.dof.ca.gov/forecasting/demographics/estimates/e-1/ Accessed October 22, 2020.

in ROG emissions and a 0.01 percent increase in NO_X emissions compared with existing projections. Therefore, the increase of O_3 precursor emissions would not have a statistically substantial effect on the emissions projections of the NSVPA *2018 Air Quality Attainment Plan*. Thus, the proposed project would not conflict with or obstruct implementation of the NSVPA *2018 Air Quality Attainment Plan*, and no impact would occur.

The NSVPA *2018 Air Quality Attainment Plan* identifies district rules and programs applicable to new development, including SCAQMD rules regarding wood stoves and fireplaces, architectural coatings, and fugitive dust during construction. Rules 3:16 (Fugitive, Indirect, or Non-Traditional Sources), 3:23 (Fireplaces and Solid Fuel Heating Device Usage), and 3:31 (Architectural Coatings) are described in subsection 5.3.2, Regulatory Setting, under Local-SCAQMD. Project-related development will be subject to all applicable SCAQMD rules.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant* impact.

IMPACT 5.3-2	***Project implementation could potentially result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under applicable state or federal ambient air quality standards.***

Significance: Less Than Significant With Mitigation Incorporated.

Impact Analysis: The project involves the construction and operation of 166 single-family homes. In addition, based on historical County trends it is assumed that approximately 9 percent of the lots would construct an accessory or secondary unit on their property. Therefore, air quality data for this project has been modeled to include 166 homes (approximately 3,550 square feet each) and 15 accessory dwellings with a maximum size of 1,200 square feet each. Activities associated with implementation of the proposed project would generate additional construction and operational emissions which would adversely affect regional air quality.

CONSTRUCTION EMISSIONS

Construction associated with the project would generate short-term emissions of criteria air pollutants. The proposed project would be constructed in phases; therefore, construction-generated emissions were quantified using a phase-by-phase analysis. Overall construction activities would include grubbing/clearing of the project site, cut/fill, and compaction of soils, installation of utilities (e.g. underground power, sewer, water, telephone, and storm drainage facilities), construction of proposed buildings, and the paving of approximately 17.2 acres of roadways. Equipment used for construction would vary day-to-day depending on the activity, but would include scrapers/earthmovers, wheeled dozers, water trucks, forklifts, wheeled loaders, and/or motor graders. Construction air emissions associated with the development of each phase was quantified using the CalEEMod land use emissions model. These quantified emission projections were then compared with the applicable SCAQMD significance thresholds for each phase. Construction-generated emissions associated with the proposed project could potentially exceed the applicable thresholds of significance. Predicted maximum daily

construction-generated emissions for the proposed project are summarized in Table 5.3-6, CONSTRUCTION-RELATED EMISSIONS.

Table 5.3-6
CONSTRUCTION-RELATED EMISSIONS

Construction Activities	Maximum Emissions (pounds per day)[1]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)
Phase I (46 units + 4 secondary units)					
Unmitigated Emissions	22.78	59.66	20.49	12.01	41.75
Mitigated Emissions	19.98	28.73	18.34	10.05	45.42
Phase II (19 units +2 secondary units)					
Unmitigated Emissions	13.34	33.148	19.91	11.47	36.62
Mitigated Emissions	11.25	24.19	18.34	10.05	40.87
Phase III (24 units +2 secondary units)					
Unmitigated Emissions	12.46	35.49	19.52	11.12	35.97
Mitigated Emissions	10.75	23.77	18.34	10.05	40.36
Phase IV (20 units +2 secondary units)					
Unmitigated Emissions	13.41	25.27	19.38	10.99	36.14
Mitigated Emissions	11.88	24.27	18.34	10.05	40.67
Phase V (43 units + 4 secondary units)					
Unmitigated Emissions	19.61	31.22	19.38	10.99	35.63
Mitigated Emissions	18.08	24.10	18.34	10.05	40.16
Phase VI (14 units + 1 secondary unit)					
Unmitigated Emissions	8.81	13.69	18.73	10.42	18.22
Mitigated Emissions	7.68	13.95	18.34	10.05	23.42
Significant Impact Thresholds					
Threshold A	**25**	**25**	**80**	**None**	**None**
Threshold B	**137**	**137**	**137**	**None**	**None**
Exceed Level A Threshold?	No	Yes	No	N/A	N/A
Exceed Level B Threshold?	No	No	No	N/A	N/A

Notes:
1. Emissions calculated using CalEEMod version 2013.2.2.
Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for daily emission model outputs. Construction emissions also account for the construction of roadways for each phase.

Based on the modeling conducted, short-term daily emissions associated with the construction of the proposed project would not exceed the Level B significance threshold; however, the Level A significance threshold would be surpassed for NO_X emissions. The SCAQMD recommends that projects apply Standard Mitigation Measures (SMM) and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level A thresholds. As a result, implementation of **MM 5.3-1** that requires diesel-fueled construction equipment to have CARB certified Tier 4 or better engines to reduce NO_X emissions would be required throughout the duration of project construction activities. Additionally, **MM 5.3-1** also includes various dust control measures to reduce fugitive PM_{10} and $PM_{2.5}$, such as providing trackout devices, covering stockpiles, and limiting onsite vehicle speeds. Implementation of **MM 5.3-1** would substantially reduce impacts resulting from construction-generated emissions associated with project construction. Due to limitations in the modeling software, only the pollutant reductions resulting from the requirement of CARB certified Tier 4 or better engines and the fugitive dust measures are quantified.

Construction-generated emissions associated with the development of the proposed project will not exceed the Level B significance threshold. While the Level A significance threshold would be surpassed for NO_X emissions, feasible SMM and appropriate BAMM would be implemented per SCAQMD guidance as

required by **MM 5.3-1**. Therefore, impacts from construction-generated air pollutants would be *less than significant*.

Offsite Improvements

Several offsite intersection improvements have been identified for the proposed project (refer to **MM 5.16-1** and **MM 5.16-2** in Section 5.16, TRAFFIC AND CIRCULATION). These improvements have been included in the construction emissions modeling conducted for the proposed project noted above in Table 5.3-6. Similar to onsite construction activities associated with the proposed project, implementation of **MM 5.3-1** would be required during construction of improvements associated with **MM 5.16-1** and **MM 5.16-2**. Impacts in this regard would be *less than significant*.

OPERATIONAL EMISSIONS

Subsequent land use activities associated with implementation of the proposed project would introduce additional mobile and stationary sources of emissions, which would adversely affect regional air quality. The proposed project would result in increased regional emissions of PM_{10} and $PM_{2.5}$, as well as ROG, NO_X, and CO, due to increased use of motor vehicles, natural gas, maintenance equipment, and various consumer products, thereby increasing potential operational air quality impacts. Predicted maximum daily emissions are summarized in Table 5.3-7, LONG-TERM OPERATIONAL EMISSIONS. Note that emissions rates differ from summer to winter because different weather patterns affect pollutant mixing, dispersion, O_3 formation, and other factors.

Table 5.3-7
LONG-TERM OPERATIONAL EMISSIONS

Source	Pollutant (pounds/day)[1, 2]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)
Summer Emissions					
Project Source	295.64	5.58	48.02	48.02	356.82
Energy Use	0.13	1.14	0.09	0.09	0.48
Mobile Source	3.24	25.68	14.17	3.86	32.83
Total	**299.02**	**32.41**	**62.29**	**51.98**	**390.14**
Winter Emissions					
Project Source	295.64	5.58	48.02	48.02	356.82
Energy Use	0.13	1.14	0.09	0.09	0.48
Mobile Source	2.46	26.22	14.17	3.86	29.07
Total	**298.24**	**32.95**	**62.29**	**51.98**	**386.38**
Significant Impact Thresholds					
Threshold A	**25**	**25**	**80**	**None**	**None**
Threshold B	**137**	**137**	**137**	**None**	**None**
Exceed Level A Threshold?	Yes	Yes	No	N/A	N/A
Exceed Level B Threshold?	Yes	No	No	N/A	N/A

Notes:
1. Emissions calculated using CalEEMod version 2016.3.1.
2. Based on a total of 1,774 daily trips as shown in the traffic impact assessment prepared for the project.
Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for daily emission model outputs.

As depicted in Table 5.3-7, emissions associated with operations of the proposed project would exceed Level A and Level B significance thresholds for ROG and Level A for NO_X. Therefore, mitigation would be required. **Mitigation Measure MM 5.3-2** prohibits the installation of wood burning fireplaces (natural gas fireplaces are acceptable). Additionally, **MM 5.3-3** requires energy efficient lighting, energy efficient and automated air conditioning controls, and exterior electrical outlets. Implementation of **MM 5.3-2** would

substantially reduce impacts resulting from long-term operational emissions associated with the project as shown in Table 5.3-8, MITIGATED LONG-TERM EMISSIONS. Due to limitations in the modeling software with regard to quantifying some energy efficient appliances, only the pollutant reductions resulting from the prohibition of wood-burning hearths are quantified.

Table 5.3-8
MITIGATED LONG-TERM EMISSIONS

Source	Pollutant (pounds/day)[1, 2]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)
Summer Emissions					
Area Source	14.79	2.87	0.30	0.30	16.04
Energy Use	0.12	1.08	0.08	0.08	0.45
Mobile Source	3.24	25.68	14.17	3.86	32.83
Total	**18.16**	**29.63**	**14.56**	**4.25**	**49.33**
Winter Emissions					
Area Source	14.79	2.87	0.28	0.28	16.04
Energy Use	0.12	1.08	0.08	0.08	0.45
Mobile Source	2.46	26.22	14.17	3.86	29.07
Total	**17.38**	**30.17**	**14.56**	**4.25**	**45.57**
Significant Impact Thresholds					
Threshold A	**25**	**25**	**80**	**None**	**None**
Threshold B	**137**	**137**	**137**	**None**	**None**
Exceed Level A Threshold?	No	Yes	No	N/A	N/A
Exceed Level B Threshold?	No	No	No	N/A	N/A

Notes:
1. Emissions calculated using CalEEMod version 2016.3.1.
2. Mitigation measures include the use of natural gas fireplaces.
Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for daily emission model outputs.

As previously stated, unmitigated emissions associated with operations of the proposed project would exceed Level A and Level B significance thresholds for ROG, and Level A thresholds for NO_X. The SCAQMD recommends that projects apply SMM and appropriate BAMM when a project exceeds Level A thresholds. Projects that cannot mitigate emissions to levels below the Level B thresholds are considered significant.

Table 5.3-8, above, shows the reduction in emissions with the inclusion of **MM 5.3-2**. As shown, implementation of **MM 5.3-2** would reduce ROG levels to below the Level B significance threshold. In order to address NO_X emissions, SMM would be implemented per SCAQMD guidance as required by **MM 5.3-3**. As shown in Table 5.3-8, NO_x emissions would be reduced to below the Level B threshold. Therefore, with the implementation of **MM 5.3-2** and **MM 5.3-3**, impacts from NO_x emissions would be reduced to below the Level B Threshold and potential impacts on air quality would be reduced to a *less than significant* level.

Combined Construction and Operational Emissions

As noted above, the project would be constructed in six phases. Therefore, the potential exists for multiple phases could be operational while a future phase is being constructed. Table 5.3-9, COMBINED OPERATIONAL AND CONSTRUCTION EMISSIONS (MITIGATED), shows that under the total operational emissions of all six phases when combined with the emissions generated during each construction phase would not exceed Level B threshold with the implementation of **MM 5.3-1**, **MM 5.3-2**, and **MM 5.3-3**.

increase impacts beyond what is identified above. The potential overlap of construction and operational emissions would not change the magnitude of project emissions. It should be noted that Table 5.3-9 conservatively shows the total project operational emissions and not just the operational emissions of the preceding phases. Therefore, potential overlapping construction and operational emissions would be lower than when calculated separately. Impacts would be less than significant in this regard.

Table 5.3-9
COMBINED OPERATIONAL AND CONSTRUCTION EMISSIONS (MITIGATED)

Construction and Operation	Maximum Emissions (pounds per day)[1]				
	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)	Carbon Monoxide (CO)
Phase I					
Mitigated Construction Emissions	19.98	28.73	18.34	10.05	45.42
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**38.14**	**58.9**	**32.9**	**14.29**	**94.75**
Phase II					
Mitigated Construction Emissions	11.25	24.19	18.34	10.05	40.87
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**29.41**	**54.36**	**32.9**	**14.29**	**90.2**
Phase III					
Mitigated Construction Emissions	10.75	23.77	18.34	10.05	40.36
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**28.91**	**53.94**	**32.9**	**14.29**	**89.69**
Phase IV					
Mitigated Construction Emissions	11.88	24.27	18.34	10.05	40.67
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**30.04**	**54.44**	**32.9**	**14.29**	**90**
Phase V					
Mitigated Construction Emissions	18.08	24.10	18.34	10.05	40.16
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**36.24**	**54.27**	**32.9**	**14.29**	**89.49**
Phase VI					
Mitigated Construction Emissions	7.68	13.95	18.34	10.05	23.42
Mitigated Operation Emissions (Phases I-VI)	18.16	30.17	14.56	4.24	49.33
Total Emissions	**25.84**	**44.12**	**32.9**	**14.29**	**72.75**
Significant Impact Thresholds					
Threshold A	**25**	**25**	**80**	**None**	**None**
Threshold B	**137**	**137**	**137**	**None**	**None**
Exceed Level A Threshold?	Yes	Yes	No	N/A	N/A
Exceed Level B Threshold?	No	No	No	N/A	N/A

Notes:
1. Emissions calculated using CalEEMod version 2013.2.2.
Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for daily emission model outputs. Construction emissions also account for the construction of roadways for each phase.

Criteria Pollutant Health Impacts

As required by Sections 40918, 40919, 40920, and 40920.5 of the California Health & Safety (H&S) Code, areas designated as being in nonattainment for one or more of the criteria pollutants identified in State or Federal standards must achieve "no net increase" in emissions (i.e., offsets) of those pollutants and

their precursors. Although Shasta County has been designated a nonattainment area with respect to the State ozone ambient air quality standard, it has further been classified as having "moderate air pollution."

Shasta County maintains a bank of Emissions Reduction Credits (ERCs) to be used as mitigation offsets for emissions increases. As described above in the Regulatory Setting section of this chapter, the SCAQMD maintains a bank of emissions reduction credits (ERCs), which can be used by land owners and project applicants to offset emissions generated by a new or proposed project or operation. The ERCs can be used to offset the increase in emissions generated by a project. ERCs are typically required when stationary source pollutants exceed 25 tons per year.[11]

As previously discussed, Project emissions would be less than significant and would not exceed SCAQMD Level B thresholds (refer to Table 5.3-6 through Table 5.3-9). Therefore, the proposed project would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and no criteria pollutant health impacts would occur. Project operational emissions combined with construction emissions would be less than significant.

Mitigation Measures:

MM 5.3-1: Prior to issuance of a grading permit, the project applicant shall submit a grading plan for review and approval by the Shasta County Building Department. The following specifications shall be included to reduce short-term air quality impacts attributable to the proposed project:

- During all construction activities, all diesel-fueled construction equipment, including but not limited to rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, and tractors, shall be California Air Resources Board (CARB) Tier 4 Interim Certified or better as set forth in Section 2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 of the Code of Federal Regulations.[12]
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. Equipment maintenance records shall be kept onsite and made available upon request by the County of Shasta.
- All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air quality standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.
- All areas (including unpaved roads) with vehicle traffic shall be watered periodically or have dust palliatives applied for stabilization of dust emissions.
- All onsite vehicles shall be limited to a speed of 15 miles per hour on unpaved roads.

[11] Shasta County Air Quality Management District, *Protocol for Review, Land Use Permitting Activities, Procedures for Implementing the California Environmental Quality Act*, November 2003.

[12] NOx emissions are primarily associated with use of diesel-powered construction equipment (e.g., graders, excavators, rubber-tired dozers, tractor/loader/backhoes). The Clean Air Act of 1990 directed the EPA to study, and regulate if warranted, the contribution of off-road internal combustion engines to urban air pollution. The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-road diesel engines was signed between the EPA, CARB, and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, the EPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards.

- All land clearing, grading, earth-moving, or excavation activities on the project site shall be suspended when sustained winds are expected to exceed 20 miles per hour.
- All portions of the development site which have been stripped of vegetation by construction activities and left inactive for more than ten days shall be seeded and/or watered until a suitable grass cover is established.
- All trucks hauling dirt, sand, soil, or loose material shall be covered or shall maintain at least 2 feet of freeboard (i.e., minimum vertical distance between top of the load and the trailer) in accordance with the requirements of California Vehicle Code Section 23114. This provision will be enforced by local law enforcement agencies.
- All material transported offsite shall be either sufficiently watered or securely covered to prevent a public nuisance.
- Wheel washers shall be installed where project vehicles and/or equipment enter and/or exit onto paved streets from unpaved roads. Vehicles and/or equipment shall be washed prior to each trip.
- Prior to final occupancy, the applicant shall re-establish ground cover on the construction site through seeding and watering.
- Off-road construction equipment shall not be left idling for periods longer than 5 minutes when not in use.

MM 5.3-2: Prior to the issuance of individual building permits, the Shasta County Building Department shall confirm that all construction documents and specifications stipulate that the installation of wood-burning fireplaces is prohibited. Natural gas fireplaces are acceptable.

MM 5.3-3: Prior to the issuance of individual building permits, the Shasta County Building Department shall confirm that all project plans and specifications include the following design features:

- The project shall provide for the use of energy-efficient lighting (includes controls) and process systems such as water heaters, furnaces, and boiler units.
- The project shall utilize energy-efficient and automated controls for air conditioning.
- Residential structures shall include exterior electric outlets in the front and rear.

Level of Significance After Mitigation: Impacts would be *less than significant* impact with mitigation incorporated.

IMPACT 5.3-3	***Project implementation would not expose sensitive receptors to substantial pollutant concentrations.***

Significance: Less Than Significant With Mitigation Incorporated.

Impact Analysis: The primary pollutants of concern to human health generated by the proposed project are criteria pollutants and TACs.

Regional Criteria Pollutants

The California Supreme Court's decision in Sierra Club v. County of Fresno (6 Cal. 5th 502) (Friant Ranch Decision) reviewed the long-term, regional air quality analysis contained in the EIR for the proposed Community Plan Update and Friant Ranch Specific Plan (Friant Ranch Project). The Friant Ranch Project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment under the NAAQS and CAAQS for ozone and PM2.5. The California Supreme Court found that the Friant Ranch Project EIR's air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must attempt to connect a project's regional air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Appendix RDEIR-A-2, *Technical Modeling Considerations For Criteria Pollutants And Human Health Effects,* summarizes many of these tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As described in Appendix RDEIR-A-2, while there are models capable of quantifying ozone and secondary PM formation and associated health effects, these tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations induced by individual projects. Therefore, translating project-generated criteria pollutants to the locations where specific health effects could occur or the resultant number of additional days of nonattainment cannot be achieved with any degree of accuracy for relatively small projects (relative to the regional air basin).

The Sacramento Metropolitan Air District (SMAQMD) adopted updated CEQA Guideline to address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District in June 2020 (available online here: http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools). Although this project is not in the Sac Metro Air District, the project is within the same North Sacramento Valley Air Basin as the SMAQMD and their adopted Guidance "provides insight on the health effects that may result from a Project emitting at the maximum thresholds of significance (TOS) levels in the SFNA [Sacramento Federal Ozone Non-Attainment Area] for oxides of nitrogen (NOX), volatile organic compounds (VOCs), and PM, in addition to levels of CO and oxides of sulfur (SOX) calculated proportional to NOX (as described in Section 4.1). This information can be used in environmental documents to provide a conservative estimate the health effects of the emissions of criteria pollutants at levels at or below the significance thresholds." SCAQMD has not published a similar guidance document. Notably, the project's emissions of criteria pollutants (shown below) are well below the maximum thresholds of significance used in the SMAQMD CEQA Guide[13]:

	Criteria Pollutants (Tons per Year)_			
	NOx	**ROG**	**PM_{10}**	**$PM_{2.5}$**
Thresholds Used in SMAQMD CEQA Guide	65	65	80	82
Annual Mitigation Project Emissions	59.8	35.54	29.12	8.5

[13] Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County (CEQA Guide),* Chapter 2l Appendix, http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools Accessed November 6, 2020.

According to the SMAQMD, because this project has estimated emissions of well below the thresholds of significance used in the SMAQMD CEQA Guide, the project's health impacts from criteria pollutants would not be significant or substantial.

Local Criteria Pollutants

The proposed project could create a significant hazard to residents in the vicinity and other sensitive receptors through exposure to substantial pollutant concentrations such as ROG, NO_X and particulate matter and/or other toxic air contaminants during construction activities. Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, schoolchildren, hospital patients, and the elderly. The project site is located within an area of large-lot single family homes. The nearest residential land uses would be those surrounding the project site on the western and southern boundaries. No schools, hospitals, or senior care homes exist in the immediate area.

Criteria Pollutants and Toxic Air Contaminants

Construction activities would involve the use of a variety of gasoline- or diesel-powered equipment that emits exhaust fumes. Residents in the vicinity would potentially be exposed to nuisance dust and heavy equipment emission diesel exhaust during construction. However, the duration of exposure would be short and exhaust from construction equipment dissipates rapidly. According to CARB, concentrations of mobile-source diesel particulate matter (DPM) emissions are typically reduced by 70 percent at a distance of approximately 500 feet.[14]

California Office of Environmental Health Hazard Assessment has not identified short-term health effects from DPM. Construction is temporary and would be transient throughout the site (i.e. move from location to location) and would not generate emissions in a fixed location for extended periods of time. Construction would be subject to and would comply with California regulations limiting the idling of heavy-duty construction equipment to no more than 5 minutes to further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions.

As discussed previously, project construction would not result in exceedances of SCAQMD standards. As shown in Table 5.3-6, **MM 5.3-1** would reduce ROG, NO_X, and PM_{10} emissions below the Level B significance thresholds. The temporary duration of construction activities coupled with implementation of **MM 5.3-1** would ensure sensitive receptors within the vicinity of the project site would not be exposed to substantial criteria pollutant emissions or toxic air contaminants (TAC) generated during construction. Therefore, with implementation of MM 5.3-1, potential impacts from TACs would be less than significant.

Carbon Monoxide Hotspots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to

[14] CARB (California Air Resources Board). 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*.

operate at unacceptable levels of service during the peak commute hours.[15] However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the project vicinity have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. As such, the SCAQMD does not require the analysis of CO hotspots. The overall effect in the County is that CO concentrations remain relatively low, and it is not anticipated that CO from project traffic would generate a CO hotspot. The following qualitative analysis is presented to support the conclusion that CO impacts from the project are highly unlikely to result in a CO hotspot or a violation of any CO ambient air quality standard.

The analysis prepared for CO attainment in the South Coast Air Quality Management District *1992 Federal Attainment Plan for Carbon Monoxide* (1992 CO Plan) for the South Coast Air Quality Management District's *2003 Air Quality Management Plan* (2003 AQMP) can be used to assist in evaluating the potential for CO exceedances. The CO hot spot analysis was conducted for four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the level of service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be level of service (LOS) E at peak morning traffic and LOS F at peak afternoon traffic. Nonetheless, the analysis concluded that there was no violation of CO standards.[16]

According to the *Supplemental Traffic Impact Analysis* (August 2017), and *Updated Technical Memorandum* (February 2019), the proposed project would generate 1,774 vehicle trips. Therefore, the proposed project would not increase traffic volumes at any intersection to more than 100,000 vehicles per day, the value studied in the 1992 CO Plan. As a result, this impact would be considered *less than significant*.

Mitigation Measures: Implement **MM 5.3-1**.

Level of Significance After Mitigation: Impacts would be *less than significant* with mitigation incorporated.

[15] Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. LOS is most commonly used to analyze intersections by categorizing traffic flow with corresponding safe driving conditions. LOS A is considered the most efficient level of service and LOS F the least efficient.
[16] SCAQMD (South Coast Air Quality Management District). 2003. *Final 2003 AQMP Appendix V – Modeling and Attainment Demonstrations*.

IMPACT 5.3-4	*Project implementation would not result in other emissions (such as those leading to odors) that would adversely affect a substantial number of people.*

Significance: Less Than Significant Impact.

Impact Analysis: Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. Implementation of the proposed project would involve individual septic tanks and a community wastewater treatment system. The individual septic tanks would include carbon filters to control odors. The wastewater treatment system would be designed to meet the reuse requirements for discharge of Title 22 (Disinfected Secondary Effluent). Title 22 reuse requires daily testing for coliform and also includes provisions for odor and nuisance control. Furthermore, the project would be required to comply with SCAQMD Rule 3:16 and *California Health & Safety Code* Section 41700, which prohibits the discharge of contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public. Therefore, the project would not generate odors that would be noticeable at any of the surrounding sensitive receptors and impacts in this regard would be *less than significant*.

Mitigation Measures: No mitigation measures are required.

Level of Significance: No mitigation measures are required. Impacts would be *less than significant*.

5.3.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.3-5	***Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).***

Significance: Potentially Significant Impact.

Cumulative Setting: The cumulative setting for air quality includes the Shasta County in its entirety and the North Sacramento Valley Air Basin. The Shasta County portion of the NSVAB is designated as a nonattainment area for the state O_3 standard. The Shasta County portion of the NSVAB is designated as being unclassified and/or attainment for all pollutants under federal standards. Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards.

Impact Analysis: The SCAQMD thresholds do not include separate significance thresholds for cumulative operational emissions. However, with respect to regional air pollution, the development of the project would result in population growth that is consistent with the County's General Plan projections. The Supplemental EIR (SEIR) prepared for the most recent comprehensive General Plan Update (1993) states as follows:

The SEIR identifies the following cumulative impacts which cannot be mitigated to less than a significant level by General Plan mitigation: land use, circulation, air quality and public services including sheriff and schools.

As discussed previously, construction-generated emissions associated with the development of the proposed project would not exceed the SCAQMD Level B significance threshold, and while the Level A significance threshold would be surpassed for NO_X emissions, feasible SMM and appropriate BAMM would be implemented per SCAQMD guidance as required by **MM 5.3-1**. As a result, impacts from construction-generated air pollutants would be considered *less than significant*. As also discussed previously, implementation of **MM 5.3-2** would reduce ROG levels to below the Level B significance threshold, and in order to address NO_X emissions, feasible SMM would be implemented per SCAQMD guidance as required by **MM 5.3-3**. However, as long-term mitigated NOx emissions would exceed the SCAQMD's Level A significance threshold, and NO_x is a precursor pollutant for ozone (Shasta County is a nonattainment area for State ozone standards; refer to Table 5.3-4), the project's long-term operational NOx emissions are cumulatively considerable. Therefore, this impact would be cumulatively *significant*.

Mitigation Measures: Implement **MM 5.3-1**, **MM 5.3-2,** and **MM 5.3-3**.

Level of Significance After Mitigation: As discussed above and shown in Tables 5.3-8 and 5.3-9, the project's construction and operational emissions would be below Level B significance thresholds with implementation of **MM 5.3-1**, **MM 5.3-2,** and **MM 5.3-3**. Despite implementation of these mitigation measures identified for this proposed project, the project's long-term NO_x emissions would be cumulatively considerable, and would result in *significant and unavoidable* cumulative air quality impacts.

This Page Intentionally Left Blank.

5.7 GREENHOUSE GASES AND CLIMATE CHANGE

NOTE TO READER: This section of the Partial Recirculated Draft EIR (RDEIR) includes an updated analysis of potential greenhouse gas and climate change impacts. This section was revised to update the analysis based upon updated methods of analysis, updated thresholds in Appendix G of the State CEQA Guidelines, and to reflect new legislation and regulations regarding greenhouse gas and climate change analysis. This section is recirculated in its entirety.

This section evaluates greenhouse gas (GHG) emissions associated with the proposed project and analyzes project compliance with applicable regulations. Consideration of the project's consistency with applicable plans, policies, and regulations, as well as the introduction of new sources of GHGs, is included in this section. GHG technical data is included as Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA.

5.7.1 ENVIRONMENTAL SETTING

CLIMATE AND METEOROLOGY

The proposed project is located five miles east of the City of Redding, between the unincorporated communities of Bella Vista and Palo Cedro, which is in Shasta County at the northern end of the Northern Sacramento Valley Air Basin (NSVAB). The environmental conditions of Shasta County are conducive to potentially adverse air quality conditions. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas. Growth and urbanization in Shasta County have also contributed to an increase in emissions.

The valley is frequently subjected to inversions that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problems. Generally, areas below 1,000 feet in elevation within Shasta County experience moderate to poor capability to disperse pollutants in both the horizontal and vertical wind fields. This is, in large measure, due to relatively stable atmospheric conditions which act to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to the dispersal of pollutants. In valley locations, at or below 1,000 feet in elevation, such as the project area, inversions create a "lid" under which pollutants are trapped. Dust and other pollutants trapped within these inversion layers will not disperse until atmospheric conditions become unstable. This situation creates concentrations of pollutants at or near the ground surface, and as a result may pose significant health risks for plants, animals, and people.

SCOPE OF ANALYSIS FOR CLIMATE CHANGE

The study area for climate change and the analysis of GHG emissions is broad as climate change is influenced by world-wide emissions and their global effects. However, the study area is also limited by the State CEQA Guidelines [Section 15064(d)], which directs lead agencies to consider an "indirect physical change" only if that change is a reasonably foreseeable impact which may be caused by the project.

California is a substantial contributor of global GHGs, emitting over 400 million tons of carbon dioxide (CO_2) per year.[1] Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit (ºF) over the next century. Methane is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission.

The impact of human activities on global climate change is apparent in the observational record. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO_2, methane (CH_4), and nitrous oxide (N_2O) from before the start of industrialization (approximately 1750), to over 650,000 years ago. For that period, it was found that CO_2 concentrations ranged from 180 parts per million (ppm) to 300 ppm. For the period from approximately 1750 to the present, global CO_2 concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

GLOBAL CLIMATE CHANGE – GREENHOUSE GASES

The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[2] The greenhouse effect traps heat in the troposphere through a threefold process as follows: short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and GHGs in the upper atmosphere absorb this long wave radiation and emit it into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

The most abundant GHGs are water vapor and carbon dioxide (CO_2). Many other trace gases have greater ability to absorb and re-radiate long wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate long wave radiation. Typical GHGs include the following:[3]

Water Vapor (H_2O)

Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively. The primary human related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change (IPCC) has not determined a GWP for water vapor.

[1] California Energy Commission. *California Greenhouse Gas Inventory for 2000-2012 – Trends of Emissions and Other Indicators*. May 2014.
[2] The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.
[3] All Global Warming Potentials are given as 100-year Global Warming Potential. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. ([IPCC] Intergovernmental Panel on Climate Change. 1996. Climate *Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC*.).

Carbon Dioxide (CO_2)

Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, CO_2 emissions from fossil fuel combustion increased by 8.8 percent between 1990 and 2013.[4] Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWPs for other GHGs.

Methane (CH_4)

Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 25.[5]

Nitrous Oxide (N_2O)

Nitrous oxide is produced by both natural and human related sources. Primary human related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 298.[6]

Hydrofluorocarbons (HFCs)

HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs range from 124 for HFC-152a to 14,800 for HFC-23.[7]

Perfluorocarbons (PFCs)

PFCs are compounds produced as a by-product of various industrial processes associated with aluminum production and the manufacturing of semiconductors. Like HFCs, PFCs generally have long atmospheric lifetimes and high GWPs of approximately 7,390 and 12,200.[8]

Sulfur hexafluoride (SF_6)

Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 22,800. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm], respectively).[9]

[4] EPA (U.S. Environmental Protection Agency). 2015. *Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2013*. April 15, 2015.
[5] Intergovernmental Panel on Climate Change, *Climate Change 2007: Working Group I: The Physical Science Basis, 2.10.2, Direct Global Warming Potentials*, https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html, accessed on January 20, 2020.
[6] Ibid
[7] Ibid
[8] Ibid.
[9] Ibid.

OTHER GREENHOUSE GAS COMPOUNDS

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone (O_3) depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

Hydrochlorofluorocarbons (HCFCs)

HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The GWPs of HCFCs range from 77 for HCFC-123 to 2,310 for HCFC-142b.[10]

1,1,1 trichloroethane

1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The GWP of methyl chloroform is 146 times that of carbon dioxide.[11]

Chlorofluorocarbons (CFCs)

CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the U.S. Environmental Protection Agency's (EPA) Final Rule (57 FR 3374) for the phase out of O_3 depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with GWPs ranging from 4,750 for CFC 11 to 14,400 for CFC 13.[12]

5.7.2 REGULATORY SETTING

FEDERAL

U.S. Environmental Protection Agency Endangerment Finding

The EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, the EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and the EPA's assessment of the scientific evidence that form the basis for the EPA's regulatory actions.

[10] Ibid.
[11] Ibid
[12] Ibid.

STATE

Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is occurring, and that there is a real potential for severe adverse environmental, social, and economic effects in the long term. Every nation emits GHGs and as a result makes an incremental cumulative contribution to global climate change; therefore, global cooperation would be required to reduce the rate of GHG emissions enough to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

California Air Resource Board Scoping Plan

CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual")[13]. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates early actions and additional GHG reduction measures by both CARB and the State's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program[14]. Additional development of these measures and adoption of the appropriate regulations occurred through the end of 2013. Key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent by 2020.
- Developing a California Cap-and-Trade program that links with other programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions (adopted in 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several sustainable community strategies have been adopted).
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, heavy-duty truck measures, the Low Carbon Fuel Standard

[13] CARB defines business-as-usual (BAU) in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

[14] The Climate Action Team, led by the secretary of the California Environmental Protection Agency, is a group of State agency secretaries and heads of agencies, boards, and departments. Team members work to coordinate statewide efforts to implement global warming emissions reduction programs and the State's Climate Adaptation Strategy.

(amendments to the Pavley Standard adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).

- Creating targeted fees, including a public goods charge on water use, fees on gasses with high global warming potential, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In 2012, CARB released revised estimates of the expected 2020 emissions reductions. The revised analysis relied on emissions projections updated in light of current economic forecasts that accounted for the economic downturn since 2008, reduction measures already approved and put in place relating to future fuel and energy demand, and other factors. This update reduced the projected 2020 emissions from 596 million metric tons of CO_2e[15] ($MMTCO_2e$) to 545 $MMTCO_2e$. The reduction in forecasted 2020 emissions means that the revised business-as-usual reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 is now 21.7 percent, down from 29 percent. CARB also provided a lower 2020 inventory forecast that incorporated State-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from business-as-usual needed to achieve the goals of AB 32 is approximately 16 percent.

CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32.

In 2016, the Legislature passed Senate Bill (SB) 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017 CARB adopted a second update to the Scoping Plan[16]. The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and, support the Clean Power Plan and other Federal actions.

Senate Bill 32 and Assembly Bill 197

SB 32 extended the goals of AB 32 and codified the GHG reduction target of 40 percent below 1990 levels by year 2030, consistent with EO B-30-15. The companion bill to SB 32, AB 197 provides additional direction to CARB for developing the Updated Scoping Plan.

Senate Bill 375

SB 375, known as the Sustainable Communities Strategy and Climate Protection Act, was signed into law in September 2008. SB 375 builds upon AB 32 by requiring CARB to develop regional GHG reduction targets for automobile and light truck sectors for 2020 and 2035, as compared to 2005 emissions levels. SB 375 provides a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB

[15] Carbon dioxide equivalent or CO_2e means the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another greenhouse gas. "CO_2e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.

[16] California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed January 30, 2020.

375 requires metropolitan planning organizations (MPOs) to incorporate a Sustainable Communities Strategy in their Regional Transportation Plans that will achieve GHG emissions reduction targets by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities.

Pursuant to SB 375, on March 22, 2018 the CARB established emission reduction targets for California's eighteen MPO regions for the year 2020 and 2035. Shasta County was assigned a 0 percent per capita change when compared to the 2005 baseline year.[17]

Executive Order S-3-05

Executive Order (EO) S-3-05 in 2005 set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

This Executive Order directed the secretary of the California Environmental Protection Agency (Cal/EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary would also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of Cal/EPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first report in March 2006, with its most recent S-3-05-mandated CAT Report released in 2010. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order S-1-07

EO S-01-07 (2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California. CARB approved the regulation in 2009 and began implementation on January 1, 2011. The low carbon fuel standard (LCFS) will reduce greenhouse gas emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. In September 2015, CARB approved the re-adoption of the LCFS, which became effective on January 1, 2016.

Executive Order S-14-08

Issued on November 17, 2008, EO S-14-08 expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, EO S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

[17] Shasta Regional Transportation Agency, Regional Transportation Plan & Sustainable Communities Strategy for the Shasta Region, page 32. https://www.srta.ca.gov/DocumentCenter/View/4285/2018-Regional-Transportation-Plan--Sustainable-Communities-Strategy-adopted-Oct-9-2018?bidId= Accessed October 5, 2020.

Executive Order S-21-09

Issued on July 17, 2009, EO S-21-09 directs CARB to adopt regulations to increase California's RPS to 33 percent by 2020. This Executive Order builds upon SB 1078 (2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Executive Order B-30-15

California Governor Jerry Brown signed EO B-30-15 on April 29, 2015. EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40% below 1990 levels and requires ARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target. This Executive Order supports EO S-03-05, described above, but is currently only binding on state agencies. On September 8, 2016, Governor Jerry Brown signed SB 32, which codified the 2030 reduction target called for in Executive Order B-30-15. CARB's 2017 Scoping Plan update addressed the 2030 target, as discussed above.

Executive Order B-55-18

On September 10, 2018, California Governor Jerry Brown issued EO B-55-18, which establishes the following GHG emissions target:

- By 2045, California shall achieve carbon net neutrality

EO B-55-18 identifies that new statewide goal is to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This emissions goal is in addition to the existing targets established by EO B-30-15 and SB 32, and EO S-3-05. This Executive Order also directs the CARB to work with other state agencies to identify and recommend measures to achieve this goal.

Assembly Bill 1493

AB 1493 ("the Pavley Standard") (Health and Safety Code Sections 42823 and 43018.5) aims to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model years 2009–2016 by achieving "the maximum feasible reduction of GHG emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 and adoption of 13 CCR Section 1961.1 require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty weight classes for passenger vehicles (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily to transport people), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO_2e emissions and 75 percent fewer smog-forming emissions.

Renewables Portfolio Standard (Senate Bill X1-2 & Senate Bill 350)

California's Renewables Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. The 33 percent standard is consistent with the RPS goal established in the Scoping Plan. The passage of Senate Bill 350 in 2015 updates the RPS to require the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. The bill would make other revisions to the RPS program and to certain other requirements on public utilities and publicly owned electric utilities.

Senate Bill 100

SB 100, the 100 Percent Clean Energy Act of 2018, sets a state policy that eligible renewable energy and zero-carbon energy resources supply 100 percent of all retail sales of electricity in California by 2045. The bill accelerates the existing RPS goals to:

- 50 percent renewable by 2025
- 60 percent renewable by 2030

The bill became effective January 1, 2019.

California Energy and Green Building Standards Codes

Title 24 of the California Code of Regulations regulates how each new home and business is built or altered in California. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings, and for fire and life safety, energy conservation, green design, and accessibility in and about buildings. Two sections of Title 24 – Part 6, the California Energy Code, and Part 11, the California Green Building Standards Code or CalGreen Code – contain standards that address GHG emissions related to construction.

The CalGreen Code became a mandatory code beginning January 1, 2011. The Code takes a holistic approach to green building by including minimum requirements in the areas of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. The Code has minimum mandatory standards and two additional tiers of voluntary measures intended to achieve greater levels of efficiency that result in lower levels of GHG emissions. Local governments must enforce the minimum standards and can choose to adopt either Tier 1 or Tier 2 standards to achieve greater positive environmental impacts. The current 2019 Title 24 standards became effective January 1, 2020. Residential and nonresidential buildings constructed under the 2019 Title 24 standards are estimated to use about 53 and 30 percent less energy than those constructed under the 2016 Title 24 standards, respectively.

LOCAL

Shasta County Air Quality Management District

The Shasta County Air Quality Management District (SCAQMD) does not have an adopted Climate Action Plan, greenhouse gas threshold of significance, or guidance document for assessing project-level greenhouse gas impacts under CEQA. In 2010, the SCAQMD initiated the regional climate action planning

(RCAP) process. The primary objectives of the RCAP process are to contribute to the State's climate protection efforts and reduction measures. Chapter 2 of the RCAP serves as the Climate Action Plan (CAP) for the unincorporated areas within the County, including the project Site.

Unincorporated Shasta County's GHG reduction targets are as follows:

1. Reduce community emissions to 15 percent below 2008 levels by 2020 (i.e., 485,567 $MTCO_2e/yr$).
2. Reduce community emissions to 49 percent below 2008 levels by 2035 (i.e., 291,340 $MTCO_2e/yr$).
3. Reduce community emissions to 83 percent below 2008 levels by 2050 (i.e., 97,113 $MTCO_2e/yr$).

The RCAP describes measures that achieve the 2020 reduction target and work toward the 2035 target. Focus on the 2050 reduction target was reserved for future reevaluation of long-term GHG reduction efforts to reflect future conditions and adjustment of emission reduction measures accordingly. The RCAP relies on the State RPS goals that will lead to an increase in renewable electricity, reduce the community energy-related emissions in unincorporated Shasta County, and make it easier for the community to achieve 2020 and 2035 emission reduction goals (Shasta County, 2012). While the RCAP was not ultimately adopted by the Shasta County AQMD Board, it was designed to set GHG emissions reduction targets consistent with AB 32 and CARB's adopted Scoping Plan. However, the RCAP has not been adopted and is not considered a qualified GHG reduction plan under CEQA Guidelines Section 15183.5 as a formal CEQA document was also not prepared.

5.7.3 THRESHOLDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

CEQA Thresholds

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by Appendix G of the State CEQA Guidelines, as amended, and used by Shasta County in its environmental review process. The Initial Study Checklist includes questions relating to GHG emissions. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant adverse environmental impact if it would:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.* Refer to Impact 5.7-1, below.

- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.* Refer to Impact 5.7-1 and Impact 5.7-2, below.

METHODOLOGY

Global climate change is, by definition, a cumulative impact of GHG emissions.[18] Therefore, there is no project-level analysis. The baseline against which to compare potential impacts of the project includes the natural and anthropogenic drivers of global climate change, including world-wide GHG emissions from

[18] California Air Pollution Control Officers Association (CAPCOA), 2008. *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, January 2008, and the California Natural Resources Agency, Final Statement of Reasons for Regulatory Action, *Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB 97*, 2009.

human activities which almost doubled between 1970 and 2010 from approximately 27 gigatonnes (Gt) of CO_2/year to nearly 49 $GtCO_2$/year.[19] As such, the geographic extent of climate change and GHG emissions cumulative impact discussion is worldwide.

Addressing GHG generation impacts requires an agency to make a determination as to what constitutes a significant impact. The amendments to the State CEQA Guidelines specifically allow lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which mitigation measures to apply. Thus, each agency is left to determine whether a project's GHG emissions will have a "significant" impact on the environment. The State CEQA Guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" the project's GHG emissions (14 California Code of Regulations Section 15064.4(a)).

The SCAQMD has primary responsibility for developing and implementing rules and regulations to maintain the national ambient air quality standards and attain the California ambient air quality standards, permitting new or modified sources, developing air quality management plans, and adopting and enforcing air pollution regulations for all projects in their portion of the Northern Sacramento Valley Air Basin. The CARB AB 32 Scoping Plan does not specify an explicit role for local air districts with respect to implementing AB 32, but it does state that CARB will work actively with air districts in coordinating emissions reporting, encouraging and coordinating GHG reductions, and providing technical assistance in quantifying reductions. The ability of air districts to control emissions (both criteria pollutants and GHGs) is provided primarily through permitting, but also via their role as a CEQA lead or commenting agency, the establishment of CEQA thresholds, and the development of analytical requirements for CEQA documents.

In the absence of quantitative significance thresholds in SCAQMD CEQA guidance, this analysis considers other adopted thresholds adopted in nearby jurisdictions. For example, the CARB Mandatory Reporting program requirements are triggered for sources of GHG emissions exceeding 2,500 $MTCO_2e$ per year. Other prominent air districts in northern California, such as the Bay Area Air Quality Management District and the Sacramento Metropolitan Air Quality Management District, have established project-level thresholds of 1,100 $MTCO_2e$ per year.[20,21] In addition, the California Air Pollution Control Officers Association (CAPCOA) recommended an interim 900 $MTCO_2e$ per year screening level as a theoretical approach to identify projects that require further analysis and potential mitigation.[22] The different thresholds include (1) compliance with a qualified GHG reduction strategy, (2) performance-based reductions, (3) numeric "bright-line" thresholds, and (4) efficiency-based thresholds.

Compliance with a Qualified GHG Reduction Strategy

As noted in the Regulatory Setting above, the RCAP includes a GHG emission inventory and forecast, emission reduction measures, and an implementation and monitoring program for unincorporated Shasta County, and was finalized in 2012. However, the RCAP was not ultimately adopted by the Shasta County AQMD Board and is not considered a qualified GHG reduction plan. The RCAP also does not provide

[19] Intergovernmental Panel on Climate Change, *Climate Change 2014 Mitigation of Climate Change Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2014.

[20] Bay Area Air Quality Management District (BAAQMD), 2017. California Environmental Quality Act Air Quality Guidelines, May 2017. Available online at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en Accessed October 6, 2020.

[21] Sacramento Metropolitan Air Quality Management District (SMAQMD), 2018. Guide to Air Quality Assessment in Sacramento County, Chapter 6, Greenhouse Gas Emissions, May 2018. Available online at: http://www.airquality.org/LandUseTransportation/Documents/Ch6GHG4-25-2020.pdf Accessed October, 6, 2020

[22] California Air Pollution Control Officers Association (CAPCOA), 2008. CEQA & Climate Change Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. Available online at: http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA-White-Paper.pdf. Accessed October 6, 2020.

specific reduction targets or CEQA significance thresholds for individual development projects. Therefore, the RCAP is not used to determine the impact of Project GHG emissions.

Performance Based Reductions

As noted above, the state has established state-wide GHG emission reduction goals. It is noted that the state-wide emission reduction goals do not equate to an equal project-level emission reduction goal for all land uses or economic sectors. Statewide and regional planning documents were reviewed to identify the most-appropriate emission reduction goal for the proposed project. Available planning documents that may be used as the source of project-level emission reduction goals include the state-wide applicable 2017 Scoping Plan, and the county-specific 2015 RTP/SCS. The County of Shasta does not have an adopted Climate Action Plan, GHG threshold of significance, adopted emissions reduction goal, or guidance document for assessing project-level GHG impacts under CEQA. In addition, the SCAQMD does not have adopted GHG emissions thresholds, targets, or goals.

Although the county-specific 2015 RTP/SCS contains region-specific emission reduction targets set by CARB under the purview of SB 375, CARB has identified that the adopted SCS targets are not enough to achieve the statewide per capita reductions necessary to meet adopted climate goals.[23] Additionally, the emission reduction targets of the 2015 RTP/SCS applied only to mobile emissions. Therefore, it was determined that the 2015 RTP/SCS was not appropriate to determine the project-level emissions thresholds for the proposed project. Therefore, the best available and most-applicable source of emissions reduction goals are the state-wide goals set by AB 32, SB 32, EO B-30-15, EO S-03-05, and EO B-55-18. At the time of analysis, there is no known documentation or substantiated analysis available to guide or support an adjustment the state-wide average GHG emission reduction goals for specific land uses, development types, or regions. Therefore, this threshold is not recommended for the proposed project.

Numeric "Bright-Line" Thresholds

A Bright Line threshold is generally a numeric threshold that indicates whether a land use project would have a significant effect on the environment based on its GHG emissions relative to broader GHG targets. This approach is generally more useful for screening out smaller projects that are not likely to cause a considerable contribution to climate change.

The numeric bright line thresholds were developed to be consistent with CEQA requirements for developing significance thresholds, are supported by substantial evidence, and provide guidance to CEQA practitioners and lead agencies with regard to determining whether GHG emissions from a proposed project are significant. In *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227 (hereafter Newhall Ranch), following its review of various potential GHG thresholds proposed in an academic study, [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright-line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, PRC Section 21003(f) provides it is a policy of the State that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the

[23] CARB, 2017. The 2017 Climate Change Scoping Plan Update, January 20, 2017. Available online at: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf. Accessed October 6, 2020.

environment." The California Supreme Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.)

Efficiency Based Thresholds

Efficiency-based thresholds represent the rate of emission reductions needed to achieve a fair share of California's GHG emissions reduction target established under AB 32, SB 32, EO B-30-15, and EO S-03-05. As noted earlier, the state has the following GHG emissions reductions goals:

- By 2020, achieve 1990 levels emissions (AB 32)
- By 2030, 40 percent below 1990 levels by 2030 (EO B-30-15, SB 32)
- By 2045, net carbon neutrality (EO B-55-18)
- By 2050, 80 percent below 1990 levels by 2050 (EO S-03-05)

Efficiency-based thresholds are typically calculated by dividing emissions associated with residential and commercial uses within the state by the sum of jobs and residents. The sum of jobs and residents is called the "service population," and a project's service population is defined as the people that work, study, live and congregate within the project site. Therefore, for the purposes of this analysis, the proposed project is compared to an efficiency-based significance threshold.

The California Supreme Court decision in the Newhall Ranch case confirmed that when an "agency chooses to rely completely on a single quantitative method to justify a no-significance finding, CEQA demands the agency research and document the quantitative parameters essential to that method."

The Newhall Ranch decision did not comment on use of an efficiency-based threshold for analyzing project-level GHG emissions. However, U.S. Supreme Court rulings establish that the U.S. Constitution limits exactions on new development to those having a "nexus" and "rough proportionality" to the impact actually caused by the new development. While there is a nexus for requiring GHG reductions for new development that results in new GHG emissions, the reductions mandated must be proportional to the impact caused by new development. Requiring new development to meet the average statewide GHG efficiency is a proportional measure but requiring more than average levels of efficiency would be mitigating the effects of existing development by imposing requirements beyond the fair share of new development's effect.

Given the recent legislative attention and case law regarding post-2020 goals and the scientific evidence that additional GHG reductions are needed through 2050 to stabilize CO_2 concentrations, the Association of Environmental Professionals' (AEP) Climate Change Committee (2015) recommended in its Beyond 2020: The Challenges of Greenhouse Gas Reduction Planning by Local Governments in California (Beyond 2020) white paper that CEQA analyses for most land use development projects can continue to rely on current thresholds for the immediate future, but that long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target." The Beyond 2020 white paper further recommends that the "significance determination…should be based on consistency with 'substantial progress' along a post-2020 trajectory."

While the Newhall Ranch decision did not specifically recommend the efficiency-based approach, the ruling did note that numerical threshold approaches may be appropriate for determining significance of GHG emissions and to emphasize the consideration of GHG efficiency provided that the thresholds were based on local or regional, not statewide, data. Additionally, recent California court decisions highlight the importance of using local or regional emissions data that reflect the unique sources and relative reduction commitment for the project area and surrounding planning context, to inform project-level efficiency thresholds (see *Golden Door Properties/Sierra Club vs. County of San Diego*, 27 Cal.App.5th 892). This has made efficiency-based thresholds infeasible for most development projects unless based on local or regional information.

Project Threshold Summary

As discussed above, compliance with a qualified GHG reduction strategy, performance-based reductions, and efficiency-based thresholds would not be appropriate to evaluate the proposed project. A numerical bright-line value based solely on Shasta County emissions sources does not exist. However, development conditions in Sacramento County are similar to Shasta County. Sacramento Metropolitan Air Quality Management District (SMAQMD) has established recommended thresholds that ensure that 90 percent of emissions from projects in the region are reviewed to determine the need for additional mitigation. According to SMAQMD's methodology, a land use development project with operational emissions that are less than 1,100 $MTCO_2e$ per year will not result in a significant impact and will not require additional mitigation. SMAQMD assumes that projects with operational emissions below 1,100 $MTCO_2e$ /year will not exceed their construction GHG threshold of significance.

Therefore, SMAQMD's land use development threshold of 1,100 $MTCO_2e$ will be applied to the proposed project to support the determination of GHG impacts. SMAQMD's threshold represents a level that would result in sufficiently low GHG emission to be less than cumulatively considerable without mitigation. The SMAQMD thresholds are appropriate to use for the proposed project as both the project site and the SMAQMD are located within the Sacramento Valley Air Basin[24]. Additionally, the SMAQMD is the closest air quality management district with adopted thresholds to the project site.

SCAQMD does not provide specific guidance regarding construction emissions. Therefore, total construction-generated GHG emissions were conservatively amortized over the estimated life of the development and included with operational emissions for comparison to the significance thresholds. A life of 30 years was assumed for the proposed project based on a standard 30-year project lifetime assumption developed by the South Coast Air Quality Management District (South Coast AQMD 2009).[25]

Based on these standards, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "significant and unavoidable impact."

[24] California Air Resources Board, https://ww3.arb.ca.gov/aqd/oldozone_jsa/bsn1sv.htm Accessed October 21, 2020

[25] The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009). The Shasta County Air Quality Management District does not provide specific guidance regarding construction emissions. Therefore, the South Coast Air Quality Management District approach was conservatively used.

5.7.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

GHG emissions of the proposed project were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for the use of government agencies, land use planners, and environmental professionals. This model was developed in coordination with the South Coast Air Quality Management District and is the most current emissions model approved for use in California by various other air districts. Greenhouse gas and climate change impacts are analyzed below according to topic. Mitigation measures directly correspond with an identified impact.

IMPACT 5.7-1	***Greenhouse gas emissions, either directly or indirectly, generated by the proposed project may have a significant impact on the environment.***

Significance: Potentially Significant Impact.

Impact Analysis: The proposed project would result in direct and indirect emissions of CO_2, CH_4, and N_2O, and would not result in other GHGs that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions. Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources, while indirect sources include emissions from electricity consumption, water demand, and solid waste generation. Operational GHG estimations are based on energy emissions from natural gas usage and automobile emissions. Project related GHG emissions were quantified with the California Emissions Estimator Model (CalEEMod). CalEEMod relies upon vehicle trip rates and project specific land use data to calculate emissions.

Construction Emissions

The proposed project has been divided into six phases. Construction of the project would involve the following activities:

- Phase 1: Clearing of approximately 33.3 acres of oak woodland; site grading; and the construction of 46 single-family homes, 4 secondary units, and approximately 190,800 square-feet of pavement.
- Phase 2: Clearing of approximately 12.1 acres of oak woodland; site grading; and the construction of 19 single-family homes, 2 secondary units, and approximately 101,600 square-feet of pavement.
- Phase 3: Clearing of approximately 8.3 acres of oak woodland; site grading; and the construction of 24 single-family homes, 2 secondary units, and approximately 101,100 square-feet of pavement.
- Phase 4: Clearing of approximately 31.4 acres of oak woodland; site grading; and the construction of 20 single-family homes, 2 secondary units, and approximately 147,000 square-feet of pavement.

- Phase 5: Clearing of approximately 42.4 acres of oak woodland; site grading; and the construction of 43 single-family homes, 4 secondary units, and approximately 119,000 square-feet of pavement.
- Phase 6: Clearing of approximately 18.7 acres of oak woodland; site grading; and the construction of 14 single-family homes, 1 secondary units, and approximately 91,200 square-feet of pavement.

Project construction activities would result in a temporary increase in GHG emissions. Construction of the project would result in direct emissions of CO_2, N_2O, and CH_4 from the operation of construction equipment and the transport of materials and construction workers to and from the project site. Project construction emissions have been converted to carbon dioxide equivalent (CO_2e) values and provided in Table 5.7-1, PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS. As shown in Table 5.7-1, construction activities are estimated to generate approximately 5,524.44 $MTCO_2e$. As noted above, SCAQMD does not have thresholds for construction emissions of greenhouse gases. Additionally, construction emissions are temporary and cease upon the completion of construction. To capture construction GHG emissions as part of the total project emissions, an approach recommended by the South Coast AQMD construction emissions typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions[26]. When amortized over an assumed 30-year project lifespan, project construction would generate approximately 184.14 $MTCO_2e$ per year. The CalEEMod outputs are contained within the Greenhouse Gas Report; refer to Appendix RDEIR-A-1.

Table 5.7-1
PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS

Parameter	Emissions $MTCO_2e$
Phase 1 Construction	1,198.29
Phase 2 Construction	741.49
Phase 3 Construction	995.96
Phase 4 Construction	776.28
Phase 5 Construction	1,025.27
Phase 6 Construction	787.15
Total Project Emissions	**5,524.44**
30-year Amortized Emissions (per year)	184.14
Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for model input/output data.	

Operational Emissions

Operational or long-term emissions would occur annually over the life of the project. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the project, the energy required to convey water to, and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. The project's operational emissions for the year 2030 are shown in Table 5.7-2, ANNUAL PROJECT GREENHOUSE GAS EMISSIONS. The project's annualized construction emissions are also provided in the tables.

[26] For purposes of comparison, the Sacramento Metropolitan AQMD suggests amortization over 40 years for residential projects, however the 30-year approach was used because it spreads the emissions over a fewer number of years and is considered more conservative approach between the two recommendations.

Table 5.7-2
ANNUAL PROJECT GREENHOUSE GAS EMISSIONS

Emissions Category	Total Unmitigated $MTCO_2e$ 2030	Total Mitigated $MTCO_2e$ 2030[1]
Direct Emissions		
Constructionamortized over 30 years	184.14	184.14
Project	131.31	2.24
Mobile	2,904.06	2,904.06
Total Direct Emissions	**3,219.51**	**3,090.44**
Indirect Emissions		
Energy	326.52	310.19
Waste	22.11	22.11
Water	22.99	22.99
Sequestration Loss	811.41	811.41
Total Indirect Emissions	***1,183.03***	***1,166.70***
Total Project-Related Emissions	**4,402.54**	**4,257.14**
Threshold of Significance	1,100	1,100
Significant Impact?	Yes	Yes

1. Incorporates the following quantifiable measures in MM 5.7-1: the prohibition of natural gas hearths and wood burning hearths and requiring houses to exceed Title 24 standards by a minimum of 20 percent.

Refer to Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for model input/output data

Direct Proposed Project-Related Sources of Greenhouse Gases

Construction Emissions. As depicted in Table 5.7-2, the proposed project would result in 184.14 $MTCO_2e$/yr (amortized over 30 years which is the expected lifecycle of the project), which represents a total of approximately 5,524.44 $MTCO_2e$ from construction activities.

Project Source Area source emissions were calculated using CalEEMod and project-specific land use data. The primary GHG emission sources calculated by CalEEMod include hearths and landscape equipment. As noted in Table 5.7-2, the proposed project would result in 131.31 $MTCO_2e$/yr of area source GHG emissions.

Mobile Source. CalEEMod relies upon trip data within the project Traffic Study and project specific land use data to calculate mobile source emissions. The proposed project is anticipated to generate 1,774 daily trips and would directly result in approximately 2,904.06 $MTCO_2e$/yr of mobile source-generated GHG emissions; refer to Table 5.7-2.

Indirect Proposed Project-Related Sources of Greenhouse Gases

Energy Consumption. Energy consumption emissions were calculated using CalEEMod and project-specific land use data. Electricity would be provided to the project site via Pacific Gas & Electric Company. The proposed project would indirectly result in approximately 326.52 $MTCO_2e$/yr due to energy consumption; refer to Table 5.7-2.

Solid Waste. GHG emissions would be generated from the decomposition of solid waste generated by the project. The CalEEMod default waste generation values were used for this analysis. Solid waste associated with operations of the proposed project would result in an approximately 22.11 $MTCO_2e$/yr; refer to Table 5.7-2.

Water Demand. There would be GHG emissions from the use of electricity to pump water to the project and to treat wastewater. It is assumed that the project-specific water consumption incorporates

reductions for -flow interior water fixtures and a water-efficient irrigation system, as required under the Green Building Standards. Emissions from indirect energy impacts due to water supply would result in approximately 22.99 $MTCO_2e$/yr; refer to Table 5.7-2.

Vegetation Land Use Change (Loss of Sequestration). Sequestration refers to the process of vegetation storing CO_2 (resulting in a carbon sink and reducing CO_2 emissions). As the project would develop natural land with vegetation that is currently sequestering CO_2, loss of the existing vegetation would result in approximately 16,228.20 $MTCO_2e$ that would not be sequestered, which is approximately 811.41 $MTCO_2e$/yr over a 20-year growing period.

Project Design Features

The project includes project design features that would further reduce project-related GHG emissions. These design features were incorporated into the greenhouse gas emissions model and are reflected in the results shown in Table 5.7-2 in the column titled *Total Unmitigated $MTCO_2e$ 2030.* The project design features include: grey water diverter system; inclusion of passive solar design in new homes to reduce annual energy usage; class 1 public bikeways within the project site; and pedestrian trails located along project roadways. Individual homes would be required to be constructed with a grey water system that complies with Chapter 16 of the California Plumbing Code. This would allow diversion of flow from washing machines, showers, and bathtubs to a manual diverter valve. Typical operations would direct flow to provide subsurface irrigation for appropriate drought tolerant trees and shrubs within the individual yard, reducing domestic water demand. Design criteria for landscaping selection, dispersal system criteria, as well as for operation and maintenance of the system would be included in the Covenants, Conditions, and Restrictions (CC&Rs) for the proposed project.

The passive solar design of the project would be required as a Condition of Approval for each single-family home built onsite would include green building design components and use a combination of photovoltaic cells, solar water heating, and other construction design techniques to reduce energy usage by 15 percent or more. Additionally, the Class 1 bikeways and pedestrian trails would provide non-motorized transit opportunities and connections surrounding neighborhoods and land uses.

The project would also include electric vehicle charging infrastructure to allow for the future installation of electric vehicle chargers, as this is required by the California Building Standards Code (Title 24). The project is required to minimize energy consumption and exceed Title 24 standards. The 2019 version of Title 24 will use approximately 53 percent less energy than those under the 2016 standards.

California's Building Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6) contains requirements for the thermal emittance, three-year aged reflectance, and Solar Reflectance Index (SRI) of roofing materials used in new construction and re-roofing projects. Additionally, outdoor electrical outlets are required by the California Electrical Code (Title 24, Part 3), which would reduce area source GHG emissions.

The Renewable Portfolio Standard (RPS) requires the state's electricity providers are to procure a minimum of 33 percent of their energy portfolio from renewable sources by 2020 and 50 percent by 2030 and would continue to implement programs consistent with the requirements of SB 350. Furthermore, SB 100 (September 2018) increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. RPS is not accounted for in the current version of CalEEMod or the modeling conducted for the project. Energy savings from water conservation resulting from the Green Building Code Standards

for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are also not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations. In addition to increasing renewable energy use goals, the 2017 CARB Scoping Plan also identifies additional reduction measures such as imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

Additionally, **MM 5.7-1** would be required to further reduce GHG emissions to the extent feasible. GHG reductions were applied using CalEEMod and are reflected in the results shown in Table 5.7-2 in the column titled *Total Mitigated $MTCO_2e$ 2030.* Reduction measures applied in CalEEMod required as mitigation by **MM 5.7-1** include the following:

- Natural gas hearths;
- Use low VOC paint;
- Exceed Title 24 energy standards by 15 percent;
- Include onsite renewable energy;
- Use grey water diverter system;
- Install low-flow faucets, toilets, and showers;
- Install water-efficient irrigation systems;
- Institute recycling and composting services to reduce solid waste by at least 65 percent.

Conclusion

As depicted in Table 5.7-2, the project, with the implementation of proposed energy efficiency measures, water conservation measures, and **MM 5.7-1** would generate approximately 4,257.14 $MTCO_2e$ per year in 2030, which is greater than the significance threshold of 1,100 $MTCO_2e$. It should be noted that the Project Design Features and **MM 5.7-1** represent all feasible mitigation measures available to reduce project related GHG emissions. Therefore, the impacts from greenhouse gas emissions would remain *significant and unavoidable*.

Mitigation Measures

Comments submitted on the 2017 Draft EIR provided suggestions for mitigation measures to be incorporated into the project. Some of the mitigation measures were found to feasible (or partially feasible) and have been incorporated into Mitigation Measure 5.7-1 below. Other suggested mitigation measures were found to be infeasible (or partially infeasible) as proposed for the reasons discussed below.

Infeasible Mitigation Measures

- *Design and install an approved rainwater catchment system to use rainwater generated by at least 65 percent of the available roof area. Rainwater catchment systems shall be designed and installed in accordance with the California Plumbing Code.*

The Applicant has determined that the potential implementation of this measure would require installation of the suggested rainwater catchment system underground to reduce visual impacts. This additional ground disturbance could result in additional environmental impacts to biological resources from potential tree removal, buried previously undiscovered cultural resources, and buried previously undiscovered tribal cultural resources, and is not a standard mitigation measure for the reduction of GHG emissions. Additionally, the project already includes the diversion of grey water for landscape irrigation,

which reduces the total water consumption of the project. As described in Section 5.17, Utilities and Service Systems, of the October 2017 Draft EIR, the grey water diversion would meet the water demand of proposed landscaping; therefore, the additional capture of rainwater would result in water supplies that exceed the project's demand for recycled water. Furthermore, this suggested measure would be more appropriate when addressing potential groundwater recharge impacts as it would not result in substantial GHG reductions.

- *Reduce the use of pavement and impermeable surfaces.*

The project is already designed with minimal impervious surface area. While low-impact development (LID) measures such as this suggested measure can reduce the energy needs of a project, stormwater runoff from impervious would be conveyed and collected in detention basins and not treated through a wastewater treatment system. Because stormwater would not be treated at the wastewater treatment facility, energy reductions (and the associated GHG emission reductions) would not be achieved by reducing the stormwater runoff through a reduction in impervious surfaces. Therefore, this measure would not appreciably reduce GHG emissions from energy use during stormwater treatment. Additionally, it is unclear how this measure is intended to reduce construction or operational emissions because the amount of impervious surfaces is not an input or calculated in the emissions modeling (CalEEMod version 2016.3.2).

- *Purchase and retire carbon offsets.*

The County also considered the potential of carbon offsets (also known as carbon credits) as a mitigation measure to reduce potential greenhouse gas emissions. However, the County determined carbon offsets to be infeasible as a mitigation measure and rejected the use of carbon offsets for each of the following separate and independent grounds:

1. Neither the County nor the local air district has an adopted an offset program. There is no available functioning program that the County can rely upon to assure that over the offset period (30 years), mitigation can be appropriately tracked and confirmed. No such local program is proposed for adoption or has been budgeted for adoption. The State of California, through the expertise of the California Air Resources Board (CARB), has adopted robust regulations for state approved registries. However, the County and local air district lack the professional staff resources to independently develop a local program capable of tracking and verifying compliance with regulations comparable to the State's Cap-and-Trade program and apply it to this single project.

2. Lead agency reliance upon a yet to be developed offset program violates CEQA requirements prohibiting deferred mitigation. (CEQA Guidelines §15126.4(a)(1)(B).)

3. The CARB (state) approved registries are approved for the State's Cap-and-Trade Regulations and are not approved for voluntary mitigation. Thus, the fact that a registry is approved by CARB is insufficient assurance that offsets purchased through the voluntary markets will achieve the desired offset targets over the offset period. Information regarding CARB's approved program can be found here:

   https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program

4. CARB does not approve or regulate the voluntary GHG reduction marketplace. The County lacks the staffing and training to independently assess the long-term viability and trustworthiness of registries

operating in the voluntary markets or track and verify compliance with regulations comparable to the State's Cap-and-Trade program. Thus, there is no assurance that offsets purchased through the voluntary markets will achieve the desired offset targets over the offset period.

The application of an offset requirement on this single development project results in inequitable treatment of similarly-situated property owners. In future years, the primary sources of GHG emissions for projects similar to Tierra Robles will be from the energy and transportation sectors. Single family homes constructed on existing parcels located elsewhere within the County will not be subject to an offset requirement, even though those homes could have similar or greater energy and transportation impacts. The County determines that it is infeasible on policy grounds to impose an offset mitigation requirement for impacts associated with a development project which are indistinguishable from identical impacts generated throughout the County which are not subject to similar mitigation.

Partially Infeasible Mitigation Measure

- *Require use of alternative fuel, hybrid, or electric construction equipment.*

It is standard practice for grading and excavation contractors to rent or lease heavy construction equipment on an as-needed basis rather than purchasing such equipment. Based upon County staff's personal communication with a representative of I-5 Rentals in Redding, alternative fuel, hybrid, and electric construction equipment is currently unavailable in the Shasta County region and the future availability of such equipment in the region is purely speculative at this point in time. Therefore, prohibiting the utilization of standard diesel and gasoline powered heavy construction equipment is infeasible. However, when electric service from PG&E is available it is feasible to prohibit the use of non-electric construction equipment, such as air compressors and generators, at building construction sites; this requirement is included in **MM 5.7-1**.

The following mitigation measures are required to reduce potential impacts.

MM 5.7-1: The project shall include the following improvements, which shall be incorporated into project improvement plans where applicable, to ensure consistency with adopted statewide plans and programs. The project applicant shall demonstrate compliance with this measure prior to issuance of building and occupancy permits as specified below:

Transportation

- Pedestrian connections to the offsite circulation network shall be provided on improvement/grading plans and implemented concurrent with subdivision backbone infrastructure improvements. (Building Permit)
- During formation of the HOA, the HOA bylaws shall be drafted to include a ride-sharing program and mechanism for coordination and communication between residents regarding ride-sharing. The HOA bylaws shall also include a requirement that monthly newsletters published by the HOA promote ride-sharing programs through the monthly newsletter and association meetings. (Occupancy Permit)

Project Sources

- Natural gas hearths and wood burning hearths shall be prohibited. (Building Permit).

- Requirements for use of low VOC interior and exterior paints shall be included in the project Covenants, Conditions, and Restrictions (CC&Rs) (Building Permit).
- Power tools utilized in the course of building construction shall be electric powered. Temporary electric service shall be established at building construction sites as soon as it is available from PG&E; generators, air compressors, and other non-electric construction equipment shall not be utilized for building construction after temporary electric service is established. (Building Permit)
- During formation of the HOA, the HOA Covenants, Conditions, and Restrictions (CC&Rs) shall be drafted to require the use of Use 100 percent electric lawnmowers and leaf blowers. The HOA shall provide an electric lawnmower to homeowners by request (Building Permit).
- During formation of the HOA, the HOA bylaws shall be drafted to include a requirement that monthly newsletters published by the HOA provide GHG emissions reduction education to the residents. (Occupancy Permit)
- Final project design shall include, in all residential buildings, a "utility" room or space for recharging batteries, whether for use in a car, electric lawnmower, other electric landscaping equipment, or batteries for small items such as flashlights. (Building Permit)
- Electrical wiring and infrastructure to support a 240-volt EV charger shall be installed in the proposed garage(s) for off-street EV charging. (Building Permit)
- Bicycle lockers and bicycle parking shall be installed at a bus stop at the southern entrance of the project site. (Building Permit)
- Building electrification shall be incorporated into project design with no natural gas connections. (Building Permit)
- During formation of the HOA, the HOA bylaws shall be drafted to include provision of a bike share program and mechanism for coordinating shared bicycle use between residents. (Occupancy Permit)

Energy Efficiency

- All houses shall be designed to exceed the Title 24 standards by a minimum of 20 to 30 percent. Title 24 regulates energy uses including space heating and cooling, hot water heating, and ventilation. Therefore, potential options to meet the improvement goal could include, but not be limited to, high-efficiency HVAC systems, efficient hot water heaters (e.g., tankless), and insulation requirements that exceed Title 24 standards. (Building Permit).
- High efficiency lighting shall be installed and achieve at least a 20 percent reduction in power rating by using either high efficiency fixtures and/or bulbs (Building Permit).
- Energy efficient appliances shall be installed and shall comply with EPA Energy Star requirements (Occupancy Permit).
- PG&E Smart Meters shall be installed in all lots/dwelling units (Occupancy Permit).
- Onsite renewable energy (photovoltaic cells, solar water heating, or other design techniques) shall be installed to reduce energy use by 15 percent, in addition to State required reductions (Building Permit).
- Low-carbon construction materials (such as materials that are locally-harvested, sustainably grown, made from rapidly renewable materials, biodegradable, or free of toxins) shall be used. (Building Permit)

- Energy Star Roof materials shall be used. (Building Permit)
- Electrical outlets shall be installed on building exteriors. (Building Permit)
- Bicycle lockers and bicycle parking shall be installed at a bus stop at the southern entrance of the project site. (Building Permit)

Water Conservation and Efficiency

- Individual homes shall be constructed with an engineered grey water system that complies with Chapter 16 of the California Plumbing Code (Building Permit).
- Water-efficient irrigation systems shall be installed (Building Permit).
- Water-efficient fixtures shall be installed (e.g., low-flow faucets, toilets, showers) (Building Permit).

Solid Waste

- At least 65 percent of solid waste shall be diverted to be recycled. Requirements for recycling shall be included in the project Covenants, Conditions, and Restrictions (CC&Rs) to ensure the project's solid waste collection contractor provides containers for recyclables (Building Permit).

Implementation of applicable regulatory requirements, design features, and mitigation measures would reduce the Project's operational emissions of GHGs; however, these measures would not substantially reduce the Project mobile source emissions (i.e., emissions from construction equipment, passenger cars, and trucks), which comprise more than 65 percent of the Project's anticipated GHG emissions. Mobile source GHG emissions are regulated by State and federal fuel standards and tailpipe emissions standards, and are outside of the control of the County, the Project Applicant, and future Project occupants. CEQA Guidelines Sections 15040(b), 15041, and 15091 collectively provide that mitigation measures must be within the responsibility and jurisdiction of the Lead Agency (i.e., Shasta County) in order to be implemented. No other mitigation measures are available that are feasible for Shasta County to enforce that have a proportional nexus to the Project's level of impact. Accordingly, the County finds that the Project's GHG emissions represent a significant and unavoidable cumulatively-considerable impact for which no feasible mitigation is available to substantially lessen or avoid a significant impact.

Level of Significance After Mitigation: Significant and unavoidable. For those mitigation measures whose emissions reductions are quantifiable, the estimated total emissions reduction in 2030 is 145.4 $MTCO_2e$ per year, resulting in an estimated project-related emissions level of 4,257.14 $MTCO_2e$ per year as shown in Table 5.7-2. Therefore, after mitigation project-related emissions would exceed the threshold of 1,100 $MTCO_2e$ per year.

IMPACT 5.7-2	***Implementation of the proposed project could potentially conflict with an applicable greenhouse gas reduction plan, policy, or regulation.***

Significance: Potentially Significant Impact.

Impact Analysis: As described above, the SCAQMD prepared their RCAP in 2012. The RCAP establishes a community-wide emissions reduction target of 15 percent below 2008 levels by 2020, 49 percent below 2008 levels by 2035, and 83 percent below 2008 levels by 2050 following guidance from CARB and the

Governor's Office of Planning and Research[27]. CARB has noted that local governments can calculate GHG emissions to 1990 levels by the year 2020, thresholds by applying the percent reductions necessary to reach 2030 and the SB 32 goal of reducing 2050 climate goals (i.e., 40 percent and 80 percent, respectively) to their community-wide GHG emissions target[28]. As noted above, the RCAP has not been adopted and is not considered a qualified GHG reduction plan under CEQA Guidelines Section 15183.5 as a formal CEQA document was also not prepared. The RCAP also does not provide specific reduction targets or CEQA significance thresholds for individual development projects. Therefore, the RCAP cannot be used to determine the impact of Project GHG emissions.

As previously described, statewide emissions reduction programs have been developed to implement AB 32 and SB 32. Local reduction measures and actions are included to address the remaining gap between the reduction targets and statewide actions. These local actions are organized into reduction categories according to the source of emissions that they address. Reduction categories include energy, solid waste, transportation, water, and carbon sequestration.

Shasta County is also subject to compliance with AB 32 and SB 32, which is a legal mandate requiring that statewide GHG emissions be reduced to 1990 levels by 2020, and 40 percent below 1990 levels by 2030, respectively. In adopting the AB 32 and SB 32 reduction targets, the legislature determined the necessary GHG reductions for the state to make in order to sufficiently offset its contribution to the cumulative climate change problem to reach 1990 levels by 2020 and be 40 percent below 1990 levels by 2030. As identified above, the proposed project would remain significant and unavoidable despite the incorporation of Mitigation Measure 5.7-1. Therefore, the proposed project would potentially conflict with the AB 32, and SB 32 reductions goals despite the implementation of the Project Design Features and **Mitigation Measure 5.7-1** described above. Impacts would be *significant and unavoidable.*

Mitigation Measures: Implement **Mitigation Measure 5.7-1**.

Level of Significance After Mitigation: Impacts would remain *significant and unavoidable* for both 2020 and 2030.

5.7.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.7-3	***Greenhouse gas emissions generated by the project could potentially have a significant impact on global climate change.***

Significance: Potentially Significant Impact.

Cumulative Setting: Under AB 32, CARB, the agency in charge of regulating sources of emissions of GHGs in California, has been tasked with adopting regulations for reduction of GHG emissions. The effects of this project are evaluated based not upon the quantity of emissions, but rather on whether the project implements reduction strategies identified in AB 32, the Governor's Executive Order S-3-05, or other strategies to help toward reducing GHGs to the level proposed by the governor. If so, it could reasonably follow that the project would not result in a significant contribution to the cumulative impact of global climate change.

[27] OPR Technical Advisory CEQA AND CLIMATE CHANGE. https://opr.ca.gov/docs/june08-ceqa.pdf?
[28] CARB Scoping Plan, page 100, 2017, https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

Impact Analysis: It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory.[29] GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective.[30] The additive effect of project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the proposed project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As previously discussed, regulatory requirements that pertain to mobile- and energy-related emissions would have the most substantial effect on reducing the project's future emissions. Cleaner burning fuel, vehicle fuel efficiency improvements over time, and increases in the use of zero emission vehicles, would result in mobile emissions decreases per vehicle mile traveled. As utility providers are mandated to meet more stringent emission standards and incorporate a greater percentage of renewable energy sources in the power grid, emissions from electricity decline per unit of energy. As stated above, the proposed project would exceed the applicable bright line threshold despite the implementation of Project Design Features and **Mitigation Measure 5.7-1**. Therefore, the project's cumulative GHG impacts would remain *significant and unavoidable*.

Mitigation Measures: Implement **MM 5.7-1**.

Level of Significance After Mitigation: Cumulative GHG impacts would *be significant and unavoidable for both 2020 and 2030.*

[29] CAPCOA (California Air Pollution Control Officers Association). 2008. *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*.
[30] Ibid.

This Page Intentionally Left Blank

5.16 TRAFFIC AND CIRCULATION

NOTE TO READER: This section of the Partial Recirculated Draft EIR (RDEIR) includes an updated analysis of the intersection of *Deschutes Road & Cedro Lane (Intersection #15)* based on traffic counts conducted at this intersection on May 24, 2017. Based upon the updated traffic counts, a revised analysis of this intersection for Existing, Existing Plus Project, Year 2035 No Project, and Year 2035 Plus Project conditions is provided. This section has been updated to include an analysis of Vehicle Miles Traveled (VMT) as a result of updates to the State CEQA Guidelines that require this this type of analysis for development projects. The analysis in this section includes a discussion of feasible mitigation measures to reduce potential impacts related total VMT generated by the project. This section is recirculated in its entirety.

This section is based upon the *Tierra Robles Traffic Impact Study* (May 2015), *Supplemental Traffic Impact Analysis* (August 2017), *Technical Memorandum – Traffic Impact Analysis Update for Intersection No. 15: Deschutes Road & Cedro Lane* (November 20, 2018), and *Updated Technical Memorandum – Updated Traffic Impact Analysis for Intersection No. 15: Deschutes Road & Cedro Lane* (February 25, 2019) prepared by Omni-Means Engineering Solutions (now GHD), all of which are included as Appendices RDEIR B-1, B-2, B-3, and B-4, respectively. Also included, in Appendix RDEIR B-5, is modeling data regarding project averages of Vehicle Miles Traveled, prepared by GHD. The purpose of these evaluations is to address traffic and transportation impacts of the proposed project on surrounding streets and intersections. The *Tierra Robles Traffic Impact Study* was prepared based on criteria set forth by Shasta County and the California Department of Transportation (Caltrans). Mitigation measures are recommended, if necessary, to avoid or lessen proposed project impacts on traffic and circulation. The following analysis of the potential environmental impacts related to traffic and circulation is also derived from the following sources:

- Caltrans. *Guide for the Preparation of Traffic Impact Studies.* December 2002.
- City of Redding. *Bikeway Action Plan 2010-2015*. April 2010.
- City of Redding. *Redding General Plan 2000 – 2020*. October 2000.
- City of Redding. *Traffic Impact Assessment Guidelines.* January 2009.
- Shasta County. *2030 Shasta County Travel Demand Model (SCTDM)*.
- Shasta County. *Shasta County 2010 Bicycle Transportation Plan*. 2010.
- Shasta County. *Shasta County General Plan*. September 2004.
- Shasta County. *Regional Transportation Plan*.

This section provides baseline information on and evaluates potential impacts on traffic and circulation related to the proposed project. The following traffic analysis scenarios were evaluated:

- *Existing Conditions. Existing* conditions quantify the current traffic operations at the study locations.

- *Existing Plus Project Conditions.* The *Existing Plus Project* condition is an analysis scenario in which traffic impacts with the proposed project are investigated in comparison to the *Existing* conditions scenario. Within this scenario, the project generated peak hour traffic volumes have been added to the *Existing* conditions volumes to obtain the *Existing Plus Project* traffic volumes.

- *Year 2035 No Project Conditions. Year 2035 No Project* conditions refer to analysis scenarios that would exist following approximately twenty years of development in the greater Redding area and Shasta County. The *Year 2035 No Project* conditions scenarios were forecasted using SCTDM.

- *Year 2035 Plus Project Conditions.* The *Year 2035 Plus Project* conditions is the analysis scenario in which traffic impacts associated with the project are investigated in comparison to the *Year 2035 No Project* condition scenario.

5.16.1 ENVIRONMENTAL SETTING

STREET CLASSIFICATIONS

In order to adequately plan for the future circulation network of streets and highways within the County, the Shasta County *General Plan* utilizes a functional hierarchy of road classification as described below. This circulation system hierarchy is used in all circulation planning and the review of all development permits. The circulation system hierarchy is made up of the roadway which are classified as either principal arterial, arterial, collectors, subcollectors, major local streets, minor local streets, and minor streets.

- *Principal Arterial.* A principal arterial provides regional, statewide, and national transportation connections. All principal arterials are under Federal jurisdiction and include Federal highways as well as interstate highways.

- *Arterial.* Arterials provide connections between links in the highway network and connects major destinations with the highway network.

- *Collector.* Accommodates traffic between principal arterial, arterial streets and/or activity centers.

- *Subcollector.* This roadway classification serves between 300 and 700 potential residences. Direct access from adjoining parcels is permitting.

- *Major Local Street.* Provides access for 50 to 300 potential residences.

- *Local Street.* Provides access for 25 to 50 potential residences.

- *Minor Local Street.* Provides access for up to 25 potential residences.

- *Minor Street.* Other types of streets that carry very low volumes of traffic.

LOCAL ACCESS

Roadways that provide primary circulation in the vicinity of the proposed project are as follows:

- *Boyle Road.* An east-west facility that runs from Old Alturas Road to Deschutes Road. Boyle Road has a two-lane cross-section.

- *Deschutes Road.* A north-south facility that extends from State Route 299 (SR-299) to the north to Interstate 5 (I-5) to the south. Deschutes Road is two-lane in the project vicinity.

- *Old Alturas Road.* An east-west collector that runs north of and approximately parallel to State Route 44 (SR-44). Old Alturas Road has a two-lane cross-section.

- *Shasta View Drive.* A two to four-lane, north-south arterial/collector street that runs between Rancho Road and College View Drive. The southerly extension of Shasta View Drive, from Rancho Road to Airport Road, and the northerly extension, from College View Drive to the City of Shasta Lake, has been conceptually indicated in the current City of Redding *General Plan* circulation system. In the project vicinity Shasta View Drive is a two-lane arterial.

- *Old Oregon Trail.* A north-south collector that runs east of and approximately parallel to Airport Road. Old Oregon Trail has a two-lane cross-section.

- *State Route 44.* An interregional highway that runs in an east-west direction linking the City of Redding with Lassen County. SR-44 begins at State Route 273 (SR-273) in the City of Redding and extends eastwards towards the City of Susanville in Lassen County. SR-44 forms a full-access interchange with Shasta View Drive. SR-44 has a four-lane divided cross section through the Shasta View Drive interchange.

- *State Route 299.* An interregional highway that begins at Highway 101 in Humboldt County and traverses east through Humboldt, Trinity, Shasta, and Modoc Counties. SR-299 forms a full-access interchange with Churn Creek Road. SR-44 has a four-lane divided cross section through the Churn Creek Road interchange.

STUDY INTERSECTIONS AND ROADWAY SEGMENTS

Intersections

The following list of critical study intersections were established through consultation with County and Caltrans staff, and were analyzed under the scenarios described above for weekday AM and PM peak hour conditions:

- *Deschutes Road & SR-299 (Intersection #1)*
- *Deschutes Road & Old Alturas Road (Intersection #2)*
- *Old Alturas Road & Seven Lakes Road (Intersection #3)*
- *Old Alturas Road & Shasta View Drive (Intersection #4)*
- *Shasta View Drive & Tarmac Road (Intersection #5)*
- *Shasta View Drive & SR-44 Westbound (WB) Ramps (Intersection #6)*
- *Shasta View Drive & SR-44 Eastbound (EB) Ramps (Intersection #7)*
- *Old Alturas Road & Old Oregon Trail (Intersection #8)*
- *Old Oregon Trail & Old 44 Drive (Intersection #9)*
- *Airport Road & SR-44 WB Ramps (Intersection #10)*
- *Airport Road & SR-44 EB Ramps (Intersection #11)*
- *Old Alturas Road & Boyle Road (Intersection #12)*

- *Boyle Road & Deschutes Road (Intersection #13)*
- *Deschutes Road & Old 44 Drive (Intersection #14)*
- *Deschutes Road & Cedro Lane (Intersection #15)*
- *Deschutes Road & SR-44 WB Ramps (Intersection #16)*
- *Deschutes Road & SR-44 EB Ramps (Intersection #17)*

Roadways

The following roadway segments were selected in coordination with County staff and Caltrans for analysis of weekday operations for existing and long-term (*Year 2035*) traffic conditions both without and with the proposed project:

- *Old Alturas Road (west of Deschutes Road) – Two lane collector (Segment #1)*
- *Old Alturas Road (north of Boyle Road) – Two lane collector (Segment #2)*
- *Old Alturas Road (east of Shasta View Drive) – Two lane collector (Segment #3)*
- *Old Alturas Road (between Old Oregon Trail and Boyle Road) – Two lane arterial (Segment #4)*
- *Boyle Road (west of Deschutes Road) – Two lane collector (Segment #5)*
- *Shasta View Drive (north of Tarmac Road) – Three lane arterial (Segment #6)*
- *Old Oregon Trail (north of Old 44 Drive) – Two lane collector (Segment #7)*
- *Deschutes Road (north of Old 44 Drive) – Two lane arterial (Segment #8)*

BICYCLE FACILITIES

Shasta County is the lead agency to provide a safe and efficient regional system of bicycle routes for commuter, school, and recreational use for the unincorporated areas of the County. The *California Streets and Highway Code* (Section 890.4) defines the various classes of bicycle facilities as follows:

- *Class I Bike Paths.* Class I facilities are completely separated right-of-way designated for the exclusive use of bicycles. Cross-flows by pedestrians and motorized vehicles are minimized.

- *Class II Bike Lanes.* Class II facilities are restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles. Travel by motor vehicles or pedestrians are not allowed; except for vehicle parking and cross flows. In most cases, Class II Bikeways require a lane of at least four feet of well-maintained pavement for the cyclist to ride on.

- *Class III Bike Routes.* Class III facilities are shared right-of-way either on the street or on the sidewalk and are designated by signs placed on vertical posts or markings stenciled on the pavement. Any bikeway which shares a through-traffic right-of-way.

- *Class IV Bikeways.* Class IV facilities or separated bikeways, promote active transportation and provide a right-of-way designated exclusively for bicycle travel adjacent to a roadway and which are separated from vehicular traffic. Types of separation include, but are not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

According to the Shasta County *2010 Bicycle Transportation Plan*, bicycles are allowed on SR-299, east of Old Oregon Trail, and on SR-44, east of Shasta View Drive. Class II bike lanes are proposed along Deschutes

Road between SR-299 and Balls Ferry Road, on Old Alturas Road west of Old Oregon Trail, and on Old Oregon Trail.

According to the City of Redding's *Bikeway Action Plan 2010-2015*, Class II bike lanes exists on Shasta View Road between Hemingway Street and Tarmac Road. Class II bike lanes are proposed for remaining segment of Shasta View Drive. Class II bike lanes are also proposed on Old Oregon Trail continuing to Airport Road, Tarmac Road and Old Alturas Road in the City of Redding.

County roadways including Old Alturas Road, Boyle Road and Deschutes Road in the immediate project vicinity do not have bicycle facilities. The Shasta County *2010 Bicycle Transportation Plan* shows that Class II bike lanes are proposed on Deschutes Road and Old Alturas Road within unincorporated Shasta County.

TRANSIT SERVICES

Existing transit service is provided primarily by the Redding Area Bus Authority (RABA). RABA provides fixed route service, express route service and demand response service to the general public within the urbanized area of the Shasta County. RABA operates 14 fixed routes within the cities of Redding, Shasta Lake and Anderson, none of which operate in the immediate vicinity of the project site. The nearest RABA bus stop is approximately 3 miles west of the project site at the intersection of Old Alturas Road and Shasta View Drive.

SAFETY PERFORMANCE

An offsite pedestrian, bicycle, and motorized vehicle safety review was conducted on Old Alturas Road, Boyle Road, and Deschutes Road in the immediate project vicinity, based on historical collision data and a field review. The five-year historical collision data covers the period from January 1, 2009 to December 31, 2013 and was obtained from the Statewide Integrated Traffic Records System (SWITRS) maintained by the California Highway Patrol (CHP).

Based on the five-year SWITRS data, 41 collisions have occurred along Old Alturas Road, 7 collisions have occurred along Boyle Road, and 101 collisions have occurred along Deschutes Road. Table 5.16-1, COLLISIONS BY YEAR, provides a summary of the collisions along the roadways by year. Table 5.16-2, COLLISIONS BY TYPE, provides a summary of the collisions by collision type.

Table 5.16-1
COLLISIONS BY YEAR

Roadway	Year					
	2009	2010	2011	2012	2013	Total
Boyle Road	2	1	0	2	2	7
Deschutes Road	21	21	22	17	20	101
Old Alturas Road	12	12	5	5	7	41
Total	**35**	**34**	**27**	**24**	**29**	**149**

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Traffic Impact Study*. May 2015.

Table 5.16-2
COLLISIONS BY TYPE

Collision Type	Roadway			
	Boyle Road	Deschutes Road	Old Alturas Road	Total
Broadside	2	28	6	36
Head-On	1	4	1	6
Hit Object	4	19	17	40
Not Stated	0	0	1	1
Other	0	1	2	3
Overturned	0	6	7	13
Rear End	0	39	4	43
Sideswipe	0	4	3	7
Total	**7**	**101**	**41**	**149**

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Traffic Impact Study*. May 2015.

As shown in Table 5.16-1, the number of collisions along these corridors has declined since 2009, with Deschutes Road consistently having the most collisions. Between 2009 and 2013, the number of collisions along Old Alturas Road has reduced by about half, while Boyle Road and Deschutes Road collisions amount remain about the same annually. As shown in Table 5.16-2, the rear end collision type had the highest amount, next to hit object collisions and broadside collisions. There were no collisions reported involving pedestrians or bicyclists. There were no fatalities reported, and there were 90 injuries over the five-year period. There were 10 injuries involving alcohol, and 20 collisions total in which alcohol was involved.

Collision rates were calculated for segments along Old Alturas Road, Boyle Road, and Deschutes Road, in terms of "accidents per million vehicle miles traveled". The collision rates are based on the number of collisions, the average daily traffic (ADT) volumes (April 2015), and the length of the segment, and the following equation:

$$\textit{Collision Rate} = \frac{(\text{Number of Collisions}) \times (1{,}000{,}000)}{\text{Vehicle Miles Traveled}}$$

The calculated collision rates were compared with statewide average rates compiled by the California Department of Transportation (Caltrans) as published in their most recent document *2011 Collision Data on California State Highways*. The document provides basic average accident rates for various types of roadways and intersections categorized by number of lanes, travel speed, etc., and are derived from the SWITRS. Table 5.16-3, COLLISION RATES FOR SEGMENTS, presents the collision rates for segments along roadways in the immediate project vicinity.

Table 5.16-3
COLLISION RATES FOR SEGEMENTS

Segments	Length (mi)	# of Collisions	2015 ADT	Collision Rate (ACC/MVM)	Statewide Basic Average Rate
Old Alturas Road					
Deschutes Road to Seven Lakes Road	1.6	6	1,046	**1.96**	1.47
Seven Lakes Road to Boyle Road	3.0	6	1,750	0.63	1.02
Boyle Road to Old Oregon Trail	1.2	9	4,197	**0.98**	0.90
Old Oregon Trail to Shasta View Drive	1.0	12	5,982	1.10	2.39
Total	**6.8**	**33**	--	--	--
Boyle Road					
Deschutes Road to Old Alturas Road	2.7	5	1,456	0.70	1.38
Deschutes Road					
SR-44 to Boyle Road	3.4	28	8,495	0.53	0.86
Boyle Road to SR-44	2.5	46	8,495	**1.19**	0.86
Total	**5.9**	**74**	**8,495**	0.81	**0.86**

Notes: ACC/MVM = Accidents per million vehicle miles.
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Traffic Impact Study*. May 2015.

As shown in Table 5.16-3, there are three segments where the collision rate is higher than the statewide average rate. On Old Alturas Road between Deschutes Road and Seven Lakes Road, between Boyle Road and Old Oregon Trail, and on Deschutes Road between Boyle Road and SR-44 the calculated collision rates exceed the statewide basic average rate for the roadway segments. These locations are further analyzed below base on field reviews completed by an Omni-Means Engineering Solutions on May 5, 2015.

Old Alturas Road (Deschutes Road to Seven Lakes Road)

The section of Old Alturas Road between Deschutes Road to Seven Lakes Road is curvilinear and narrow with roadside obstructions. This section of rural roadway has a collision rate 33 percent higher than the statewide average for similar facilities. Of the 6 reported collisions, the primary collision factors are summarized as follows:

- 2 – DUI
- 1 – Hitting an Animal
- 1 – Unsafe Speed
- 2 – Improper Turn

Old Alturas Road (Boyle Road to Old Oregon Trail)

The section of Old Alturas Road between Boyle Road and Old Oregon Trail is a modern roadway with good alignment, lane widths, shoulders and roadside conditions. The collision rate is 9 percent higher than the statewide average for similar facilities. Of the 9 reported collisions, the primary collision factors are summarized as follows:

- 2 – DUI
- 2 – Unsafe Speed
- 1 – Hitting an Animal
- 4 – Improper Turn

A collision rate 9 percent higher than the statewide average for similar facilities is not statistically significant and is considered to be within a normal and expected range.

Deschutes Road (Boyle Road to SR-44)

The section of Deschutes Road between Boyle Road and SR-44 maintains good horizontal alignment, vertical alignment and sight distances. However, the shoulders are narrow, the roadside environment has numerous obstructions and there are numerous driveways and low-volume road connections. The collision rate is 38 percent higher than the statewide average for similar facilities. Of the 46 reported collisions, the primary collision factors are summarized as follows:

- 3 – DUI
- 27 – Unsafe Speed
- 2 – Hitting an Animal
- 4 – Improper Turn
- 9 – Failure to Grant R/W to Another Automobile (Includes Collisions at a Traffic Signal)
- 1 – Unsafe Lane Change

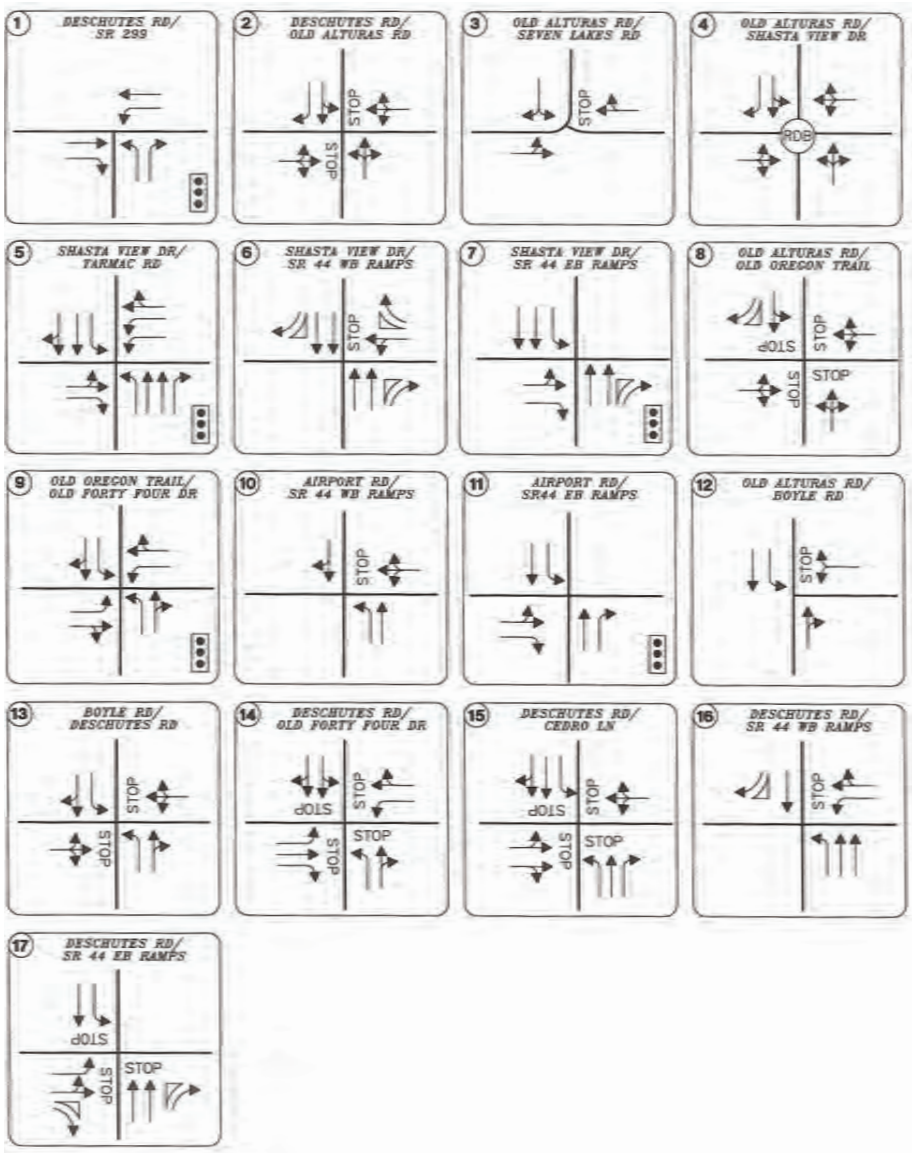
Approximately 85 percent of the collisions were during daylight conditions and 56 percent were rear end collisions. The combination of unsafe speed and the congested roadside with numerous driveways and minor road connections results in a high number of rear-end collisions.

DATA COLLECTION

For all study intersections, existing weekday AM and PM peak hour counts were conducted by Omni-Means Engineering Solutions on Wednesday, February 6, 2013. Schools in the area were in session and no known special events were occurring in the area at the time of the traffic counts. No precipitation or otherwise inclement weather was recorded on the collection dates. All intersections are analyzed during the weekday AM and PM peak hour period. The AM peak hour is defined as the one continuous hour of peak traffic flow counted between 7:00 AM and 9:00 AM. The PM peak hour is defined as the one continuous hour of peak traffic flow counted between 4:00 PM and 6:00 PM.

For all roadway segments, existing average daily traffic (ADT) counts were collected by Omni-Means Engineering Solutions on Thursday, April 23, 2015. Schools in the area were in session and no known special events were occurring in the area at the time of the traffic counts. No precipitation or otherwise inclement weather was recorded on the collection dates. All roadway segments were analyzed on a daily basis.

Figure 5.16-1, EXISTING LANE GEOMETRICS AND CONTROL, illustrates existing lane geometrics and controls for the project study area roadways. Figure 5.16-2, EXISTING INTERSECTION TRAFFIC VOLUMES, presents the existing traffic volumes at the seventeen study intersections for AM and PM peak hour conditions.

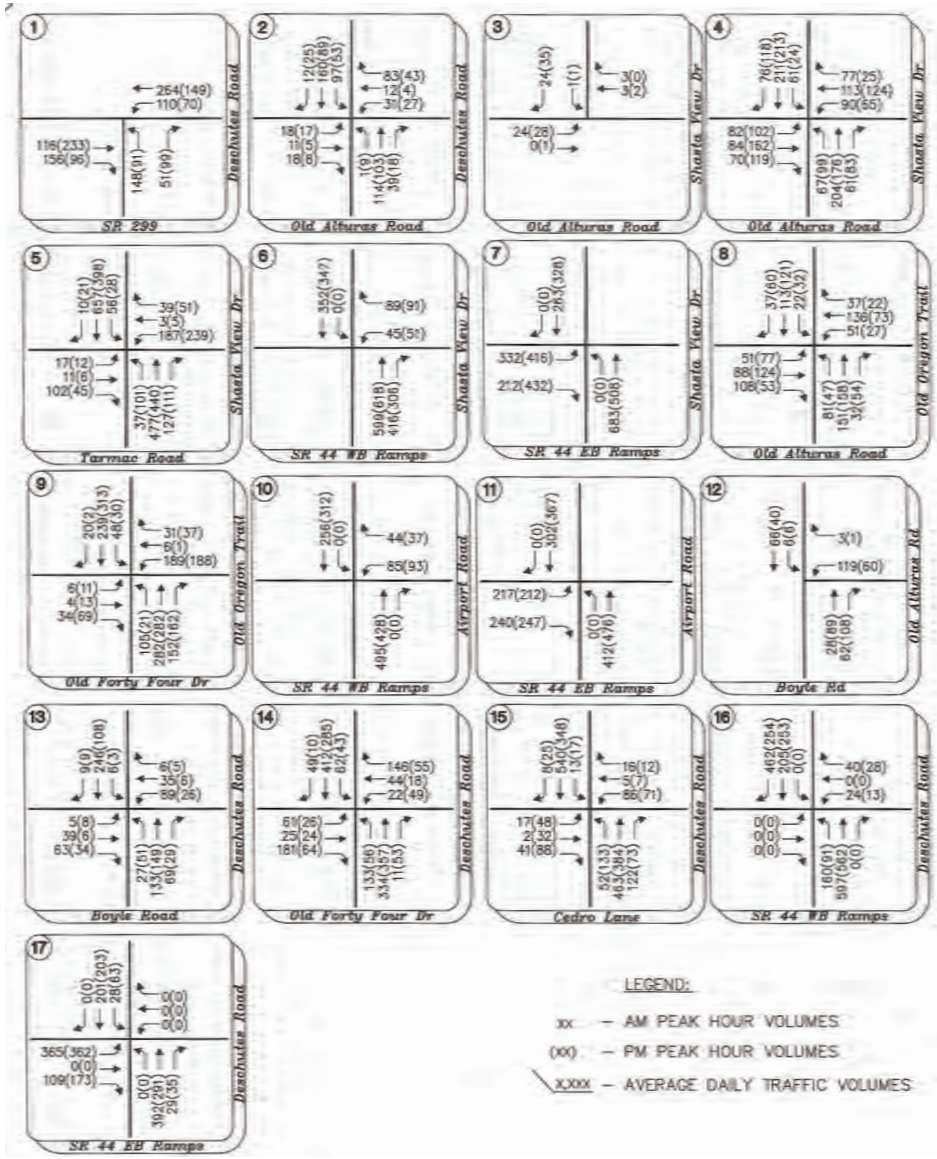


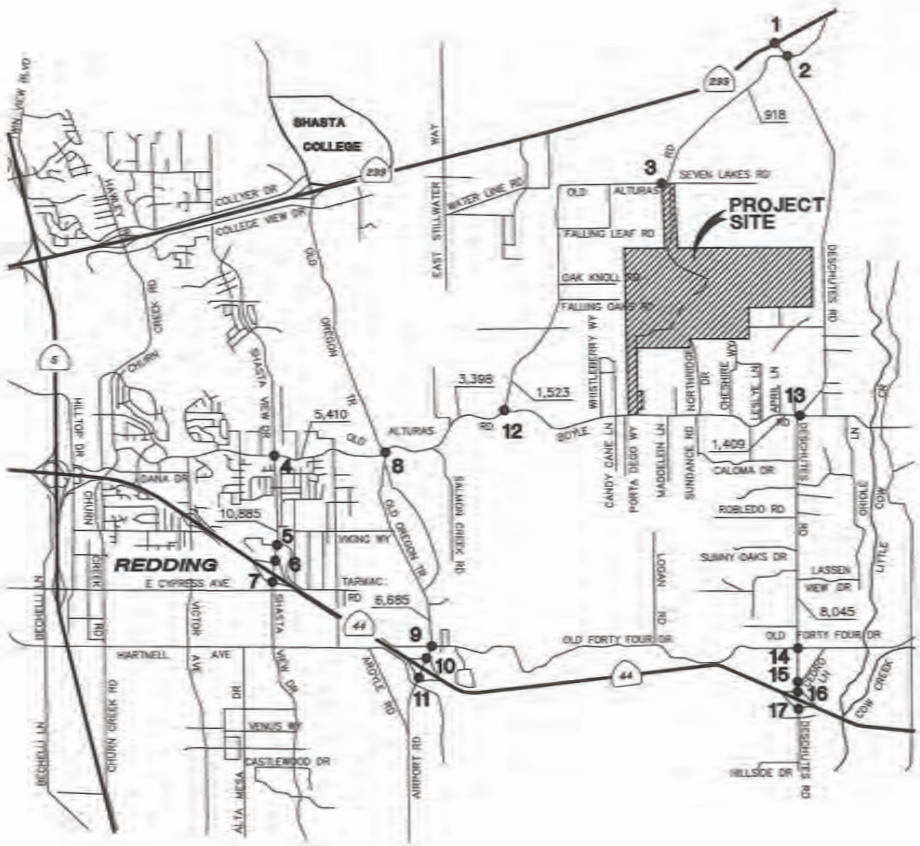
N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • EIR

Existing Lane Geometrics and Control

Figure 5.16-1





N.T.S.

Existing Intersection Traffic Volumes

Figure 5.16-2

METHODOLOGY AND GUIDELINES

The following methodologies, including guidelines and standards of the Shasta County and Caltrans related to traffic and circulation, were utilized in the evaluation of the proposed project's traffic impacts.

LEVEL OF SERVICE METHODOLOGIES

Intersection, roadway, mainline, and ramp level-of-service (LOS) has been calculated for all control types using the methods documented in the Transportation Research Board's *Highway Capacity Manual 2010*. LOS determinations are presented on a letter grade scale from "A" to "F", whereby LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions.

Intersection LOS

Level-of-service definitions for different types of intersection controls are presented in Table 5.16-4, LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS. Intersection LOS is calculated for all control types using the *Synchro 8* software by Trafficware, implementing the methods documented in the HCM 2010. For signalized intersections and all-way-stop-controlled (AWSC) intersections, the intersection delays and LOS are average values for all intersection movements. For two-way-stop-controlled (TWSC) intersections, the intersection delays and LOS are representative of those for the worst-case movement.

Table 5.16-4
LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS

LOS	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle (sec)		
				Signalized	Unsignalized	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10.0	≤ 10.0	≤ 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and ≤ 20.0	>10 and 15.0	>10 and ≤ 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20 and ≤ 35.0	>15 and 25.0	>15 and ≤ 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35 and ≤ 55.0	>25 and 35.0	>25 and ≤ 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55 and ≤ 80.0	>35 and 50.0	>35 and ≤ 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

Source: Transportation Research Board. *Highway Capacity Manual, Fifth Edition*. 2010.

Roadway LOS

The average daily traffic based roadway LOS thresholds are provided below in Table 5.16-5, LEVEL OF SERVICES CRITERIA FOR ROADWAYS.

Table 5.16-5
LEVEL OF SERVICE CRITERIA FOR ROADWAYS

Roadway Type	Average Daily Traffic (ADT) – Total of Both Directions				
	LOS "A"	LOS "B"	LOS "C"	LOS "D"	LOS "E"
6-Lane Freeway	75,000	90,000	105,000	120,000	135,000
4-Lane Freeway	50,000	60,000	70,000	80,000	90,000
6-Lane Expressway (high access control)	36,000	42,000	48,000	54,000	60,000
4-Lane Expressway (high access control)	24,000	28,000	32,000	36,000	40,000
6-Lane Divided Arterial (with left-turn lane)	32,000	38,000	43,000	49,000	54,000
4-Lane Divided Arterial (with left-turn lane)	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial (no left-turn lane)	18,000	21,000	24,000	27,000	30,000
2-Lane Arterial (with left-turn lane)	11,000	12,500	14,500	16,000	18,000
2-Lane Arterial (no left-turn lane)	9,000	10,500	12,000	13,500	15,000
4-Lane Collector	12,000	15,000	18,000	21,000	24,000
2-Lane Collector	6,000	7,500	9,000	10,500	12,000

Source: Transportation Research Board. *Highway Capacity Manual, Fifth Edition*. 2010.

CALTRANS LOS GUIDELINES

The Caltrans published *Guide for the Preparation of Traffic Impact Studies* (December 2002) states the following:

"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS."

SHASTA COUNTY LOS POLICY

The Shasta County *General Plan* Circulation Element as amended through September 2004 was referenced to establish level of service methodologies for the proposed project. Specifically, policies C-6k and C-6l which are provided below:

- *Policy C-6k.* Shasta County shall adopt the following LOS standards for considering any new roads:
  - Rural arterial and collectors – LOS C
  - Urban/Suburban arterials and collectors – LOS C

- *Policy C-6l.* New development which may result in exceeding LOS E on existing facilities shall demonstrate that all feasible methods of reducing travel demand have been attempted to reach LOS C. New development shall not be approved unless traffic impacts are adequately mitigated. Such mitigation may take the form of, but not limited to the following:
  - Provision of capacity improvements to the specific road link to be impacted, the transit system, or any reasonable combination.
  - Provision of demand reduction measures included as part of the project design or project operation or any feasible combination.

- *Policy C-11e.* The County shall assess fees on new development to address the impact of additional development on the County's transportation system.

CITY OF REDDING LOS POLICY

The City of Redding *General Plan* Transportation Element Policy T1A is consistent with LOS standards stated within the City of Redding *Traffic Impact Assessment Guidelines* (January 2009) and is provided below:

- *Policy T1A.* Establish the following peak hour LOS standards for transportation planning and review:

    - Use LOS "C" – "acceptable delays" – for most arterial streets and their intersections.
    - Use LOS "D" – "tolerable delays" – for the Downtown area where vitality, activity, and pedestrian and transit use are primary goals.
    - Use LOS "D" – tolerable delays – for streets within the State Highway System and interchanges.
    - Use LOS "D" – tolerable delays – for river-crossing street corridors whose capacity is affected by adjacent intersections."

TRAFFIC SIGNAL WARRANTS

Traffic signals are used to provide an orderly flow of traffic through an intersection. Many times, they are needed to offer side street traffic an opportunity to access a major road where high volumes and/or high vehicle speeds impede crossing or turn movements. Signals do not, however, increase the capacity of an intersection. In fact, they often slightly reduce the number of total vehicles that can pass through an intersection in a given period of time. Signals can also cause an increase in traffic accidents if installed at inappropriate locations. The term "signal warrants" refers to the list of established criteria used by public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection. This study has employed the signal warrant criteria presented in the *2014 California Manual on Uniform Traffic Control Devices* (MUTCD) for all study intersections. The signal warrant criteria are based upon several factors, including the volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas.

The California MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, the peak hour volume-based Warrant 3 used in this study serves as an early indicator of whether a study intersection would benefit from signalization. Additional traffic warrant analyses are recommended to determine the true feasibility of a signal improvement. The warrant analysis results are summarized in the level-of-service intersection operation tables in subsequent sections of this section.

EXISTING CONDITIONS

The following *Existing* condition analysis establishes the baseline traffic volumes under current conditions. The *Existing* condition is the analysis scenario in which current operations at study locations, assuming no project development, are analyzed.

EXISTING ROADWAY OPERATIONS

Table 5.16-6, EXISTING ROADWAY LEVEL OF SERVICE, contains a summary of the existing roadway segment LOS conditions. As shown in Table 5.16-6, all study segments are currently found to be operating better than the threshold LOS for *Existing* conditions.

Table 5.16-6
EXISTING ROADWAY LEVEL OF SERVICE

#	Roadway Segment	Capacity Configuration	Target LOS	Average Daily Traffic (ADT)	LOS
1	Old Alturas Road (west of Deschutes Road)	Two Lane Collector	E	1,046	A
2	Old Alturas Road (north of Boyle Road)	Two Lane Collector	E	1,750	A
3	Old Alturas Road (east of Shasta View Drive)	Two Lane Collector	C	5,982	A
4	Old Alturas Road (between Old Oregon Trail & Boyle Road)	Two Lane Arterial	E	4,197	A
5	Boyle Road (west of Deschutes Road)	Two Lane Collector	E	1,456	A
6	Shasta View Drive (north of Tarmac Road)	Three Lane Arterial	C	11,952	B
7	Old Oregon Trail (north of Old 44 Drive)	Two Lane Collector	E	8,031	C
8	Deschutes Road (north of Old 44 Drive)	Two Lane Collector	E	8,495	C

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Traffic Impact Study*. May 2015.

EXISTING INTERSECTION OPERATIONS

Existing weekday AM and weekday PM peak hour intersection traffic operations were quantified utilizing the existing intersection lane geometrics and control (Figure 5.16-1) and the existing intersection traffic volumes (Figure 5.16-2). Table 5.16-7, EXISTING INTERSECTION LEVEL OF SERVICE, contains a summary of the *Existing* study intersection LOS conditions.

Table 5.16-7
EXISTING INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Deschutes Road & SR-299	Signal	C	8.9	A	-	16.6	B	-
2	Deschutes Road & Old Alturas Road	TWSC	E	15.0	B	-	11.8	B	-
3	Old Alturas Road & Seven Lakes Road	TWSC	E	8.4	A	-	3.2	A	-
4	Old Alturas Road & Shasta View Drive	RDB	C	5.1	A	-	4.9	A	-
5	Shasta View Drive & Tarmac Road	Signal	C	15.9	B	-	13.6	B	-
6	Shasta View Drive & SR-44 WB Ramps	TWSC	C	22.4	C	-	21.3	C	-
7	Shasta View Drive and SR-44 EB Ramps	Signal	C	16.8	B	-	14.2	B	-
8	Old Alturas Road & Old Oregon Trail	AWSC	E	15.5	C	-	11.6	B	-
9	Old Oregon Trail & Old 44 Drive	Signal	C	20.7	C	-	18.0	B	-
10	**Airport Road & SR-44 WB Ramps**	**TWSC**	**C**	**28.7**	**D**	**No**	**68.6**	**F**	**No**
11	Airport Road & SR-44 EB Ramps	Signal	C	11.4	B	-	11.2	B	-
12	Old Alturas Road & Boyle Road	TWSC	E	9.9	A	-	9.8	A	-
13	Boyle Road & Deschutes Road	TWSC	E	27.7	D	-	12.3	B	-
14	Deschutes Road & Old 44 Drive	AWSC	E	35.3	E	-	17.5	C	-
15	Deschutes Road & Cedro Lane[4]	AWSC	E	65.6	F	Yes	20.2	C	-
16	Deschutes Road & SR-44 WB Ramps	TWSC	C	20.3	C	-	15.0	B	-
17	Deschutes Road & SR-44 EB Ramps	AWSC	C	15.2	C	-	13.8	B	-

Notes:
1. TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
2. LOS = Delay based on worst minor street approach for TWSC intersections.
3. Warrant = Based on California MUTCD Warrant 3.
4. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

As shown in Table 5.16-7 above, all study intersections except the following intersections listed below currently operate at or above the threshold LOS for both AM and PM peak hour periods under *Existing* conditions:

- *Airport Road & SR-44 WB Ramps (Intersection #10)*
- *Deschutes Road & Cedro Lane (Intersection #15)*

TRIP GENERATION AND DISTRIBUTION

PROJECT TRIP GENERATION

Project trip generation was estimated utilizing trip generation rates contained in the Institute of Transportation Engineers (ITE) Publication *Trip Generation Manual (Ninth Edition)*. Single Family Detached Housing (ITE Code 210) has been used to estimate the trip generation for the proposed project. Table 5.16-8, PROJECT TRIP GENERATION, provides a summary of the land use and quantities (i.e., units) for the proposed project, along with corresponding ITE land use codes from which trip generation characteristics were established and analyzed.

Table 5.16-8
PROJECT TRIP GENERATION

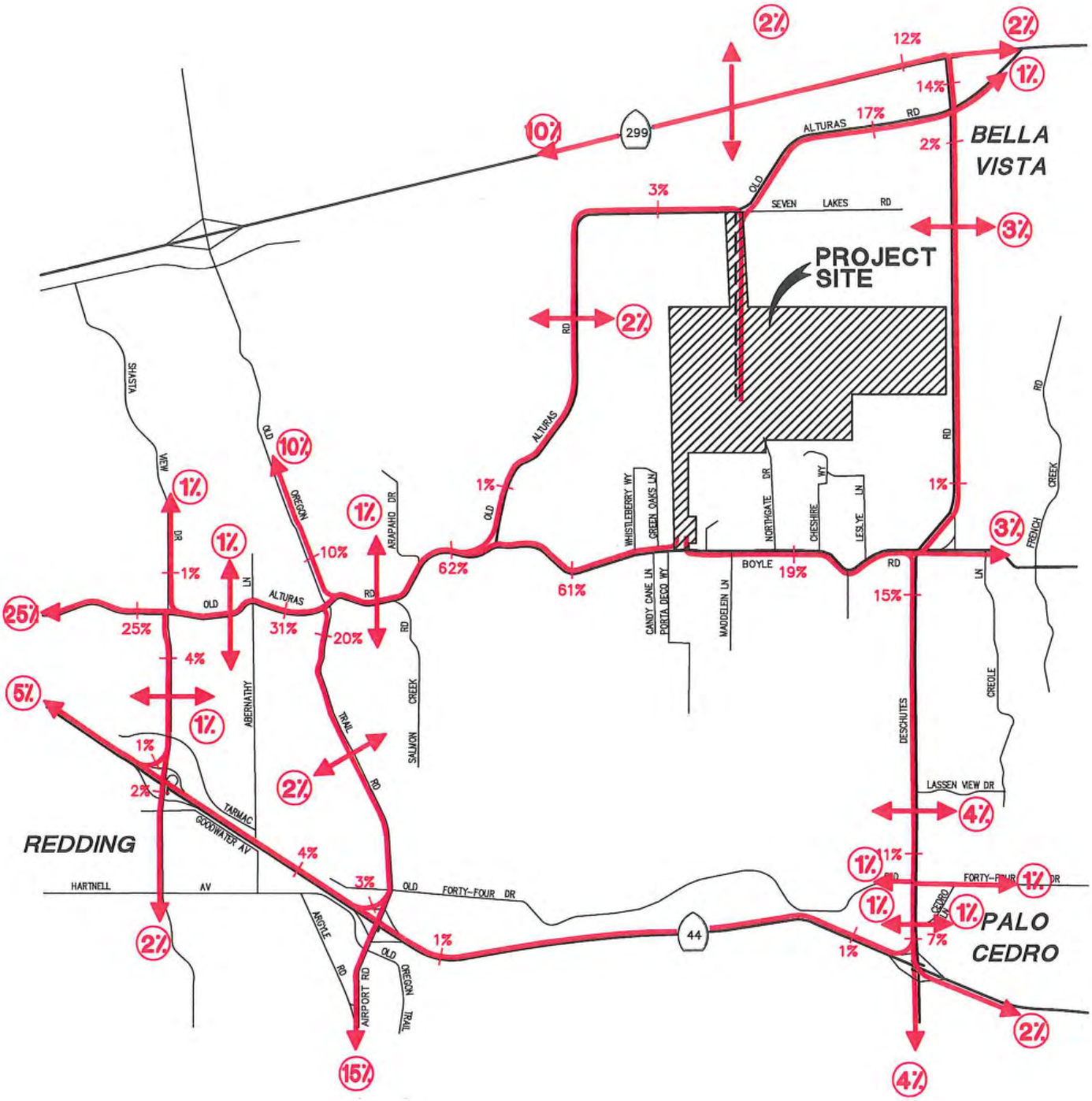
Land Use Category (ITE Code)	Unit	Daily Trip Rate / Unit	AM Peak Hour Trip Rate / Unit			PM Peak Hour Trip Rate / Unit		
			Total	In%	Out%	Total	In%	Out%
Single Family Detached Housing (210)	DU	10.09	0.76	25%	75%	1.00	63%	37%
Apartment (220)	DU	6.65	0.51	20%	80%	0.62	65%	35%
Tierra Robles Planned Development	**Quantity (Units)**	**Daily Trips**	**AM Peak Hour Trips**			**PM Peak Hour Trips**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
Housing	166	1,674	126	31	94	166	104	61
Apartments	15	100	8	2	6	9	6	4
Replace with any reduction %	*0%*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net New Project Trips		**1,774**	**134**	**33**	**101**	**175**	**110**	**65**

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

As shown in Table 5.16-8, it is estimated that the proposed project would generate approximately 1,774 new daily trips, with 135 vehicle trips generated during the AM peak hour and 175 vehicle trips generated during the PM peak hour period.

PROJECT TRIP DISTRIBUTION

The directional trip distribution and assignment of project-generated trips were estimated based on an understanding of existing and projected future traffic flows and travel patterns within the vicinity of the proposed project site, location of local and regional housing and employment/commercial centers in relation to the proposed project site and supplemented by the use of the Shasta County Regional Travel Demand Forecast model. The directional trip distribution for the proposed project is graphically depicted in Figure 5.16-3, PROJECT TRIP DISTRIBUTION.



N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • EIR

Project Trip Distribution

Figure 5.16-3

5.16.3 REGULATORY SETTING

Traffic analysis in the State of California is guided by policies and standards set at the state level by the Caltrans and at the local level by local jurisdictions. The Shasta County *General Plan* Transportation Element provides the necessary framework to guide the growth and development of the county's transportation-related infrastructure. A discussion of the transportation-related state and local regulations, as well as objective and polices in the Shasta County *General Plan* that are pertinent to the transportation analysis for the project, are included below.

STATE

California Department of Transportation

Caltrans policies are applicable to SR-299 and SR-44 and are summarized in the *Guide for the Preparation of Traffic Impact Studies* (December 2002). These guidelines identify when a traffic impact study is required, what should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies. Caltrans endeavors to maintain a target service level of between LOS C and LOS D on State highway facilities; however, this may not always be feasible and a lower service level may be acceptable.

LOCAL

Shasta County General Plan

The Shasta County *General Plan* Circulation Element sets forth future plans for the transportation systems in the County. Transportation policies pertinent to this project are provided below.

- *Policy C-6a*. Future road and street development including future right-of-way shall comply with adopted County Development Standards.

- *Policy C*-6c. New residential lots less than five acres in size in urban and/or suburban residential areas shall avoid direct access to arterial and collectors. Where feasible, such lots shall be served by an internal street system. In all other cases, maximize intersection and driveway spacing on arterial and collector streets. Where feasible, utilize shared/common driveways.

- *Policy C-6g.* All new land division shall be provided with a legally accessible road.

- *Policy C-6h.* Development adjacent to arterial and collectors should be designed to minimize the noise impact received from traffic. The circulation system shall also be designed with consideration given to minimizing noise impacts on adjacent development.

- *Policy C-6j.* New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by residents/occupants in accordance with Fire Safety Standards.

- *Policy C-6k.* Shasta County shall adopt the following LOS standards for considering any new roads:

    - Rural arterial and collectors – LOS C

- Urban/Suburban arterials and collectors – LOS C

- *Policy C-6l.* New development which may result in exceeding LOS E on existing facilities shall demonstrate that all feasible methods of reducing travel demand have been attempted to reach LOS C. New development shall not be approved unless traffic impacts are adequately mitigated. Such mitigation may take the form of, but not limited to the following:

  - Provision of capacity improvements to the specific road link to be impacted, the transit system, or any reasonable combination.
  - Provision of demand reduction measures included as part of the project design or project operation or any feasible combination.

- *Policy C-9a.* All new roads serving new residentially-designated land divisions shall be paved to minimize air quality impacts and shall be implemented by application of the County Road Standards.

- *Policy C-11e.* The County shall assess fees on new development to address the impact of additional development on the County's transportation system.

Shasta County Regional Transportation Plan

The Shasta Regional Transportation Agency (SRTA) is the agency responsible for transportation planning for the Shasta County region, including the three cities and the unincorporated area. SRTA's responsibility includes development and adoption of transportation policy direction, review and coordination of transportation planning, preparation and endorsement of an *Overall Work Program* (OWP), a *Regional Transportation Plan* (RTP), a *Regional Transportation Improvement Plan* (RTIP), and a *Federal Transportation Improvement Plan* (FTIP).

City of Redding General Plan

The City of Redding *General Plan* Transportation Element integrates land use and transportation planning by ensuring that all existing and future developments have adequate circulation. Transportation goals and policies are discussed within the Transportation Element of the City's *General Plan*. As noted above in Section 5.16.3, METHODOLOGY AND GUIDELINES, *General Plan* Policy T1A established performance standards for acceptable LOS within the City's jurisdiction.

5.16.4 THRESHOLDS OF SIGNIFICANCE

LOS THRESHOLDS

Shasta County

For facilities in the unincorporated County (and not owned by Caltrans) following significance threshold is used:

Roadways

- An existing roadway segment that operates acceptable (LOS A through LOS E) without the project is degraded to an unacceptable LOS F due to the addition of the project traffic.

- A roadway segment that operates at unacceptable LOS F without the project experiences an increase in its daily volumes to capacity ratio (V/C) of 0.05 or greater due to the addition of the project traffic.

Intersections

- An existing intersection that operates acceptable (LOS A through LOS E) without the project is degraded to an unacceptable LOS F due to the addition of the project traffic.

- An existing intersection that operates at unacceptable LOS F without the project experiences an increase of 5.0 or more seconds of delay due to the addition of the project traffic.

City of Redding and Caltrans

For facilities within the corporate limits of the City of Redding or facilities owned by Caltrans, the following significance threshold is used:

Roadways

- An existing segment that operates acceptable (LOS A through LOS C) without the project is degraded to an unacceptable LOS D or worse due to the addition of the project traffic.

- A roadway segment that operates at unacceptable LOS D or worse without the project experiences an increase in its daily volumes to capacity ratio (V/C) of 0.05 or greater due to the addition of the project traffic.

Intersections

- An existing intersection that operates acceptable (LOS A through LOS C) without the project is degraded to an unacceptable LOS D or worse due to the addition of the project traffic.

- A roadway segment that operates at unacceptable LOS D or worse without the project experiences an increase of 5.0 or more seconds of delay due to the addition of the project traffic.

TIMING AND FUNDING FOR MITIGATION MEASURES

The extent to which offsite roadway improvements or transportation programs are needed to mitigate the impacts of the proposed project is described below. In some cases, the project applicant is expected to provide the full improvements needed. In other cases, where the contribution of project-generated traffic is minimal, it more appropriate for the project applicant to contribute a “fair-share” payment for the cost of the improvements.

Shasta County

The Shasta County Board of Supervisors approved the *Major Road Impact Fees Program* in June 1991, through *Resolution 91-115, A Resolution Establishing Major Road Impacts Fees for the South Central Regional Area*. The proposed project is subject to this fee program for roadway improvements within unincorporated Shasta County.

City of Redding

Consistent with the City of Redding *Traffic Impact Assessment Guidelines* (January 2009), the following mitigation guidelines are considered applicable transportation improvements within the City of Redding limits:

- *Impacts under Existing Plus Project Conditions.* It is the project's responsibility to install the project's recommended improvements at the time of development in order to mitigate impacts to a less than significant level. In the case of a subdivision, the number of units that can be constructed before triggering significant impacts will be determined.

- *Impacts under Cumulative Conditions.* If the project's fair share of a cumulative impact is 25 percent or more, then the recommended improvements shall be installed at the time of development, subject to a reimbursement agreement. If the project's fair share of a cumulative impact is less than 25 percent, then the project will be required to pay its fair share of the cost of the improvements to be constructed later by others, prior to the realization of the impact.

CEQA SIGNIFICANCE CRITERIA

In accordance with State *CEQA Guidelines*, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. According to Appendix G of the State *CEQA Guidelines*, the proposed project would have a significant impact related to traffic and circulation, if it would:

- *Project implementation may conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.* Refer to Impact 5.16-1 and Impact 5.16-5 in Section 5.16.9, CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES, below.

- *Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highway.* Refer to Impact 5.16-1 and Impact 5.16-5 in Section 5.16.9, CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES, below.

- *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).* Refer to Impact 5.16-2, below.

- *Result in inadequate emergency access.* Refer to Impact 5.16-3, below.

- *Result in inadequate parking capacity.* Refer to AREAS OF NO PROJECT IMPACT, below.

- *Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?* Refer to Impact 5.16-4, below.

- *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.* Refer to AREAS OF NO PROJECT IMPACT, below.

Based on these standards, the effects of the proposed project have been categorized as either a "*less than significant"* impact or a "*potentially significant"* impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "*significant and unavoidable"* impact.

AREAS OF NO PROJECT IMPACT

In October 2012 and February 2016, the County conducted an Initial Study to determine significant effects of the proposed project. In the course of this evaluation, certain impacts of the proposed project were found to not to be significant because of the inability of a project of this scope to create such impacts or the absence of project characteristics producing effects of this type. The effects determined not to be significant are not required to be included in primary analysis sections of the Draft EIR. As such, the following impacts either are not applicable to the proposed project or are not reasonably foreseeable and are not addressed further within this section (refer to Section 10.0, EFFECTS FOUND NOT TO BE SIGNIFICANT):

- *Result in inadequate parking capacity.*

- *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.*

5.16.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

Traffic and circulation impacts are analyzed below according to topic. Mitigation measures directly correspond with an identified impact.

IMPACT 5.16-1	***Project implementation may conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.***

Significance: Potentially Significant Impact.

Impact Analysis: Project trip generation is discussed in Section 5.16.5, TRIP GENERATION AND DISTRIBUTION, above. As shown previously in Table 5.16-8, it is estimated that the proposed project will generate approximately 125 AM peak hour trips and 164 PM peak hour trips. *Existing Plus Project*

conditions were simulated by superimposing traffic generated by the proposed project onto *Existing* conditions intersection and roadway traffic volumes.

Existing Plus Project Roadway Operations

The *Existing Plus Project* daily traffic operations along roadway segments were analyzed by evaluating Existing Plus Project ADT volumes to the ADT-based LOS thresholds (refer to Table 5.16-6, above) that corresponds to the roadway type assumed for *Existing* conditions. Table 5.16-9, EXISTING PLUS PROJECT ROADWAY LEVEL OF SERVICE, contains a summary of the resulting *Existing Plus Project* roadway segment LOS conditions. As shown in Table 5.16-9, all roadway segments are project to operate at acceptable level of service, in *Existing Plus Project* conditions. Impacts would be *less than significant* in this regard.

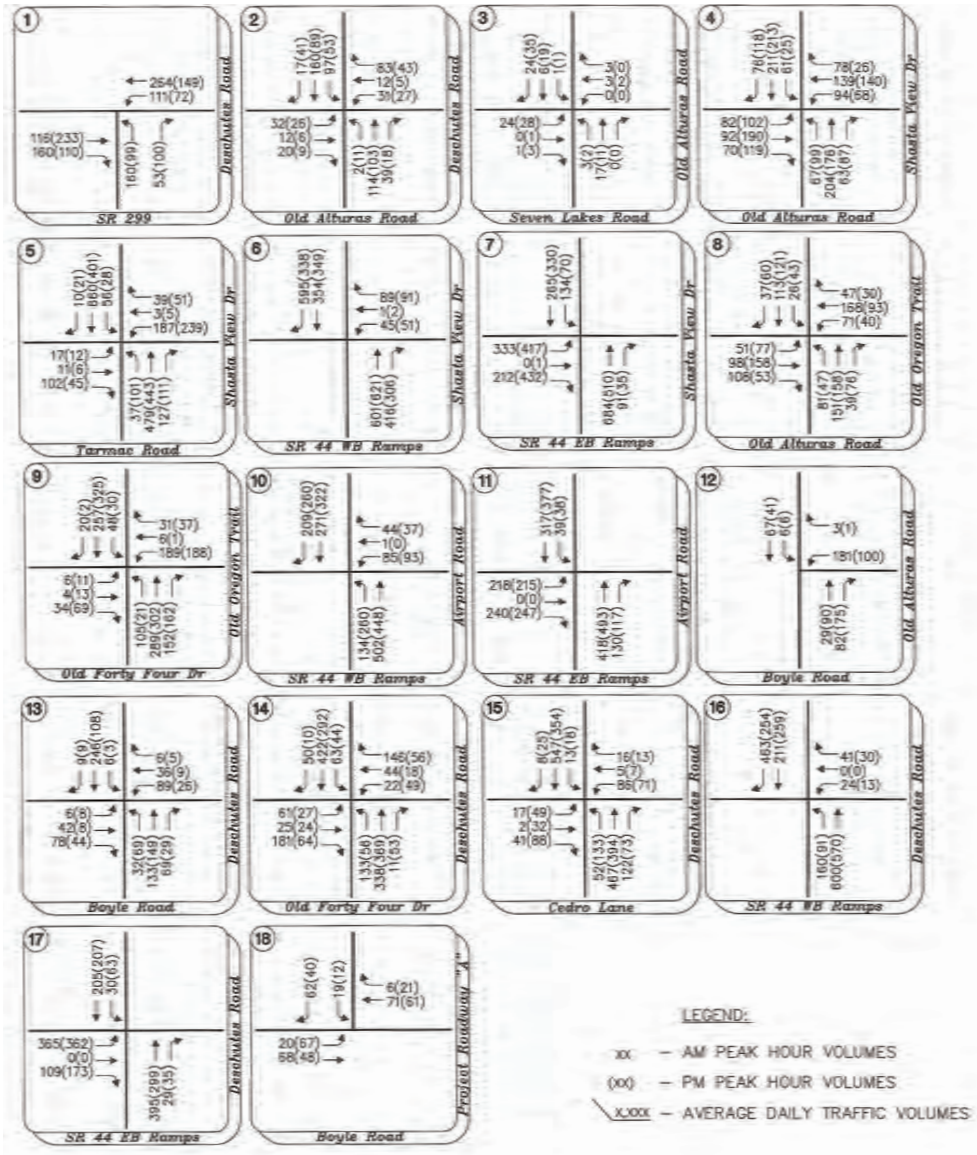
Table 5.16-9
EXISTING PLUS PROJECT ROADWAY LEVEL OF SERVICE

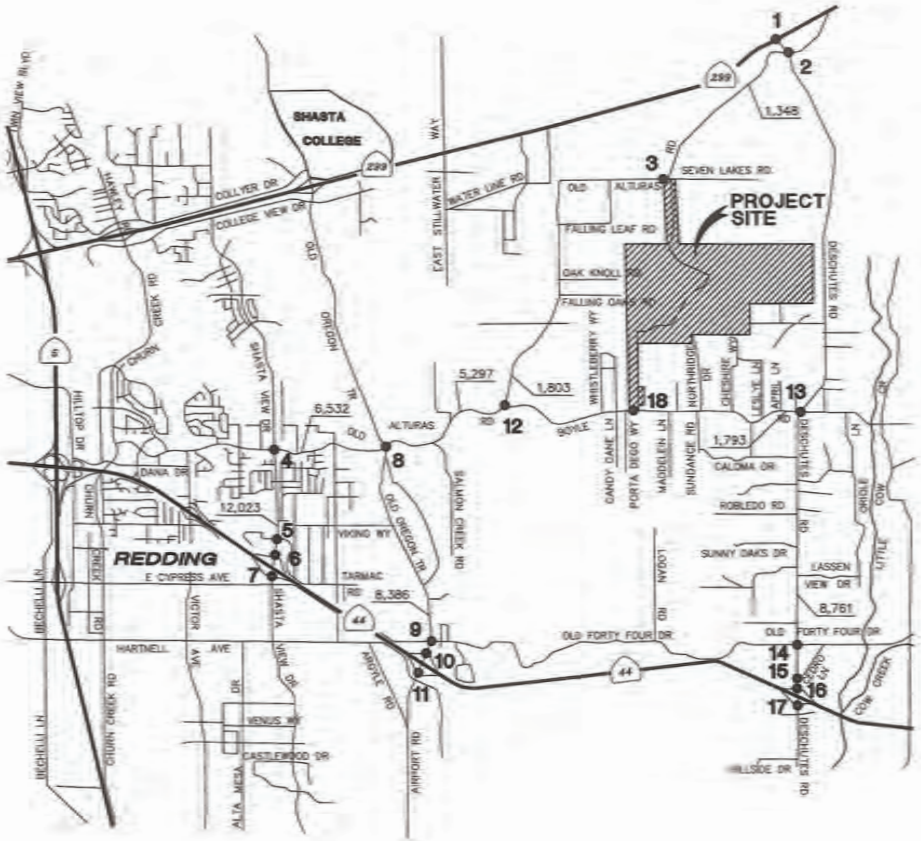
#	Roadway Segment	Capacity Configuration	Target LOS	Average Daily Traffic (ADT)	LOS
1	Old Alturas Road (west of Deschutes Road)	Two Lane Collector	E	1,348	A
2	Old Alturas Road (north of Boyle Road)	Two Lane Collector	E	1,803	A
3	Old Alturas Road (east of Shasta View Drive)	Two Lane Collector	C	6,532	B
4	Old Alturas Road (between Old Oregon Trail & Boyle Road)	Two Lane Arterial	E	5,297	A
5	Boyle Road (west of Deschutes Road)	Two Lane Collector	E	1,793	A
6	Shasta View Drive (north of Tarmac Road)	Three Lane Arterial	C	12,023	B
7	Old Oregon Trail (north of Old 44 Drive)	Two Lane Collector	E	8,386	C
8	Deschutes Road (north of Old 44 Drive)	Two Lane Collector	E	8,761	C

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

Existing Plus Project Intersection Operations

Existing Plus Project AM peak hour and PM peak hour intersection traffic operations were quantified utilizing the *Existing Plus Project* traffic volumes (refer to Figure 5.16-4, EXISTING PLUS PROJECT INTERSECTION TRAFFIC VOLUMES, and Figure 5.16-5, EXISTING PLUS PROJECT INTERSECTION LANE GEOMETRICS AND CONTROLS). Table 5.16-10, EXISTING PLUS PROJECT LEVEL OF SERVICE**,** contains a summary of the *Existing Plus Project* study intersection LOS conditions.

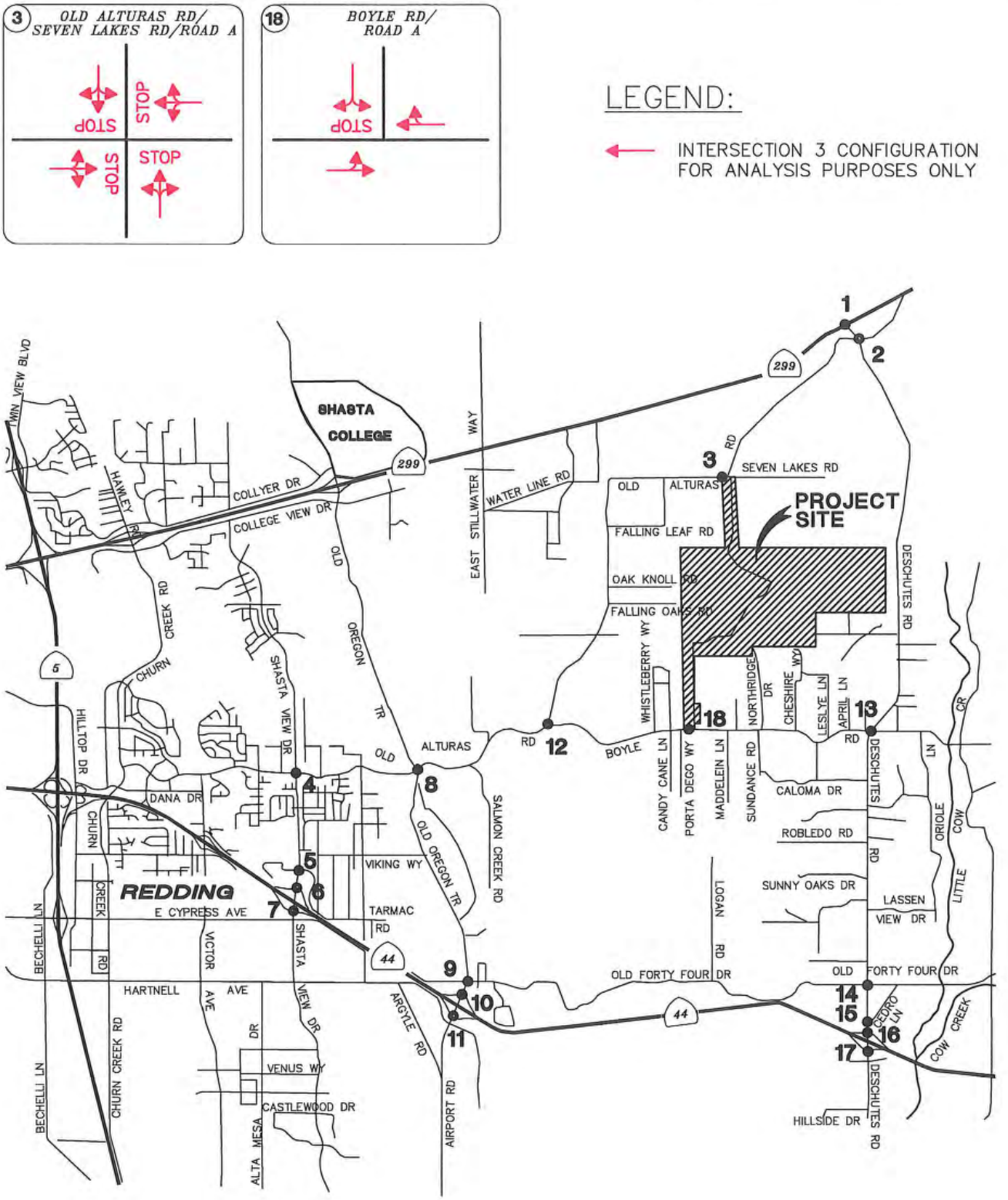




N.T.S.

Existing Plus Project Intersection Traffic Volumes

Figure 5.16-4



NOTE: All other intersections will have same lane geometrics and control as shown in Figure 5.6-1

N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • EIR

Existing Plus Project Intersection Lane Geometrics and Controls

Figure 5.16-5

Table 5.16-10
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Deschutes Road & SR-299	Signal	C	18.5	B	-	20.8	C	-
2	Deschutes Road & Old Alturas Road	TWSC	E	16.7	C	-	12.5	B	-
3	Old Alturas Road & Seven Lakes Road	TWSC	E	7.0	A	-	7.1	A	-
4	Old Alturas Road & Shasta View Drive	RDB	C	5.3	A	-	5.0	A	-
5	Shasta View Drive & Tarmac Road	Signal	C	15.9	B	-	15.1	B	-
6	Shasta View Drive & SR-44 WB Ramps	TWSC	C	22.6	C	-	24.1	C	-
7	Shasta View Drive and SR-44 EB Ramps	Signal	C	16.8	B	-	17.1	B	-
8	Old Alturas Road & Old Oregon Trail	AWSC	E	18.8	C	-	17.1	C	-
9	Old Oregon Trail & Old 44 Drive	Signal	C	20.9	C	-	21.7	C	-
10	**Airport Road & SR-44 WB Ramps**	**TWSC**	**C**	**29.7**	**D**	**No**	**88.1**	**F**	**Yes**
11	Airport Road & SR-44 EB Ramps	Signal	C	11.4	B	-	12.3	B	-
12	Old Alturas Road & Boyle Road	TWSC	E	10.5	B	-	10.1	B	-
13	Boyle Road & Deschutes Road	TWSC	E	31.3	D	-	15.4	C	-
14	Deschutes Road & Old 44 Drive	AWSC	E	37.1	E	-	22.6	C	-
15	Deschutes Road & Cedro Lane[1]	AWSC	E	70.4	F	Yes	22.1	C	-
16	Deschutes Road & SR-44 WB Ramps	TWSC	C	20.5	C	-	15.5	C	-
17	Deschutes Road & SR-44 EB Ramps	AWSC	C	15.4	C	-	14.4	B	-
18	Boyle Road & Tierra Robles Parkway	TWSC	C	9.5	A	-	8.5	A	-

Notes:
TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
LOS = Delay based on worst minor street approach for TWSC intersections.
Warrant = Based on California MUTCD Warrant 3.
1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

As shown in Table 5.16-10, above, all study intersections, except the following are projected to operate at or above the threshold LOS during the AM and PM peak hour:

- *Airport Road & SR-44 WB Ramps (Intersection #10)*
- *Deschutes Road & Cedro Lane (Intersection #15)*

Table 5.16-11, EXISTING PLUS PROJECT SIGNIFICANT IMPACTS, presents the intersections projected to operate at unacceptable levels of service under the *Existing Plus Project* conditions and those intersections that warrant mitigation.

Table 5.16-11
EXISTING PLUS PROJECT SIGNIFICANT IMPACTS

AM Peak Hour									
#	Intersection	Control Type	Target LOS	Existing LOS	Existing Plus Project LOS	Existing Delay (D1)	Existing Plus Project Delay (D2)	D2-D1	Significant Impact?
10	Airport Road & SR-44 WB Ramps	TWSC	C	D	D	28.7	29.7	1	No
15	Deschutes Road & Cedro Lane[1]	AWSC	E	F	F	65.6	70.4	4.8	No
PM Peak Hour									
#	Intersection	Control Type	Target LOS	Existing LOS	Existing Plus Project LOS	Existing Delay (D1)	Existing Plus Project Delay (D2)	D2-D1	Significant Impact?
10	Airport Road & SR-44 WB Ramps	TWSC	C	**F**	**F**	68.6	88.1	19.5	**Yes**

Notes:
TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
LOS = Delay based on worst minor street approach for TWSC intersections.
1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

- *Airport Road & SR-44 WB Ramps (Intersection #10).* This unsignalized intersection (within the City of Redding) is projected to operate at LOS D during the AM peak hour and LOS F during the PM peak hour with implementation of the proposed project. Although this intersection operates at an unacceptable LOS F in the *No Project* condition, the proposed project creates a significant impact by causing the delay to increase by more than 5 seconds per vehicle. This intersection meets the peak hour signal warrant under *Existing Plus Project* PM peak hour conditions. Construction of intersection improvements and a traffic signal or a modern roundabout (refer to **MM 5.16-1**) would reduce the impact at this intersection to a *less than significant* level (LOS B and A, respectively) for *Existing Plus Project* conditions (refer to Table 5.16-12, MITIGATED EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE, below). The improvement at this intersection was planned and funded, but not built in 2008.

- *Deschutes Road & Cedro Lane (Intersection #15).* This unsignalized intersection is projected to operate at LOS F during the AM peak hour with implementation of the proposed project. However, because the projected increase in delay attributable to the project is less than 5 seconds under *Existing Plus Project* AM peak hour conditions the project would not create a significant impact.

Table 5.16-12
MITIGATED EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
10	Airport Road & SR-44 WB Ramps	Signal	C	10.2	B	19.6	B
10	Airport Road & SR-44 WB Ramps	RDB	C	3.5	A	4.3	A

Notes:
TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
LOS = Delay based on worst minor street approach for TWSC intersections.
Warrant = Based on California MUTCD Warrant 3.
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

Overall implementation of **MM 5.16-1** would reduce *Existing Plus Project* intersection impacts to a *less than significant* level. It should be noted that implementation of **MM 5.16-1** would also serve to mitigate

Year 2035 Plus Project conditions at *Airport Road & SR-44 WB Ramps (Intersection #10)* (refer to Impact 5.16-5, below). No additional mitigation measures are required for the *Existing Plus Project* or *Year 2035 Plus Project* conditions for this intersection.

Pedestrian, Bicycle, and Transit Facilities

The proposed project includes a total of 6 miles of shared bike/pedestrian trails with minimal road crossings. This includes a paved 4-foot bike path and a 4-foot paved shoulder adjacent to the travel way. The proposed project would connect the Boyle Road neighborhood with the Old Alturas Road/Seven Lakes Road neighborhood, a distance of approximately 2 miles.

The Shasta County *2010 Bicycle Transportation Plan* identifies a Class II bike lanes along Deschutes Road and Old Alturas Road. The County's *Major Road Impact Fee Program* identifies the following improvements to be constructed when the individual improvements become a priority:

- *Boyle Road.* Add shoulders and some realignment from Old Alturas Road to Deschutes Road.
- *Old Alturas Road.* Realign and add shoulders from north of Boyle Road to State Route 299 East.
- *Deschutes Road.* Widen and add two-way left turn pockets and shoulders from Berkeley Drive to Boyle Road; install signal at Rhonda Road.

The following discussion evaluates the proposed project's impact on pedestrian, bicycle, and transit operations within the immediate vicinity of the site.

Pedestrian Facilities

County roadways including Old Alturas Road, Boyle Road and Deschutes Road in the immediate project vicinity do not have existing pedestrian facilities. The pedestrian activities are anticipated to be very light on the above-mentioned roadways due to the lack of commercial and employment centers in the immediate project vicinity and the distances to area schools are more than 2 miles. Shasta County collects fees through its *Major Road Impact Fee Program* at the time of development and are used to implement local roadway improvements as necessary throughout the County. Improvements noted above and implemented by the County for Boyle Road, Old Alturas Road, and Deschutes Road would include shoulder improvements that would serve to enhance existing and future pedestrian movement within the area. *Less than significant* impacts would occur.

Bicycle Facilities

County roadways including Old Alturas Road, Boyle Road and Deschutes Road in the immediate project vicinity do not have existing bicycle facilities. As previously mentioned above, the Shasta County *2010 Bicycle Transportation Plan* shows that Class II bike lanes are proposed on Deschutes Road and Old Alturas Road within unincorporated Shasta County.

The bicycle activities in the project area are anticipated to be light on the above-mentioned roadways due to the lack of commercial and employment centers in the immediate project vicinity and the distances to area schools are more than 2 miles. Shasta County collects fees through its *Major Road Impact Fee Program* at the time of development and are used to implement local roadway improvements as necessary throughout the County. Improvements noted above and implemented by the County for Boyle

Road, Old Alturas Road, and Deschutes Road would include shoulder improvements that would serve to enhance existing and future bicycle movement within the area. *Less than significant* impacts would occur.

Transit Facilities

Existing transit service is provided primarily by the Redding Area Bus Authority (RABA). RABA provides fixed route service, express route service and demand response service to the general public within the urbanized area of Shasta County. RABA operates 14 fixed routes within the cities of Redding, Shasta Lake, and Anderson, none of which operate in the immediate vicinity of the project site. The nearest RABA bus stop is located approximately 3 miles west of the project site at the intersection of Old Alturas Road and Shasta View Drive.

Development of the proposed project could increase the need for transit services to serve the South-Central Region. However, development of this project alone would not result in an increase in demand that would create a significant impact that would necessitate changing current transit operation. Considering the type of development, a semi-rural single-family residential development, the number of potential new transit riders would be relatively small.

Mitigation Measures:

MM 5.16-1: In accordance with the City of Redding *Traffic Impact Analysis Guidelines* (January 2009), the project applicant shall construct the following improvements in the corporate limits of the City of Redding prior to issuance of a building permit that would allow construction of the first residence:

- *Airport Road & SR-44 WB Ramps (Intersection #10).* Construct traffic signal or a single/multi-lane roundabout. Traffic signal construction at this location shall also be coordinated with existing traffic signals at *Old Oregon Trail & Old 44 Drive (Intersection #9)* and *Airport Road & SR-44 EB Ramps (Intersection #11)*.

Level of Significance After Mitigation: Impacts would be *less than significant* with mitigation incorporated.

IMPACT 5.16-2	***Project implementation could increase hazards due to a design feature (e.g., sharp curves or dangerous intersections).***

Significance: Potentially Significant Impact.

Impact Analysis: As indicated on the Figure 3-6, PROPOSED SITE LAYOUT, in Section 3.0, PROJECT DESCRIPTION, onsite access would be facilitated via a new road extension (Chatham Ranch Drive) from Old Alturas Road, south to the project site. Chatham Ranch Drive is proposed to connect to Old Alturas Road approximately 187 feet west from the existing intersection of Seven Lakes Road and Old Alturas Road.

The volume of traffic on Seven Lakes Road is projected to be approximately 30 AM peak hour trips and 70 PM peak hour trips under 2035 conditions. Given the low traffic forecasts on Seven Lakes Road and

approximately 17 AM and 23 PM peak hour project trips on Chatham Ranch Drive, it is expected that the Seven Lakes Road/Chatham Ranch Drive intersection would operate at acceptable LOS with the addition of project trips and be controlled through implementation of a four-way stop controlled intersection. In addition, the section of Seven Lakes Road from the intersection with Chatham Ranch Drive to the existing intersection of Old Alturas would be widened to a Local Rural Street section. As a result of these improvements implemented as part of the proposed project, potential impacts associated with construction of this new intersection would be *less than significant*.

Safety Performance

As previously discussed above in Section 5.16.1, ENVIRONMENTAL SETTING, an offsite pedestrian, bicycle, and motorized vehicle safety review was conducted on Old Alturas Road, Boyle Road, and Deschutes Road in the immediate project vicinity, based on historical collision data and a field review. Based on the five-year SWITRS data, 41 collisions have occurred along Old Alturas Road, 7 collisions have occurred along Boyle Road, and 101 collisions have occurred along Deschutes Road. The type of collisions included broadsides, head-on, and vehicles versus object. Tables 5.16-1, COLLISIONS BY YEAR, and 5.16-2, COLLISIONS BY TYPE, above, illustrate the number type of collisions for each roadway segment evaluated.

- *Old Alturas Road (Deschutes Road to Seven Lakes Road).* The section of Old Alturas Road between Deschutes Road to Seven Lakes Road is curvilinear and narrow with roadside obstructions. This section of rural roadway has a collision rate 33 percent higher than the statewide average for similar facilities.

  It is estimated that 17 percent of the project traffic will use this section of roadway which will increase the ADT by 27 percent in the *Existing Plus Project* conditions and by 23 percent in the *Year 2035 Plus Project* conditions. The increase in traffic, in combination with the overall very low traffic volumes and LOS A conditions, is not expected to significantly increase the rate of collisions. *Less than significant* impacts would occur in this regard. No mitigation measures are required.

- *Old Alturas Road (Boyle Road to Old Oregon Trail).* The section of Old Alturas Road between Boyle Road and Old Oregon Trail is a modern roadway with good alignment, lane widths, shoulders and roadside conditions. The collision rate is 9 percent higher than the statewide average for similar facilities.

  It is estimated that 61 percent to 62 percent of the project traffic will use this section of roadway which will increase the ADT by 24 percent in the *Existing Plus Project* conditions and by 22 percent in the *Year 2035 Plus Project* conditions. A collision rate 9 percent higher than the statewide average for similar facilities is not statistically significant and is considered to be within a normal and expected range. The increase in traffic, in combination with the LOS A conditions and the modern roadway, is not expected to significantly increase the rate of collisions. *Less than significant* impacts would occur in this regard. No mitigation measures are required.

- *Deschutes Road (Boyle Road to SR-44).* The section of Deschutes Road between Boyle Road and SR-44 maintains sufficient horizontal alignment, vertical alignment and sight distances. However, the shoulders are narrow, the roadside environment has numerous obstructions and there are numerous driveways and low-volume road connections. The collision rate is 38 percent higher than the statewide average for similar roadway facilities.

Approximately 85 percent of the collisions occurred during daylight conditions and 56% were rear-end collisions. The combination of unsafe speed and the congested roadside with numerous driveways and minor road connections results in a high number of rear-end collisions. Just south of Boyle Road, it is estimated that 15 percent of the project traffic will use this section of roadway which will increase the ADT by 5 percent in both the *Existing Plus Project* and *Year 2035 Plus Project* conditions. Immediately north of SR-44, it is estimated that 7 percent of the project traffic will use this section of roadway which will increase the ADT by 1 percent in both the *Existing Plus Project* and *Year 2035 Plus Project* conditions. The installation of intersection warning signs at various locations along Deschutes Road between Boyle Road and SR-44 would serve to notify drivers of upcoming driveways. Implementation of **MM 5.16-2** would reduce impacts for both *Existing*, *Existing Plus Project,* and *Year 2035 Plus Project* conditions to *less than significant* levels.

Mitigation Measures:

MM 5.16-2: Prior to issuance of a building permit that would allow construction of the first residence, the project applicant shall install the following intersection warning signs to the satisfaction of the Shasta County Public Works Department:

- Install Caltrans standard W2 intersection warning signs with W16-8P advance street name plaques at Lassen View Drive, Beryl Drive, Sunny Oaks Drive, Wesley Drive, Robledo Road, Oak Meadow Road, Oak Tree Lane, and Coloma Drive.

Level of Significance After Mitigation: Impacts would be *less than significant* with mitigation incorporated.

IMPACT 5.16-3	***Implementation of the proposed project may result in inadequate emergency access.***

Significance: Less Than Significant Impact.

Impact Analysis: The following provides an assessment of short-term construction and long-term traffic impacts related to emergency access.

Short-Term Construction

Some traffic delays can be expected during project construction; however, the traffic impacts during construction are temporary in nature and will cease upon completion of construction activities. A Traffic Management Plan (TMP) is required to be developed by the project applicant and approved by the Shasta County Public Works Department prior to the initiation of any construction activities to minimize disruption to existing traffic flow conditions. The TMP addresses details regarding road closures, provisions to maintain access to any adjacent properties, prior notices, adequate sign-posting, detours (including for bicyclists), and permitted hours of construction activity as determined appropriate by the County. Adequate local and emergency access to adjacent uses is required to be provided at all times. The TMP shall be reviewed and approved by the County Sheriff, Shasta Fire Department, and other

emergency service providers so that construction does not interfere with any emergency response or evacuation plans. Short-term impacts would be *less than significant* in this regard.

Long-Term Operation

Primary access to and from the proposed project would be from Boyle Road at the southern end of the project site, with a north-south oriented internal arterial roadway (Tierra Robles Parkway) that connects with Old Alturas Road (via Chatham Ranch Drive) at the north end of the project site. Tierra Robles Parkway would be constructed to run northerly from Boyle Road beginning approximately 1.25 miles east of the intersection of Boyle Road and Old Alturas Road. Tierra Robles Parkway turns into Chatham Ranch Drive approximately mid-way through the subdivision. This new road would be located within an 84-foot wide right-of-way which would traverse the proposed project site, and ultimately tie into Seven Lakes Road, adjacent to its intersection with Old Alturas Road. Approximately ½ mile of Chatham Ranch Drive, from its intersection at Old Alturas Road south to the subdivision, would be constructed offsite within a previously dedicated roadway easement. The internal street network consists of approximately 15 roadway segments and would be designed and constructed to meet applicable County street standards.

A series of internally looped roads with right-of-way ranging between 50 feet to 60 feet in width would be connected to Tierra Robles Parkway which would provide access to the internal lots of the proposed project. The southerly terminus of Tierra Robles Lane is located at the northerly terminus of Northgate Drive. The proposed connection with Northgate Road would be gated per County fire standards and used for reciprocal emergency access only. Potential long-term impacts related to emergency access would *be less than significant*.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

IMPACT 5.16-4	***Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?***

Significance: Significant and Unavoidable Impact.

In accordance with SB 743, CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines change the way transportation impacts will be analyzed in environmental documents. With SB 743, the criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas and shift the focus from vehicle congestion and delay to a reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Vehicle miles traveled (VMT) is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person. As stated in the Governor's Office of Planning and Research (OPR) document titled *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018):

> SB 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. As one appellate court recently explained: "During the last 10 years, the Legislature has charted a course of long-term sustainability based on denser infill development, reduced reliance on individual vehicles and improved mass transit, all with the goal of reducing greenhouse gas emissions. Section 21099 is part of that strategy…" (Covina Residents for Responsible Development v. City of Covina (2018) 21 Cal.App.5th 712, 729.) Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Id., subd. (b)(1); see generally, adopted CEQA Guidelines, § 15064.3, subd. (b) [Criteria for Analyzing Transportation Impacts].) To that end, in developing the criteria, OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)

Section 15064.3 of the CEQA Guidelines was adopted by OPR on December 28, 2018, and states that VMT is the appropriate measure of transportation impacts. Sections 15064.3(c) and 15007 also state that the provisions of this section shall apply prospectively, i.e., new requirements in CEQA Guidelines amendments will apply to steps in the CEQA process not yet undertaken by the date when agencies must comply with the amendments. Section 15064.3(c) further states that VMT analyses must be implemented statewide by July 1, 2020. The Notice of Preparation for the project was issued in February 2016, prior to the adoption of Section 15064.3, and the Draft EIR was released before July 1, 2020.

Nevertheless, for informational purposes and in the interest of full disclosure, and consistent with recent changes in CEQA, the project's potential impact on vehicle miles traveled (VMT) was analyzed. The following analysis is based off VMT based modeling performed by GHD Traffic Engineers. This modeling data is included in Appendix 15.9, TRAFFIC IMPACT STUDY.

The VMT analysis determined that the proposed project would have an average per capita VMT of 17.83 miles. As compared to the average per capita VMT in unincorporated Shasta County (25.34 miles), where the project site is located, the project's average per capita VMT would be 29.6% below the average per capita VMT for the unincorporated area. As compared to the regional (or Countywide) average per capita VMT (18.33 miles), which includes urban areas of Shasta County, the project's average per capita VMT would be 2.7% below the Countywide average pe capita VMT.

The County of Shasta has not yet adopted a County-specific VMT threshold of significance. Therefore, for the analysis of this project the County is relying upon the threshold recommended by OPR in *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which suggests that a project whose average per capita VMT is not less than 15% below the regional (or Countywide) average per capita VMT should be considered as resulting in a significant transportation impact. Despite the project's overall reduction in average per capita VMT, under the OPR standard, the project would have a potentially significant impact when compared to the Countywide average per capita VMT (as opposed to if it were compared to average

per capita VMT for the unincorporated area). As such, mitigation would be required to further reduce the project's average per capita VMT.

The following discussion addresses potential VMT mitigation measures referenced by OPR in *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Although some of the mitigation measures may be feasible and are acceptable to the Applicant (as noted below), the mitigation measures below would not "substantially lessen" the project's VMT as the majority of the project's VMT is a result of its location. While the project site is close to the County's largest urban center (resulting in a lower average per capita VMT for the project than the unincorporated area of the County), it is not close enough to be served by the existing public transportation network.

It should be noted that the project is not required to adopt every mitigation measure that is proposed or suggested. As outlined in recent CEQA case law, *Covington v. Great Basin Unified Air Pollution Control District*[1], An EIR "must respond to specific suggestions for mitigating a significant environmental impact unless the suggested mitigation is facially infeasible. (*San Francisco Ecology Center v. City and County of San Francisco* (1975) 48 Cal.App.3d 584, 596, 122 Cal.Rptr. 100) While the response need not be exhaustive, it should evince good faith and a reasoned analysis." (Los Angeles Unified School Dist. v. City of Los Angeles (1997) 58 Cal.App.4th 1019, 1029 [68 Cal. Rptr. 2d 367].) Finally, an agency need not "adopt every nickel and dime mitigation scheme brought to its attention or proposed in the project EIR," but it must incorporate "feasible mitigation measures" "when such measures would 'substantially lessen' a significant environmental effect." (San Franciscans for Reasonable Growth v. City and County of San Francisco (1989) 209 Cal.App.3d 1502, 1519 [258 Cal. Rptr. 267].)

1. **Concept: Improve or increase access to transit.**

   Analysis: There is currently no public transportation that serves the project area. The Applicant is willing to require that the Tierra Robles Homeowners Association (TRHOA) provide incentives for the use of public transportation, such as subsidized transit passes, when public transportation becomes available on Boyle Road. According to the California Air Pollution Control Officers Association (CAPCOA) paper titled *Quantifying Greenhouse Gas Mitigation Measures* (August 2010), this can result in VMT reductions of approximately 20%. However, because it is unknown when public transportation will become available on Boyle Road, this mitigation is not capable of being accomplished in a successful manner within a reasonable period of time.

   Conclusion: Although the Applicant is willing to implement this measure, it would not substantially lessen the project's average per capita VMT.

2. **Concept: Increase access to common goods and services, such as groceries, schools, and daycare.**

   Analysis: As compared to many other developments in unincorporated Shasta County, the project would construct residences closer to the County's largest urban center and, therefore, would provide increased access to goods and services, such as groceries, schools, and daycare. The VMT reductions associated with increasing access to goods and services is

[1] *Covington v. Great Basin Unified Air Pollution Control Dist.* (2019) 43 Cal.App.5th 867, 878-879 [256 Cal.Rptr.3d 902].

reflected in the project's projected average per capita VMT, which is less than the average per capita VMT for the unincorporated area of the County and Countywide.

Conclusion: This mitigation is already incorporated into the project's average per capita VMT calculations and would not further reduce the project's average per capita VMT. Therefore, this mitigation is not considered feasible.

3. **Concept: Incorporate affordable housing into the project.**

   Analysis: Although affordable housing may potentially be shown to reduce VMT in urbanized areas, there is no reliable evidence that housing price impacts the amount of VMT for developments situated beyond public transportation networks.

   Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

4. **Concept: Incorporate neighborhood electric vehicle network.**

   Analysis: The project will include the installation of the infrastructure to support a 240-volt vehicle charging circuit in the garage of project homes. This would be required by the TRHOA during the approval of plans.

   Conclusion: There is no known established metric demonstrating the extent to which this mitigation would reduce VMT. For this reason, this mitigation is not considered feasible.

5. **Concept: Orient the project toward transit, bicycle and pedestrian facilities.**

   Analysis: There are no transit, bicycle, or pedestrian facilities near the project site. The project is designed so that residents will be able to use planned bicycle paths to Boyle Road. However, it is unknown when public transportation and bicycle paths will become available on Boyle Road.

   Conclusion: This mitigation is not capable of being accomplished in a successful manner within a reasonable period of time, and therefore is not considered feasible to substantially lessen VMT.

6. **Concept: Provide traffic calming.**

   Analysis: The project is designed so that vehicles will travel at a calm speed within the development. According to CAPCOA, this can result in VMT reductions of approximately 1%.

   Conclusion: This mitigation is incorporated into the project design and would not further reduce the project's average per capita VMT. Therefore, this mitigation is not considered feasible.

7. **Concept: Provide bicycle parking.**

   Analysis: Each residence will include a garage with space for bicycle parking. Although the

project is designed so that residents will be able to use planned bicycle paths to Boyle Road, there are not yet any bicycle facilities near the project site. It is unknown when public bicycle paths will become available on Boyle Road.

Conclusion: This mitigation is not capable of being accomplished in a successful manner within a reasonable period of time, and therefore is not considered feasible to substantially lessen VMT.

8. **Concept: Limit or eliminate parking supply.**

Analysis: The project will have parking adequate to meet all codes but will not provide excess parking beyond that which is necessary for residents.

Conclusion: This mitigation is incorporated into the project design and would not further reduce the project's average per capita VMT. Therefore, this mitigation is not considered feasible.

9. **Concept: Unbundle parking costs.**

Analysis: This concept is more appropriate for commercial or multi-family projects. As a single-family home project, the project will have parking adequate to meet all codes but will not provide excess parking beyond that which is necessary for residents.

Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

10. **Concept: Provide parking cash-out programs.**

Analysis: This concept is more appropriate for commercial or multi-family projects. As a single-family home project, the project will have parking adequate to meet all codes but will not provide excess parking beyond that which is necessary for residents.

Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

11. **Concept: Implement roadway pricing.**

Analysis: This concept is more appropriate for implementation by cities or counties with authority to charge for use of roadways. The project's roadways will serve only residents of the project and will not act as thoroughfares for other vehicles.

Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

12. **Concept: Implement or provide access to a commute reduction program.**

Analysis: The project will include infrastructure for phone lines and internet, such that residents will be able to work remotely with ease, such that the need to commute will be

reduced. According to CAPCOA, this can result in VMT reductions of approximately 5.5%.

Conclusion: Beyond providing telecommunications infrastructure to each lot, there is no authority to force project residents to telework; thus, the measure's efficacy is not quantifiable. Therefore, this mitigation is not considered feasible.

13. **Concept: Provide car-sharing, bike sharing, and ride-sharing program.**

    Analysis: The TRHOA will encourage ride-sharing in their newsletter and help facilitate opportunities for ride-sharing. According to CAPCOA, a ride share program can result in VMT reductions of approximately 15%.

    Conclusion: Beyond encouraging and facilitating ride-sharing, there is no authority to force project residents to share rides; thus, the measure's efficacy is not quantifiable. Therefore, this mitigation is not considered feasible.

14. **Concept: Provide transit passes.**

    Analysis: There is currently no public transportation that serves the project area. The Applicant is willing to require that the TRHOA provide incentives for the use of public transportation, such as subsidized transit passes, when public transportation becomes available on Boyle Road. It is unknown when public transportation will become available on Boyle Road.

    Conclusion: This mitigation is not capable of being accomplished in a successful manner within a reasonable period of time and, therefore, is not considered feasible to substantially lessen VMT.

15. **Concept: Shifting single occupancy vehicle trips to carpooling or vanpooling, for example, providing ride-matching services.**

    Analysis: The TRHOA will encourage ride-sharing in their newsletter and help facilitate opportunities for ride-sharing. According to CAPCOA, a ride share program can result in VMT reductions of approximately 15%.

    Conclusion: Beyond encouraging and facilitating carpooling or ride-sharing, there is no authority to force project residents to share rides; thus, the measure's efficacy is not quantifiable. Therefore, this mitigation is not considered feasible.

16. **Concept: Provide telework options.**

    Analysis: The project will include infrastructure for phone lines and internet, such that residents will be able to work remotely with ease, such that the need to commute will be reduced. According to CAPCOA, this can result in VMT reductions of approximately 5.5%. However, there is no authority to force project residents to telework from their homes.

    Conclusion: Beyond providing telecommunications infrastructure to each lot, there is no authority to force project residents to telework; thus, the measure's efficacy is not quantifiable. Therefore, this mitigation is not considered feasible.

17. **Concept: Provide incentives or subsidies that increase the use of modes other than single-occupancy vehicle.**

    Analysis: The TRHOA will encourage ride-sharing in their newsletter and help facilitate opportunities for ride-sharing. According to CAPCOA, a ride share program can result in VMT reductions of approximately 15%.

    Conclusion: Beyond encouraging and facilitating carpooling or ride-sharing, there is no authority to force project residents to share rides; thus, the measure's efficacy is not quantifiable. Therefore, this mitigation is not considered feasible.

18. **Concept: Provide on-site amenities at places of work, such as priority parking for carpools and vanpools, secure bike parking, and showers and locker rooms.**

    Analysis: This concept is more appropriate for commercial projects. As a single-family home project, the project will have parking adequate to meet all codes but will not provide excess parking beyond that which is necessary for residents. Each residence will include a garage with space for bicycle parking.

    Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

19. **Concept: Provide employee transportation coordinators at employment sites.**

    Analysis: This concept is more appropriate for commercial projects. As a single-family home project, it is not known where residents will work, so providing an employee transportation coordinator at random employment sites is not capable of being accomplished in a successful manner within a reasonable period of time.

    Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

20. **Concept: Provide a guaranteed ride home service to users of non-auto modes.**

    Analysis: This concept is more appropriate for commercial projects. As a single-family home project, it is impossible to know where residents will work. Without knowing where residents will work, it is not realistic or feasible to guarantee a ride home.

    Conclusion: This mitigation would not reduce the project's average per capita VMT and is not considered feasible.

Based on the analysis of the OPR recommended mitigation measures above, there are no feasible mitigation measures that would reduce the project's average per capita VMT. Despite the project design features and measures discussed above, the Project's location and uncertainty as to the timing of public transportation and bicycle networks servicing the project are such that there are no feasible mitigation measures that will reduce the project's average per capita VMT by 15% below the regional average per capita VMT. Therefore, potential impacts are significant and unavoidable.

5.16.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.16-5	***Project implementation may result in cumulative impacts as a result of conflicts with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.***

Significance: Significant and Unavoidable Impact.

Cumulative Setting: The cumulative setting for traffic and circulation consists of traffic generated by all existing and future (cumulative) development in the project area. For the purposes of this analysis, the planning horizon for future traffic condition considers cumulative conditions in the Year 2035. *Year 2035* conditions were developed using the current SCRTDF Model. *Year 2035 Plus Project* conditions were subsequently developed by superimposing the proposed project-generated traffic on top of the *Year 2035* base traffic volumes.

Impact Analysis: *Year 2035* conditions refer to future long-term condition where buildout of all remaining vacant *General Plan* land uses are developed, even though this is highly unlikely given the projected rate of growth, along with supporting circulation system improvements. *Year 2035 No Project* conditions refers to a cumulative *No Project* condition scenario in which all remaining vacant *General Plan* land uses are developed, also highly unlikely, except for the proposed project.

Year 2035 No Project

The Year 2035 No Project condition is the analysis scenario in which future operations at study locations, assuming no project development, are analyzed. Year 2035 No Project condition intersection traffic volumes are illustrated in Figure 5.16-6, YEAR 2035 NO PROJECT INTERSECTION TRAFFIC VOLUMES.

Year 2035 No Project Roadway Operations

Table 5.16-13, YEAR 2035 NO PROJECT ROADWAY LEVEL OF SERVICE, contains a summary of the *Year 2035 No Project* roadway segment ADT volumes compared to the ADT-based LOS thresholds that corresponds to the roadway type assumed for the *Existing* conditions. As shown in Table 5.16-13, the study roadway segments are projected to operate at acceptable LOS under *Year 2035 No Project* conditions.

N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • EIR

Year 2035 No Project Intersection Traffic Volumes

Figure 5.16-6

Table 5.16-13
YEAR 2035 NO PROJECT ROADWAY LEVEL OF SERVICE

#	Roadway Segment	Capacity Configuration	Target LOS	Average Daily Traffic (ADT)	Year 2035 No Project ADT	LOS
1	Old Alturas Road (west of Deschutes Road)	Two Lane Collector	E	1,046	1,250	A
2	Old Alturas Road (north of Boyle Road)	Two Lane Collector	E	1,750	1,950	A
3	Old Alturas Road (east of Shasta View Drive)	Two Lane Collector	C	5,982	8,390	C
4	Old Alturas Road (between Old Oregon Trail & Boyle Road)	Two Lane Arterial	E	4,197	4,600	A
5	Boyle Road (west of Deschutes Road)	Two Lane Collector	E	1,456	1,510	A
6	Shasta View Drive (north of Tarmac Road)	Three Lane Arterial	C	11,952	12,060	B
7	Old Oregon Trail (north of Old 44 Drive)	Two Lane Collector	E	8,031	10,840	E
8	Deschutes Road (north of Old 44 Drive)	Two Lane Collector	E	8,495	9,800	C

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Traffic Impact Study*. May 2015.

Year 2035 No Project Intersection Operations

Table 5.16-14, YEAR 2035 NO PROJECT INTERSECTION LEVEL OF SERVICE, contains a summary of the *Year 2035 No Project* study intersection LOS conditions.

Table 5.16-14
YEAR 2035 NO PROJECT INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Deschutes Road & SR-299	Signal	C	19.2	B	-	16.8	B	-
2	Deschutes Road & Old Alturas Road	TWSC	E	19.5	C	-	16.1	C	-
3	Old Alturas Road & Seven Lakes Road	TWSC	E	8.5	A	-	8.5	A	-
4	Old Alturas Road & Shasta View Drive	RDB	C	8.3	A	-	26.4	C	-
5	Shasta View Drive & Tarmac Road	Signal	C	20.8	C	-	8.7	A	-
6	**Shasta View Drive & SR-44 WB Ramps**	**TWSC**	**C**	24.6	C	-	**28.5**	**D**	**Yes**
7	Shasta View Drive and SR-44 EB Ramps	Signal	C	16.5	B	-	15.9	B	-
8	**Old Alturas Road & Old Oregon Trail**	**AWSC**	**E**	**180.2**	**F**	**Yes**	**137.2**	**F**	**Yes**
9	Old Oregon Trail & Old 44 Drive	Signal	C	26.5	C	-	26.9	C	-
10	**Airport Road & SR-44 WB Ramps**	**TWSC**	**C**	**104.0**	**F**	**Yes**	**OVR**	**F**	**Yes**
11	Airport Road & SR-44 EB Ramps	Signal	C	16.0	B	-	18.0	B	-
12	Old Alturas Road & Boyle Road	TWSC	E	11.7	B	-	10.6	B	-
13	**Boyle Road & Deschutes Road**	**TWSC**	**E**	**64.2**	**F**	**No**	17.7	C	-
14	**Deschutes Road & Old 44 Drive**	**AWSC**	**E**	**56.2**	**F**	**Yes**	39.5	E	-
15	**Deschutes Road & Cedro Lane[1]**	**AWSC**	**E**	**165.2**	**F**	**Yes**	**55.7**	**F**	**Yes**
16	**Deschutes Road & SR-44 WB Ramps**	**TWSC**	**C**	**53.2**	**F**	**No**	**26.5**	**D**	**No**
17	Deschutes Road & SR-44 EB Ramps	AWSC	C	22.6	C	-	18.9	C	-

Notes:
TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
LOS = Delay based on worst minor street approach for TWSC intersections.
Warrant = Based on California MUTCD Warrant 3.
1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

As shown in Table 5.16-14, the following study intersections are projected to operate at an unacceptable LOS during the AM and/or PM peak hour:

- *Shasta View Drive & SR-44 WB Ramps (Intersection #6)*
- *Old Alturas Road & Old Oregon Trail (Intersection #8)*
- *Airport Road & SR-44 WB Ramps (Intersection #10)*

- *Boyle Road & Deschutes Road (Intersection #13)*
- *Deschutes Road & Old 44 Drive (Intersection #14)*
- *Deschutes Road & Cedro Lane (Intersection #15)*
- *Deschutes Road & SR-44 WB Ramps (Intersection #16)*

Year 2035 Plus Project

The *Year 2035 Plus Project* conditions is the analysis scenario in which traffic impacts associated with the project are comparison to the *Year 2035 No Project* condition scenario. *Year 2035 Plus Project* condition intersection traffic volumes are illustrated in Figure 5.16-7, YEAR 2035 PLUS PROJECT INTERSECTION TRAFFIC VOLUMES.

Year 2035 Plus Project Roadway Operations

Table 5.16-15, YEAR 2035 PLUS PROJECT ROADWAY LEVEL OF SERVICE, contains a summary of the *Year 2035 Plus Project* roadway segment ADT volumes compared to the ADT-based LOS thresholds that corresponds to the roadway type assumed for the *Existing* conditions. As shown in Table 5.16-15, the study roadway segments are projected to operate at acceptable LOS under *Year 2035 Plus Project* conditions.

Table 5.16-15
YEAR 2035 PLUS PROJECT ROADWAY LEVEL OF SERVICE

#	Roadway Segment	Capacity Configuration	Target LOS	Year 2035 Plus Project ADT	LOS
1	Old Alturas Road (west of Deschutes Road)	Two Lane Collector	E	1,552	A
2	Old Alturas Road (north of Boyle Road)	Two Lane Collector	E	2,003	A
3	Old Alturas Road (east of Shasta View Drive)	Two Lane Collector	C	8,940	C
4	Old Alturas Road (between Old Oregon Trail & Boyle Road)	Two Lane Arterial	E	5,700	A
5	Boyle Road (west of Deschutes Road)	Two Lane Collector	E	1,847	A
6	Shasta View Drive (north of Tarmac Road)	Three Lane Arterial	C	12,131	B
7	Old Oregon Trail (north of Old 44 Drive)	Two Lane Collector	E	11,195	E
8	Deschutes Road (north of Old 44 Drive)	Two Lane Collector	E	10,066	D

Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

Year 2035 Plus Project Intersection Operations

Table 5.16-16, YEAR 2035 PLUS PROJECT INTERSECTION LEVEL OF SERVICE, contains a summary of the *Year 2035 Plus Project* study intersection LOS conditions. As shown in Table 5.16-16, all study intersections, except intersections listed below, are projected to operate at or above threshold LOS:

- *Shasta View Drive & SR-44 WB Ramps (Intersection #6)*
- *Old Alturas Road & Old Oregon Trail (Intersection #8)*
- *Airport Road & SR-44 WB Ramps (Intersection #10)*
- *Boyle Road & Deschutes Road (Intersection #13)*
- *Deschutes Road & Old 44 Drive (Intersection #14)*
- *Deschutes Road & Cedro Lane (Intersection #15)*
- *Deschutes Road & SR-44 WB Ramps (Intersection #16)*

Year 2035 Plus Project Intersection Traffic Volumes

N.T.S.

Figure 5.16-7

Table 5.16-16
YEAR 2035 PLUS PROJECT INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	Deschutes Road & SR-299	Signal	C	19.4	B	-	16.9	B	-
2	Deschutes Road & Old Alturas Road	TWSC	E	22.2	C	-	17.0	C	-
3	Old Alturas Road & Seven Lakes Road	TWSC	E	7.3	A	-	7.8	A	-
4	Old Alturas Road & Shasta View Drive	RDB	C	8.8	A	-	9.4	A	-
5	Shasta View Drive & Tarmac Road	Signal	C	20.8	C	-	17.7	B	-
6	**Shasta View Drive & SR-44 WB Ramps**	TWSC	C	24.7	C	-	**28.8**	**D**	**Yes**
7	Shasta View Drive and SR-44 EB Ramps	Signal	C	16.6	B	-	15.9	B	-
8	**Old Alturas Road & Old Oregon Trail**	**AWSC**	**E**	**218.8**	**F**	**Yes**	**171.8**	**F**	**Yes**
9	Old Oregon Trail & Old 44 Drive	Signal	C	26.9	C	-	28.1	C	-
10	**Airport Road & SR-44 WB Ramps**	**TWSC**	**C**	**111.6**	**F**	**Yes**	**OVR**	**F**	**Yes**
11	Airport Road & SR-44 EB Ramps	Signal	C	16.1	B	-	18.6	B	-
12	Old Alturas Road & Boyle Road	TWSC	E	12.7	B	-	11.1	B	-
13	**Boyle Road & Deschutes Road**	**TWSC**	**E**	**76.3**	**F**	**No**	18.4	C	-
14	**Deschutes Road & Old 44 Drive**	**AWSC**	**E**	**58.5**	**F**	**Yes**	40.8	E	-
15	**Deschutes Road & Cedro Lane[1]**	**AWSC**	**E**	**171.3**	**F**	**Yes**	**61.8**	**F**	**Yes**
16	**Deschutes Road & SR-44 WB Ramps**	**TWSC**	**C**	**53.8**	**F**	**No**	**27.0**	D	**No**
17	Deschutes Road & SR-44 EB Ramps	AWSC	C	23.0	C	-	19.3	C	-
18	Boyle Road & Tierra Robles Parkway	TWSC	E	10.3	B	-	10.1	B	-

1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

No intersections that are projected to operate at an unacceptable LOS in *Year 2035 Plus Project* conditions operated at acceptable LOS in *Year 2035 No Project* conditions. Table 5.16-17, YEAR 2035 PLUS PROJECT SIGNIFICANT IMPACTS, presents the intersections projected to operate at unacceptable levels of service under the *Year 2035 Project* conditions and those intersections that warrant mitigation.

Table 5.16-17
YEAR 2035 PLUS PROJECT SIGNIFICANT IMPACTS

AM Peak Hour

#	Intersection	Control Type	Target LOS	2035 LOS	2035 Plus Project LOS	2035 Delay (D1)	2035 Plus Project Delay (D2)	D2-D1	Significant Impact?
6	Shasta View Drive & SR-44 WB Ramps	TWSC	C	**C**	**C**	24.6	24.7	0.1	No
8	Old Alturas Road & Old Oregon Trail	AWSC	E	F	F	180.2	218.8	38.6	**Yes**
10	Airport Road & SR-44 WB Ramps	TWSC	C	F	F	104	111.2	7.6	**Yes**
13	Boyle Road & Deschutes Road	TWSC	E	F	F	64.2	76.3	12.1	**Yes**
14	Deschutes Road & Old 44 Drive	AWSC	E	F	F	56.2	58.5	2.3	No
15	Deschutes Road & Cedro Lane[1]	AWSC	E	F	F	165.2	171.3	6.1	Yes
16	Deschutes Road & SR-44 WB Ramps	TWSC	C	F	F	53.2	53.8	0.6	No

PM Peak Hour

#	Intersection	Control Type	Target LOS	2035 LOS	2035 Plus Project LOS	2035 Delay (D1)	2035 Plus Project Delay (D2)	D2-D1	Significant Impact?
6	Shasta View Drive & SR-44 WB Ramps	TWSC	C	D	D	28.5	28.8	0.3	No
8	Old Alturas Road & Old Oregon Trail	AWSC	E	F	F	137.2	171.8	34.6	**Yes**
10	Airport Road & SR-44 WB Ramps	TWSC	C	F	F	OVR	OVR	>5 sec	**Yes**
13	Boyle Road & Deschutes Road	TWSC	E	C	C	17.7	18.4	0.7	No
14	Deschutes Road & Old 44 Drive	AWSC	E	E	E	39.5	40.8	1.3	No
15	Deschutes Road & Cedro Lane[1]	AWSC	E	F	F	55.7	61.8	6.1	Yes
16	Deschutes Road & SR-44 WB Ramps	TWSC	C	D	D	26.5	27	0.5	No

1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

The following improvements would provide acceptable operations at intersections where a potentially significant project impact has been identified. Refer to Table 5.16-18, MITIGATED YEAR 2035 PLUS PROJECT INTERSECTION LEVEL OF SERVICE.

- *Old Alturas Road & Old Oregon Trail (Intersection #8).* The Old Alturas Road and Old Oregon Trail intersection is projected to operate at an unacceptable LOS F in the weekday AM and PM peak hours. Although this intersection operates at an unacceptable LOS F in the *No Project* condition, the proposed project creates a *potentially significant* impact by causing the delay to increase by more than 5 seconds per vehicle. The improvements to this intersection described in **MM 5.16-3** would mitigate AM and PM peak hour intersection operations to a *less than significant* level (LOS B).

- *Airport Road & SR-44 WB Ramps (Intersection #10).* The Airport Road and SR-44 WB Ramps intersection is projected to operate at an unacceptable LOS F during both the AM and PM peak hours. The proposed project creates a potentially significant impact during both the AM and PM peak hours by causing the LOS to decrease from acceptable to unacceptable. As previously discussed, implementation of **MM 5.16-1** requiring construction of a traffic signal or a roundabout would mitigate the AM and PM peak hour impact at this intersection to a *less than significant* level (LOS C or better) for both *Existing Plus Project* and *Year 2035 Plus Project* conditions. Therefore, no additional mitigation measures beyond implementing **MM 5.16-1** would be required to reduce the impact at this intersection to a *less than significant* level.

- *Boyle Road & Deschutes Road (Intersection #13).* The Boyle Road and Deschutes Road intersection is projected to operate at an unacceptable LOS F during the AM peak hour. Although this intersection operates at an unacceptable LOS F in the *No Project* condition, the proposed project creates a *potentially significant* impact by causing the delay to increase by more than 5 seconds per vehicle. The improvements to this intersection described in **MM 5.16-4** would mitigate AM peak hour intersection operations to a *less than significant* level (LOS C).

- *Deschutes Road & Cedro Lane (Intersection #15).* The Deschutes Road and Cedro Lane intersection is projected to operate at an unacceptable LOS F during both AM and PM peak hours. Although this intersection operates at an unacceptable LOS F in the *No Project* condition, the proposed project creates a significant impact by causing the average delay to increase by more than 5 seconds per vehicle during both AM and PM peak hours. The improvements to this intersection described in **MM 5.16-5** would mitigate AM and PM peak hour intersection operations to a *less than significant* level (LOS B).

Table 5.16-18
MITIGATED YEAR 2035 PLUS PROJECT INTERSECTION LEVEL OF SERVICE

#	Intersection	Control Type	Target LOS	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
8	Old Alturas Road & Old Oregon Trail	RDB	E	12.6	B	10.2	B
10	Airport Road & SR-44 WB Ramps	Signal	C	11.1	B	16.6	B
10	Airport Road & SR-44 WB Ramps	RDB	C	4.3	A	5.7	A
13	Boyle Road & Deschutes Road	AWSC	E	18.6	C	10.6	B
15	Deschutes Road & Cedro Lane[1]	Signal	E	12.2	B	13.4	B

Notes:
TWSC = Two Way Stop Control AWSC = All Way Stop Control OVR = >300 Seconds Delay RDB = Roundabout
LOS = Delay based on worst minor street approach for TWSC intersections.
Warrant = Based on California MUTCD Warrant 3.
1. Updated per Updated Technical Memorandum, dated February 25, 2019, prepared by GHD, included in Appendix RDEIR B-4, Traffic Impact Study
Source: Omni-Means Engineering Solutions (GHD). *Tierra Robles Supplemental Traffic Impact Analysis Technical Memorandum*. August 2017.

Mitigation Measures:

MM 5.16-3: *Old Alturas Road & Old Oregon Trail (Intersection #8).* Prior to recordation of a final map for each phase identified on the tentative subdivision map, the project applicant shall pay the proportionate share of the project's pro-rated share of the cost of constructing a single/multi-lane roundabout (13 percent of $2,562,000, or $333,060, based on an engineer's cost estimate of the improvements prepared by the Shasta County Public Works Department). The proportionate share is $2,006 per residential lot. Payments for phases two through six shall be adjusted annually on May 1 based on the change in the Building Cost Index provided by the *Engineering News-Record* for the prior calendar year.

MM 5.16-4: *Boyle Road & Deschutes Road (Intersection #13).* Prior to recordation of a final map or issuance of a building permit (whichever occurs first), the project applicant shall pay the pro-rated cost share in the amount of $605 representing 11 percent of the cost of upgrading the existing two-way-stop-controlled intersection to all-way-stop-controlled intersection. The fee amount is based on an engineer's cost estimate of the improvements prepared by the Shasta County Public Works Department.

MM 5.16.-5: *Deschutes Road & Cedro Lane (Intersection #15).* Prior to recordation of a final map or issuance of a building permit (whichever occurs first), the project applicant shall pay the pro-rated cost share in the amount of $38,350 representing 5 percent of the cost of constructing a traffic signal. The fee amount is based on an engineer's cost estimate of the improvements prepared by the Shasta County Public Works Department.

Level of Significance After Mitigation: The improvements identified for the intersections of *Old Alturas Road & Old Oregon Trail (Intersection #8), Boyle Road & Deschutes Road (Intersection #13), and Deschutes Road & Cedro Lane (Intersection #15)* are not currently part of any current Shasta County improvement plan or fee program. As a result, full implementation as described in **MM 5.16-3, MM 5.16-4, and MM 5.16-5** cannot be assured by the project applicant. This is considered to be a cumulatively considerable and *significant and unavoidable* impact.

The County evaluated the feasibility of requiring the applicant to improve the Deschutes Road & Cedro Lane intersection. However, this intersection already fails to meet County LOS standards. Mitigation

measures must meet the nexus and reasonable relationship requirements of Nollan and Dolan decisions of the United States Supreme Court. *CEQA Guidelines Section 15041(a)*. Applicants cannot be required to remedy existing deficiencies resulting from past planning decisions. *Rohn v. City of Visalia (1989) 214 Cal.App. 3d 1463.* Accordingly, it is not legally feasible for the County to compel the applicant to improve this intersection. However, the County can, pursuant to its land use powers, require the applicant to pay a fair share of the intersection improvement based upon future traffic conditions and the projected percentage of vehicle trips generated by the project during the AM or PM peak hour, whichever is greater.

The Shasta County Department of Public Works operates a Countywide traffic impact fee program based on residential units or non-residential building square footage. The proposed project may contribute to this program as described in **MM 5.16-3, MM 5.16-4**, and **MM 5.16-5**, should Shasta County update the fee program to include the *Old Alturas Road & Old Oregon Trail (Intersection #8)*, *Boyle Road & Deschutes Road (Intersection #13), and Deschutes Road & Cedro Lane (Intersection #15)* intersections. The payment of applicable fair-share costs towards a programmed improvement would result in a cumulatively *less than significant* impact at each intersection. Alternatively, if the applicant and the County enter into a Development Agreement(s) which assures the completion of the improvements described in **MM 5.16-3**, **MM 5.16-4**, and/or **MM 5.16-5**, then the project would result in a cumulatively *less than significant impact* at each intersection that is assured to be improved in accordance with the Development Agreement(s). However, as the County cannot compel an applicant to enter into a Development Agreement, this mitigation measure is considered to be infeasible.

This Page Intentionally Left Blank

5.17 UTILITIES AND SERVICE SYSTEMS

NOTE TO READER: This section of the Partial Recirculated Draft Environmental Impact Report (RDEIR) includes an updated analysis of potential water supply impacts. This section was revised to provide an updated analysis regarding an alternative water supply during water shortages associated with a multiple dry year event. This section of the RDEIR includes only the discussion related to water supply impacts. Portions of this section, such as wastewater treatment and solid waste, not included in this RDEIR remain unchanged from the 2017 Draft EIR.

This section of the RDEIR addresses the proposed project's potential impacts on water service. The analysis in this section is partially based on information provided in the *Water Demand Evaluation* prepared for this project prepared by Tully & Young (April 2017) which is provided in Appendix RDEIR C-1, WATER DEMAND EVALUATION, as well as updated information regarding the feasibility of alternative water supply options included in the analysis below. Refer to Section 5.18, ENERGY CONSUMPTION, for an assessment of anticipated project electrical and natural gas demands. The following analysis of the potential environmental impacts related to water service is also derived from the following sources and agencies:

- Available literature and other publicly available information from affected utility providers.
- Bella Vista Water District. *Urban Water Management Plan Update 2015*. December 2016.
- Shasta County. *Shasta County General Plan*. September 2004.

The following section provides baseline information on, and evaluates potential impacts on, water service practices and policies related to the proposed project. Environmental, regulatory settings and mitigation measures to reduce significant impacts, where applicable, are provided.

5.17.1 ENVIRONMENTAL SETTING

This section discusses the existing conditions related to water service in the project area.

WATER SERVICE

The proposed project is located within the established service area of the Bella Vista Water District (BVWD). BVWD is located northeast of the City of Redding in western Shasta County (County). BVWD encompasses approximately 34,360 acres (54 square miles) generally extending from Churn Creek Road on the west, the community of Palo Cedro on the southeast, the community of Mountain Gate on the northwest, and Salt Creek at State Route 299 (SR-299) on the northeast.

BVWD was formed on June 4, 1957 to provide agricultural and domestic water to the area northeast of the City of Redding. BVWD's water supply comes from two sources, the Sacramento River (under a water service contract with the United States Bureau of Reclamation [USBR]) and five deep groundwater wells that draw from the Redding Area Groundwater Basin, Enterprise Sub-basin located along the southerly boundary of BVWD. The water system consists of five tanks, nine pumping plants, the main treatment plant, five wells, and over 200 miles of pipeline from 4-inch to 54-inch in diameter. All of the water is pumped at least once, and much of it is pumped through at least two pumping stations.

All water delivered by BVWD to its customers is treated to the same standards, regardless of whether the water is used for domestic or agricultural purposes. BVWD currently operates under Domestic Water Supply Permit No. 01-02-08(P) 002 through the California Division of Drinking Water (DDW), formerly California Department of Public Health (CDPH).

Surface water is pumped from the Sacramento River at the Wintu Pumping Plant, which is outside of BVWD's boundary on the north side of the river below Hilltop Drive. From the Wintu Pumping Plant water is sent to a surge tank and then to the Water Treatment Plant (WTP) located on Canby Road immediately northeast of the Mount Shasta Mall. River water is first treated with chlorine at the Wintu Pumping Plant and then filtered at the WTP utilizing in-line pressure filters. Polymer is used at the WTP to aid the filtration process.

Treatment of groundwater at BVWD's five wells consists of oxidation of iron and manganese using chlorine, followed by absorption of the iron and manganese oxides in pressure filters.

BVWD contains Shasta College and Simpson University, four elementary schools, Foothill High School, and Mountain View Middle School. In addition to residential, rural, commercial, and public institutional customers, BVWD serves water to agricultural and aquaculture customers, which use the water for growing strawberries, grapes, fruit and nut trees, alfalfa, pasture, vegetables, and a few fish farms.

Surface Water

As discussed above, surface water is provided by the Sacramento River. BVWD entered into a long-term renewal contract with the USBR that authorizes BVWD to divert from the Sacramento River a specified quantity of the water supply created by the Central Valley Project (CVP).[1] The contract allows BVWD to divert up to 24,578 acre-feet per year (AFY) of CVP water for agricultural (irrigation) and municipal and industrial (M&I) purposes, subject to shortages pursuant to USBR's M&I Shortage Policy. The percent reduction is applied to the historical average of BVWD's actual M&I water usage over the prior three unconstrained water years. Agricultural use can be reduced by as much as 100 percent in shortage years. The contract is effective through February 28, 2030. The contract includes a permanent assignment of 578 acre-feet (AF) of CVP water from Shasta County Water Agency.

BVWD has a long-term transfer agreement with the Anderson-Cottonwood Irrigation District Transfer Agreement for 1,536 AFY of CVP water, subject to shortage curtailment. The agreement is effective through February 28, 2045. Anderson-Cottonwood Irrigation District sells and transfers the water under its USBR Sacramento River Settlement Contract for diversion of CVP water from the Sacramento River. This transfer is available to BVWD between April 1 and October 31.

The McConnell Foundation has a USBR contract to receive 5,100 AFY of CVP water each year, without any shortage provision curtailment. The District could request to purchase water from the McConnell Foundation in the future if needed to supplement its supply. However, BVWD does not presently plan to purchase water from the McConnell Foundation in non-shortage years.

Redding Area Groundwater Basin

BVWD is located in the northern area of the Redding Area Groundwater Basin, Enterprise Sub-basin

[1] Letter from Bella Vista Water District (BVWD), dated March 24, 2016.

(Groundwater Basin Number 5-6.04) and Millville Sub-basin (Groundwater Basin Number 5-6.05), which contains the main water-bearing geologic units in the northern Sacramento Valley.

BVWD joined the Shasta County Water Agency, City of Redding, City of Shasta Lake, and several other local agencies as a member of the Redding Area Water Council (RAWC). The RAWC is a consortium of public agencies. The RAWC prepared the Coordinated AB 3030 Groundwater Management Plan (GMP) for the Redding Area Groundwater Basin in 1998 and updated it in 2007. The California Department of Water Resources (DWR) does not identify the Redding Area Groundwater Basin as being over-drafted nor expected to become over-drafted. The purposes of the GMP are to avoid or minimize conditions that adversely affect groundwater availability and quality in the Plan area and to develop a management program that addresses data collection and protects and enables reasonable use of the groundwater resources of the Redding Area Groundwater Basin. The Redding Area Groundwater Basin is 510 square miles with a usable capacity of 5.5 million AF.

The Enterprise Sub-basin is 95 square miles and has a safe yield of 332 AFY. The Enterprise Sub-basin comprises the portion of the Redding Area Groundwater Basin bound on the west and southwest by the Sacramento River, on the north by the Klamath Mountains, and on the east by Little Cow Creek and Cow Creek. Annual precipitation within the Basin ranges from 29 to 41 inches, increasing to the north. Recharge to the principal aquifer formation is mostly by infiltration of stream flows. Infiltration of applied water and stream flows, and direct infiltration of precipitation are the main sources of recharge in the sub-basin.

Groundwater levels fluctuate seasonally approximately 5 to 10 feet, and for the semi-confined wells, between 10 and 15 feet for normal and dry years. Measurements of groundwater have shown levels start dropping in early spring and continue to decline through the summer until early September. Groundwater levels rise during the rainy season, reaching maximum levels typically in February.

Groundwater Production

BVWD currently has five groundwater wells located along the southerly boundary of BVWD. There is a wide variation in quantity pumped year to year due to variable operation. Operation of these wells has been limited to drought periods when surface water (CVP water) turbidity exceeds economically feasible treatment parameters, periods when either the Wintu Pump Station or BVWD's WTP have been down for maintenance and/or construction, and during peak demands in the summer when BVWD has difficulties maintaining water levels in the four million-gallon (MG) tank. Overall, when all five wells are in operation, they can collectively produce up to 4,200 AF annually. BVWD plans to expand groundwater production into the future by constructing a new well every 10 years starting in 2020. Each well is expected to increase groundwater by 810 AF annually per well.[2]

Water Use

Water demands served by BVWD are primarily agricultural and domestic (residential, rural, commercial, and public institutional). Residential connections comprise the majority of customers for BVWD. It is assumed that the number of residential and rural connections will continue to increase over time. Although these categories make up the majority of connections, agricultural properties cover more land and typically consume more water per connection. It is assumed that as development encroaches on agricultural properties and water deliveries become more expensive and less reliable, agricultural

[2] BVWD. *Urban Water Management Plan Update 2015*, footnote 3, Table 6-5, p. 67.

connections will decrease over time, being replaced by single-family residential and rural customers. The number of active connections in 2015 is summarized in Table 5.17-1, ACTIVE CONNECTIONS, below.

Table 5.17-1
ACTIVE CONNECTIONS

Use	Connections	% of Total Connections
Residential	3,931	64.3%
Aquacultural	5	0.1%
Agricultural	194	3.2%
Rural	1,637	26.8%
Commercial	291	4.8%
Public Institutional	57	0.9%
Total	**6,115**	**100%**

Source: BVWD. *Urban Water Management Plan Update 2015*. Table 4-1, page 27. December 2016.

Water Supply

TABLE 5.17-2, SUMMARY OF WATER SUPPLY SOURCES, shows the available water supplies for BVWD during normal water years.

Table 5.17-2
SUMMARY OF WATER SUPPLY SOURCES

Water Supply Sources	Projected Supply (AFY)				
	2020	2025	2030	2035	2040
U.S. Bureau of Reclamation[1]	24,578	24,578	24,578	24,578	24,578
Groundwater[2]	5,010	5,010	5,820	5,820	6,630
Anderson-Cottonwood Irrigation District	1,536	1,536	1,536	1,536	1,536
Total	**31,124**	**31,124**	**31,934**	**31,934**	**32,744**

Source: BVWD. *Urban Water Management Plan Update 2015.* Table 6-5, page 67. December 2016.
Notes:
1. BVWD's contract with USBR provides up to 24,578 AFY of CVP water. Actual supplies are subject to restrictions for environmental flows, drought and the CVP M&I Shortage Policy.
2. Groundwater wells are currently only used to supplement surface water in short and long-term shortages. 4,200 AFY is estimated to be the maximum capacity of the existing wells. Additional groundwater wells are planned for construction every 10 years starting in 2020 increasing groundwater by 810 AFY per well.

Normal and Dry-Year Supply Reliability

BVWD depends on its long-term contract to purchase water from the USBR and their groundwater wells. As a water provider that is predominantly reliant upon the CVP, BVWD is subject to significant water supply uncertainty and shortages due to dry hydrologic conditions, compounded by operational and regulatory constraints both directly and indirectly related to the Federal Endangered Species Act (FESA). The water supply reliability goal of BVWD is to meet 100 percent of demand in normal years.

Table 5.17-3, NORMAL YEAR SUPPLY AND DEMAND, shows the anticipated supply and demand for BVWD during an average year through year 2040. As indicated in Table 5.17-3, BVWD is anticipated to have a surplus of between 7,847 AF and 9,204 AF through 2040. The supply and demand totals in Table 5.17-3 include agricultural use.

Table 5.17-3
NORMAL YEAR SUPPLY AND DEMAND

	2020	2025	2030	2035	2040
Supply Totals	24,290	24,960	26,470	27,203	28,779
Demand Totals	16,363	17,113	17,897	18,718	19575
Difference	7,927	7,847	8,573	8,485	9,204

Source: BVWD. *Urban Water Management Plan Update 2015.* Table 7-3, page 74. December 2016.

During single dry year conditions, BVWD's water supplies are projected to be insufficient to meet demand. As shown in Table 5.17-4, SINGLE DRY YEAR SUPPLY AND DEMAND, this shortfall is projected to exceed 7,000 AF. The agricultural amounts were maintained to show the impact of a multiple-dry year for the consideration of the supplemental supply program BVWD offers to agricultural customers. Groundwater would be used during water shortage years to make up a portion of the difference.

Table 5.17-4
SINGLE DRY YEAR SUPPLY AND DEMAND

	2020	2025	2030	2035	2040
Supply Totals	10,122	10,246	11,185	11,320	12,271
Demand Totals	16,363	17,113	17,897	18,718	19,575
Difference	-6,241	-6,867	-6,712	-7,398	-7,304

Source: BVWD. *Urban Water Management Plan Update 2015.* Table 7-4, page 75. December 2016.

During a multiple-dry year period, USBR allotments for Manufacturing and Industrial (M&I) use can be reduced by 50 percent or more and agricultural allotments can be reduced to zero percent. Table 5.17-5, SUPPLY AND DEMAND COMPARISON – MULTIPLE-DRY YEAR, provides an estimate of the projected multiple-dry year supply and demand totals.

Table 5.17-5
SUPPLY AND DEMAND COMPARISON – MULTIPLE-DRY YEAR

	Water Use	2020	2025	2030	2035	2040
Multiple-Dry Year First Year Supply	Supply Totals	16,652	16,995	18,164	18,540	19,743
	Demand Totals	16,363	17,113	17,897	17,718	19,575
	Difference	289	-118	267	-178	168
Multiple-Dry Year Second Year Supply	Supply Totals	17,189	17,677	18,997	19,530	20,898
	Demand Totals	16,363	17,113	17,897	18,718	19,575
	Difference	826	564	1,100	812	1,325
Multiple-Dry Year Third Year Supply	Supply Totals	16,617	17,078	18,371	18,875	20,213
	Demand Totals	16,363	17,113	17,897	18,718	19,575
	Difference	245	-35	474	157	638

Source: BVWD. *Urban Water Management Plan Update 2015.* Table 7-5, page 75. December 2016.

Drought Condition Conservation and Contingencies. As mentioned above, the USBR contract allows BVWD to divert up to 24,578 AFY of CVP water for agricultural (irrigation) and M&I use; however, the water allocation is subject to shortages pursuant to USBR's M&I Shortage Policy (herein referenced as "Shortage Policy"). When a "Condition of Shortage" is issued by the USBR, CVP water allocation to BVWD is reduced based on the historical average of BVWD's actual municipal and industrial water usage[3]. This percent reduction in CVP contract water available to BVWD is calculated based on BVWD's prior three

[3] "Condition of Shortage" is defined in the USBR water service contract as "…a condition respecting the CVP during any year (March 1 through February of the following year) such that the USBR Contracting Officer is unable to deliver sufficient water to meet the contract total."

years of receiving 100 percent CVP contracted water allocation. Regarding agricultural allocations, such water can be reduced by as much as 100 percent during a "Condition of Shortage" period. The "Condition of Shortage" associated with the CVP water supply has also been influenced by regulatory actions and court rulings associated with Biological Opinions issued under FESA. These regulatory actions and court rulings have reduced the water supply available to CVP water service contractors, which includes BVWD[4].

All BVWD customers, both existing and any new development within BVWD's service area, are subject to BVWD's rules, regulations and policies which include adopted shortage measures. BVWD adopted a Water Shortage Contingency Plan (WSCP), by Resolution 15-04, on March 23, 2015. The purpose of Resolution 15-04 was to establish a municipal and industrial WSCP in order to conserve the available water supply and protect the integrity of water supply facilities with particular regard for domestic water use, sanitation, and fire protection while at the same time protecting and preserving public health, welfare, and safety.[5] Resolution 15-04 identifies five "stages" of water shortages; each stage contains 19 customer actions that apply to all customers. Table 5.17-6, WATER SHORTAGE CONTINGENCY PLAN STAGES, defines theses stages and provides a synopsis of outdoor watering reductions and construction related watering reductions.

Table 5.17-6
WATER SHORTAGE CONTINGENCY PLAN STAGES[1]

<table>
<tr><th>Stage</th><th>Water Supply</th><th>Percent of Normal</th><th>Outdoor Watering Reductions</th><th>Construction Watering Reductions</th></tr>
<tr><td>Stage 1</td><td>Normal Supply</td><td>85% - 100%</td><td rowspan="2">1. Limited to between one hour before sunset and one hour after sunrise.
2. "Smart" irrigation systems set to specified percent of evapotranspiration rate.
3. Limited to efficient irrigation systems (i.e., drip irrigation, rain sensors).</td><td>No restrictions</td></tr>
<tr><td>Stage 2</td><td>Moderate Shortage</td><td>70% - 85%</td><td rowspan="4">Construction meters monitored for efficient water use.</td></tr>
<tr><td>Stage 3</td><td>Severe Shortage</td><td>50% - 70%</td><td rowspan="3">1. Reductions listed from Stages 1 and 2.
2. Limited to specified number of days allowed for outdoor watering.
3. No potable water to be used within 48 hours after measurable rainfall.</td></tr>
<tr><td rowspan="2">Stage 4</td><td>Extreme Shortage: Short-Term[2]</td><td>30% - 70%</td></tr>
<tr><td>Extreme Shortage: Long-Term[3]</td><td>30% - 50%</td></tr>
<tr><td rowspan="2">Stage 5</td><td>Critical Shortage: Short-Term[2]</td><td>Less than 30%</td><td rowspan="2">No outdoor watering allowed</td><td rowspan="2">No construction watering allowed</td></tr>
<tr><td>Extreme Shortage: Long-Term[3]</td><td>Less than 30%</td></tr>
</table>

Source: Bella Vista Water District. *Resolution 15-04: A Resolution of the Board of Directors of the Bella Vista Water District Adopting a Municipal and Industrial Water Shortage Contingency Plan.* March 23, 2015.
Notes:
[1] This table focuses on stage definition and summarized outdoor and construction watering restrictions. Refer to Appendix RDEIR C-1 of this RDEIR for details regarding outdoor and construction water use and the complete list of water shortage customer actions.
[2] A short-term declaration is for water shortage conditions expected for a duration of 45 days or less.
[3] A long-term declaration is for water shortage conditions expected for a duration of more than 45 days.

In accordance with the adopted WSCP, the BVWD Board amended the shortage level from Stage 3 to Stage 1 on April 25, 2016. Stage 1 requires public institutional customers to reduce water use by 5 to 15 percent and reduce the amount of water used for landscape irrigation by 10 to 20 percent. As noted

[4] Bella Vista Water District. *Urban Water Management Plan*. May 2015. Note: Copy of the 2015 *Urban Water Management Plan* is available at the Shasta County Department of Resource Management during normal business hours (M-F, 8:00 am – 5:00 pm).
[5] Letter from BVWD, dated March 24, 2016.

previously, BVWD was in a Stage 3 – Severe Water Shortage. Stage 3 requires public institutional customers to reduce water use by 25 percent, reduce landscape irrigation to 3 nights per week, and reduce the amount of water used for landscape irrigation by 25 percent.[6] Conservation efforts are still in effect as identified in "Consumer Actions by Shortage Stage" table that identifies water conservation measures. Resolution 15-04 and all 19 customer actions applicable to each stage are provided in Appendix RDEIR C-1, WATER DEMAND EVALUATION, of this RDEIR.

5.17.2 REGULATORY SETTING

FEDERAL

Federal Clean Water Act

The federal Clean Water Act (CWA) 33 USC§ 1251 et seq. places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states. Although the CWA does establish certain guidelines for the states to follow in developing their programs, it also allows the U.S. Environmental Protection Agency (USEPA) to withdraw control from states with inadequate implementation mechanisms.

The CWA requires National Pollutant Discharge Elimination System (NPDES) permits for discharges of pollutants from a point source to navigable waters of the United States (Section 402; (33 USC §1342 et seq.). A "discharge" can include any addition of a pollutant to navigable waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. (33 USC§ 1362 et seq.)

STATE

California Department of Water Resources (DWR)

DWR is responsible for the preparation of the California Water Plan and the management of State's surface water and groundwater resources. DWR also oversees the California Water Project and the regulation and protection of dams. Other DWR functions include assisting local agencies in preparation of their Urban Water Management Plans (UWMPs) and reviewing the plans to ensure compliance with the Urban Water Management Act.

State Water Resources Control Board (SWRCB)

The State Water Resources Control Board (SWRCB) was established in 1967 to administer state water rights and water quality functions. The SWRCB and its nine Regional Water Quality Control Boards administer water rights and enforce pollution control standards throughout the state. The SWRCB is responsible for granting water rights through the appropriation process following public hearings and appropriate environmental review by applicants and responsible agencies. In granting water rights permits, the SWRCB must consider all beneficial uses, including water for downstream human and environmental needs. In addition to granting water rights, the SWRCB also issues water quality related certification to developers of water projects under Section 401 of the CWA.

[6] Ibid.

The SWRCB and RWQCBs issue NPDES permits in lieu of direct issuance by the USEPA, subject to review and approval by the USEPA Regional Administrator (USEPA Region 9). The terms of these NPDES permits implement pertinent provisions of the CWA and its implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti-degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the CWA's goal of "fishable and swimmable" navigable waters. All NPDES permits issued by the RWQCBs include Waste Discharge Requirements (WDRs) issued under the authority of the California Porter-Cologne Water Quality Control Act, discussed below.

California Water Code

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (California Water Code § 13000 et seq.) (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and each of the nine RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt water quality control plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unauthorized discharges of soils, hazardous substances, sewage, and oil or petroleum product, among others.

Each RWQCB must formulate and adopt one or more water quality control plans (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

The California Water Code also requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to DWR. The UWMPs, which must be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMPA) of 1983, including amendments that have been made to the UWMPA and other applicable regulations. The UWMPA requires urban water suppliers servicing more than 3,000 connections or supplying more than 3,000 acre-feet (AF) of water annually, to prepare a UWMP. The proposed project is within the area governed by Bella Vista Water District’s 2015 UWMP.

Senate Bill 610 – Water Supply Assessment

Senate Bill (SB) 610 and SB 221 are companion measures that seek to promote more collaborative planning among local water suppliers and cities and counties. They require that water supply assessments occur early in the land use planning process for all large-scale development projects. If groundwater is the proposed supply source, the required assessments must include detailed analyses of historic, current, and projected groundwater pumping and an evaluation of the sufficiency of the groundwater basin to sustain a new project’s demands. They also require an identification of existing water entitlements, rights, and contracts and a quantification of the prior year’s water deliveries. SB 610 applies to projects that meet the following criteria:

- A proposed residential development of more than 500 dwelling units.

- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
- A proposed hotel or motel, or both, having more than 500 rooms.
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- A mixed-use project that includes one or more of the projects specified above.
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

SB 610 amended Public Resources Code Section 21151.9 to provide that whenever a city or county decides that a project meets any of the above criteria, it must comply with Section 10910 et seq. of the Water Code. Section 10910 et seq. of the Water Code was also amended by SB 610 to require a city or county to coordinate the CEQA analysis with the water agency proposed to serve the project. Section 10910 et seq. requires a city or county to identify any public water system that may supply water to a proposed project. The city or county must ask each of these water providers to indicate whether its "total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses." If the city or county does not receive this information from the water provider, it must provide the water supply assessment itself. The proposed project is not subject to SB 610 and therefore a water supply assessment is not required.

Sustainable Groundwater Management Act of 2014

In 2014, California enacted the Sustainable Groundwater Management Act (SGMA; Water Code Section 10720 et seq.). SGMA, and related amendments to California law, require that all groundwater basins designated as high or medium priority in the DWR California Statewide Groundwater Elevation Monitoring (CASGEM) Program, and that are subject to critical overdraft conditions, must be managed under a new Groundwater Sustainability Plan (GSP) or a coordinated set of GSPs, by January 31, 2020. High or medium priority basins that are not subject to a critical overdraft must be regulated under one or more GSPs by 2022. Almost all of the northern Sacramento Valley basin, including portions of the Enterprise Basin, which includes the project area, have been designated as high priority under the CASGEM program[7]. Where GSPs are required, one or more local Groundwater Sustainability Agencies (GSAs) must be formed to implement applicable GSPs. A GSA has the authority to require registration of groundwater wells, measure and manage extractions, require reports and assess fees, and to request revisions of basin boundaries, including establishing new sub-basins. GSAs must be formed for high and medium priority basins by June 2017.

Each GSP must include a physical description of the covered basin, such as groundwater levels, groundwater quality, subsidence, information on groundwater-surface water interaction, data on historical and projected water demands and supplies, monitoring and management provisions, and a description of how the plan will affect other plans, including city and county general plans. The DWR must adopt regulations for the preparation of a GSP by January 2016. As defined by the SGMA, “sustainable

7 https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization

groundwater management" means that groundwater use within basins managed by a GSP will not cause any of the following "undesirable results:" (a) chronic lowering of groundwater levels (not including overdraft during a drought, if a basin is otherwise managed); (b) significant and unreasonable reductions in groundwater storage; (c) significant and unreasonable seawater intrusion; (d) significant and unreasonable degradation of water quality; (e) significant and unreasonable land subsidence; and (f) surface water depletions that have significant and unreasonable adverse impacts on beneficial uses (Water Code Section 10721(w)).

California Model Water Efficient Landscape Ordinance

The Water Conservation in Landscaping Act was enacted in 2006, requiring the California Department of Water Resources (DWR) to update the Model Water Efficient Landscape Ordinance (MWELO).[8] In 2009, the Office of Administrative Law (OAL) approved the updated MWELO, which required a retail water supplier or a county to adopt the provisions of the MWELO by January 1, 2010, or enact its own provisions equal to or more restrictive than the MWELO provisions.[9]

In response to the Governor's executive order dated April 1, 2015, (EO B-29-15), DWR updated the MWELO and the California Water Commission approved the adoption and incorporation of the updated State standards for MWELO on July 15, 2015.[10] The changes included a reduction to 55 percent for the maximum amount of water that may be applied to a landscape for residential projects, which effectively reduces the landscape area that can be planted with high water use plants. The MWELO applies to all types of new construction with a landscape area greater than 500 square feet (sf) (the prior MWELO applied to landscapes greater than 2,500 sf).[11] For residential projects, the coverage of high water use plants is reduced due to the new 55 percent water maximum and turf is limited. Shasta County has yet to adopt a MWELO provision but does require that planned projects submit landscaping plans.[12] The County will require landscaping plans to comply with MWELO as required by law.[13]

It is difficult to predict the ultimate impact of the MWELO requirements on future water demand. While the requirement is for development of a landscape design plan that uses plants and features that are estimated to use no more than 55 percent of ETo (the MWELO's residential landscaping requirement), some provision must be made for the inherent tendency to over-water even with irrigation controllers installed, piecemeal changes in landscape design, and reductions in irrigation efficiency through product use.[14]

In addition to MWELO, BVWD also has water conservation measures it continually encourages to limit water waste and promote conservation, which will be updated to reflect the newly mandated state-wide prohibitions authorized under the Governor's Executive Order B-37-16.[15]

[8]Gov. Code §§ 65591-65599

[9] California Code of Regulations (CCR), Tit. 23, Div. 2, Ch. 27, Sec. 492.4. The MWELO provides the local agency discretion to calculate the landscape water budget assuming a portion of landscape demand is met by precipitation, which would further reduce the outdoor water budget.

[10] These updated changes have been incorporated into California Code of Regulations (CCR), Tit. 23, Div. 2, Ch. 27, Sec. 490-495.

[11] CCR Tit. 23, Div. 2, Ch. 27, Sec. 490.1.

[12] Shasta County Code 17.84.040 – H.

[13] Copies of County Certification of MEWLO compliance of landscaping plans are a condition of service from Bella Vista Water District. March 24, 2016 Bella Vista Water District Comment Letter, Requirement 1g.

[14] Shasta County will be responsible for reviewing and approving the proposed project's landscape plan as part of its authorities authorized under the MWELO provisions and as a condition of service from Bella Vista Water District.

[15] Executive Order B-37-16 (issued in May 2016) includes a directive for the State Water Resources Control Board to permanently prohibit a defined set of practices that waste potable water.

California Drought Regulations

Beginning in January 2014, Governor Jerry Brown issued three Executive Orders (EOs), B-26-14, B-28-14, and B-29-15, regarding water supply, water demand, and water use within the State during severe drought conditions. EO B-29-15, issued April 1, 2015, sets limitations not only for existing land uses and water supply systems, but also for new construction. Some of these restrictions include:

- The Water Board shall prohibit irrigation with potable water of ornamental turf on public street medians. (EO B-29-15, Save Water, Action #6)
- The Water Board shall prohibit irrigation with potable water outside of newly constructed homes and buildings that is not delivered by drip or microspray systems. (EO B-29-15, Save Water, Action #7)
- The California Energy Commission (CEC) shall adopt emergency regulations establishing standards that improve the efficiency of water appliances, including toilets, urinals, and faucets available for sale and installation in new and existing buildings. (EO B-29-15, Increase Enforcement Against Water Waste, Action #16)

In addition, EO B-29-15 requires that DWR update the State Model Water Efficient Landscape Ordinance through expedited regulation by the end of 2015. This ordinance will increase water efficiency standards for new and existing landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf (EO B-29-15, Increase Enforcement Against Water Waste, Action #11).

On November 13, 2015, Governor Brown issued EO B-36-15, which upheld the previous EOs, and directs the SWRCB to extend urban water use restrictions through October 31, 2016 based on drought conditions known through January 2016. The SWRCB issued Emergency Regulations on February 2, 2016, in compliance with EO B-36-15. These emergency regulations maintain the current tiers of required water reductions; however, additional adjustments in response to stakeholders' equity concerns were included in the Emergency Regulations.

In addition, DWR and the USBR have finalized the 2016 Drought Contingency Plan that outlines State Water Project and Central Valley Project operations from February through November 2016. The 2016 Drought Contingency Plan was developed in coordination with staff from State and federal agencies. The 2016 Drought Contingency Plan communicates overarching goals for 2016 water management and the potential operations needed to achieve those goals.

On May 9, 2016, Governor Brown issued EO B-37-16, which upheld the previous EOs, and directs local agencies to provide new permanent water use targets for each urban water supplier and concrete improvements to drought preparedness. Local agencies are required to publicly disclose the projections and calculations used to determine their conservation standards, and to continue monthly water conservation reporting. EO B-37-16 calls for wise water use and less water waste to become permanent changes to prepare for more frequent and persistent periods of limited water supply.

LOCAL

Shasta County General Plan

The Water Resources subsection of the Shasta County *General Plan* contains policies regarding septic systems, while the Public Facilities subsection of the Shasta County *General Plan* contains policies regarding public services, including public utilities such as wastewater treatment and solid waste. These policies are intended to provide guidance on operating and maintaining public utilities and service systems so as to ensure adequate water supply and prevent contamination of water resources from wastewater treatment systems, septic systems, and waste disposal sites. In addition, these policies also provide for compatibility with solid waste disposal sites and adjacent land uses. The following *General Plan* policies are applicable to the proposed project:

Section 6.6 – Water Resources

- *Policy W-b.* Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to streams, creeks, rivers, reservoirs, or groundwater basins in accordance with standards and water resource management plans adopted by the County.

- *Policy W-c.* All proposed land divisions and developments in Shasta County shall have an adequate water supply of a quantity and a quality for the planned uses. Project proponents shall submit sufficient data and reports, when requested, which demonstrate that potential adverse impacts on the existing water users will not be significant. The reports for land divisions shall be submitted to the County for review and acceptance prior to a completeness determination of a tentative map. This policy will not apply to developments in special districts which have committed and documented, in writing, the ability to provide the needed water supply.

- *Policy W-d*. The potential for cumulative water quality impacts resulting from widespread use of septic systems in poorly suited soil areas shall be periodically evaluated by the County for the need to provide greater monitoring and possible changes to applicable sewage disposal standards.

5.17.3 THRESHOLDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with State *CEQA Guidelines*, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. According to Appendix G of the State *CEQA Guidelines*, the proposed project would result in a significant impact related to water service if it would:

- *Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.* Refer to Impact 5.17-4.

Based on these standards, the effects of the proposed project have been categorized as either a "*less than significant"* impact or a "*potentially significant"* impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "*significant and unavoidable"* impact.

5.17.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

The potential impacts of the proposed project were evaluated qualitatively by comparing the anticipated project effects on water service with existing conditions. The evaluation is based on professional judgment, an analysis of project consistency with the goals and polices of the Shasta County *General Plan*, and the significance criteria established by Appendix G of the State *CEQA Guidelines*, which the County has determined to be appropriate criteria for this RDEIR. The findings from the *Water Demand Evaluation* (Tully & Young, 2017) have also been referenced when determining potential impacts of the proposed project. Further information in this section is based on, but not limited to, the County's *General Plan*, available literature, and other publicly available information from the affected agencies and utility providers. In accordance with CEQA, the effects of a project are evaluated to determine if they would result in a significant adverse impact on the environment.

Water service is analyzed below and, as appropriate, impacts discussions are separated and evaluated under the heading of *Short-Term Construction* or *Long-Term Operation*. Mitigation measures directly correspond with an identified impact.

IMPACT 5.17-4	***Would sufficient water supplies be available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?***

Significance: Potentially Significant Impact.

Impact Analysis: The primary water supply for BVWD is through a 25-year renewable contract with the USBR for water supply from the CVP, which entitles BVWD to 24,578 acre-feet annually[16]. CVP water furnished to BVWD is allocated and managed in accordance with the USBR's Shortage Policy and BVWD has adopted Resolution 15-04, which establishes a municipal and industrial Water Shortage Contingency Plan (WSCP) in order to conserve the available water supply and protect the integrity of BVWD water supply facilities. The proposed project would generate demand for water during both short-term construction and long-term operation. The increase in water demand that could exceed BVWD's water supply as a result of the proposed project is analyzed below.

[16] Although BVWD's current contract (Contract 14-06-200-85A-LTR1 between the USBR and BVWD) expires March 1, 2030, the contract includes specific clauses allowing for the renewal of successive periods of 40 years each. In addition, BVWD's current contract is an extension of prior contracts with successive service that began in April 1964.

Short-Term Construction

Refer to Impact 5.17-2 in the 2017 DEIR. Water for construction would be supplied via water trucks. Water would be used for purposes of dust control during grading and construction, as well as for minor activities such as washing of construction equipment and vehicles.

For purposes of identifying incremental water demands, construction water is assumed to be 2 acre-feet per year (this is about 600,000 gallons – or over 150 fill-ups of a 4,000-gallon water truck per year).[17] The proposed project is anticipated to be operating at full capacity and fully built within 15 years of breaking ground, therefore construction water is only included in the initial years of the project.

Existing water supplies would be adequate to meet the water demand needs during the construction phase and no new water infrastructure would be required for construction purposes. As such, new or expanded water supply entitlements would not be required in support of construction activities. Impacts would be *less than significant*.

Long-Term Operation

As stated above, SB 610 and SB 221 are companion measures that seek to promote more collaborative planning among local water suppliers and cities and counties. They require that water supply assessments occur early in the land use planning process for all large-scale development projects. If groundwater is the proposed supply source, the required assessment must include detailed analyses of historic, current, and projected groundwater pumping and an evaluation of the sufficiency of the groundwater basin to sustain a new project's demands. They also require identification of existing water entitlements, rights, and contracts and a quantification of the prior year's water deliveries. As stated above, the proposed project does not meet any "project" thresholds outlined in Senate Bill 610; however, a *Water Demand Evaluation* was prepared to estimate the additional water demands of the project and to analyze the water supply elements of Senate Bill 610 (refer to Appendix RDEIR C-1, WATER DEMAND EVALUATION).

Water Demand (Use). Residential unit demand reflects two distinct uses: indoor use and outdoor use. The design of the proposed project calls for 166 lots ranging from 1.19 to 6.81 acres, consisting of single-family homes with individual landscaping (limited to 5,000 square feet within the building envelope). The indoor and outdoor components are ultimately combined into a total unit demand factor for residential uses. Residential unit demand factors are represented as the quantity of water in acre-feet per dwelling unit (DU) per year.

- *Indoor Residential Demand.* The dwelling units are estimated to use 0.15 acre-feet per year (AFY) for indoor water demand for primary residences, and 0.28 AFY for the 15 lots with both primary and secondary units. This indoor unit demand factor is based upon an assumed value of 55 gallons per capita (i.e., per person) per day (gpcd), with an assumed average occupancy rate of 2.5 people per home for primary residences, and 2 people per home for the secondary units.[18] The assumed per-person rate of 55 gallons per day is derived from California Water Code Section 10608.20(b)(2)(A), which states a value of 55 gpcd be used for estimating indoor residential use targets. When multiplied, the per-person use results in a per-dwelling unit demand of 0.15 AFY

[17] Tully & Young. *Water Supply Evaluation for Tierra Robles Project*. April 26, 2017.
[18] The occupancy rate is the average single family occupancy rate for Shasta County (2.5) per the California Department of Finance census data available from "E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2016 with 2010 Census Benchmark" available at: http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/.

for the 166 single family homes,[19] and 0.12 AFY for the 15 accessory dwelling units. This indoor use value has been confirmed through analyses of residential water meter data and is reflective of new suburban single-family dwelling units and older homes retrofitted with new water efficient fixtures and appliances.[20]

- *Outdoor Residential Demand.* Outdoor demands for the proposed project are calculated based on regulations defined under the County's landscape ordinance discussed previously. The ordinance does not provide a specific calculation methodology for estimating landscape water demands, so for the purposes of this memorandum the MWELO method is used. The MWELO provides for determining the Maximum Applied Water Allowance (MAWA) where the maximum is determined as 55 percent of the reference evapotranspiration for the area.

  A primary factor in this calculation is evapotranspiration (ET). The methodology directs the use of ET from a reference crop, such as maintained grass – a value referred to as ETo. For the proposed project, the ETo value used is 56.22 inches per year.[21] The landscape area is the other primary factor. As noted previously, the proposed project has specified building envelopes for each lot, and is limiting irrigated landscaping to 5,000 square feet within each envelope. This value is used to estimate the overall MAWA, which represents a conservative upper limit for outdoor residential demands. For the 15 lots that will also include an accessory dwelling unit, the 5,000 square-foot landscape area is reduced by 1,500 square feet to reflect the footprint of the accessory dwelling unit and anticipated hardscapes such as extended driveway and patio areas. Based on the MAWA, maximum permissible water demands per standard lot is 0.29 AFY.[22] For the 15 lots with accessory dwelling units, the maximum demand is estimated to be 0.21 AFY.

Taking the indoor and outdoor factors into account, Table 5.17-7, RESIDENTIAL UNIT WATER DEMAND FACTORS, provides the total estimated per-lot water demand for the proposed project. Combined, each lot is estimated to use 0.45 AFY for lots with only a primary residence, and 0.48 AFY for the 15 lots with accessory dwelling units.

Table 5.17-7
RESIDENTIAL UNIT WATER DEMAND FACTORS

Water Demand Category by Dwelling Unit (DU) Type	Indoor Factor	Outdoor Factor	Total Demand Factor (AF/DU)
Residential Home	0.15	0.29	0.45
Residential Home with Secondary Unit	0.28	0.21	0.48

Source: Tully & Young. *Water Supply Evaluation for Tierra Robles Project*. April 26, 2017.

The proposed project demand represents the demand for water at the project location (e.g., at the customer's location). To fully represent the demand, distribution system losses must also be included. Often, distribution system losses represent water that is lost due to system leaks, fire protection, unauthorized connections, and inaccurate meters. Essentially, this is the water that is produced by BVWD that does not make its customers – either as a real loss or an apparent loss (e.g. such as may result when

[19] Indoor demand for primary units = 2.5 people/house x 55 gallons per-person, per day x 365 days = 50,188 gallons/dwelling unit/year = 0.15 acre-feet/dwelling unit/year

[20] With the increasingly stringent requirements of building codes as well as water and energy efficiency codes, it is likely that the actual indoor demand of the proposed project may be below the stated 0.15 af/yr value. Recently, the Governor issued Executive Order B-37-16 that, among other orders, directed state agencies to develop new urban water use targets including a standard for indoor residential per-capita water use. These new targets are to "build upon the existing state law" that requires a 20% reduction in urban water use by 2020 – which includes the suggested 55 gallons-per-person per day planning guidance.

[21] California Department of Water Resources reference ETo map zone 14.

[22] MAWA formula = 56.22 inches X 0.62 X 0.55 X 5,000 sf = 95,855 gallons = 0.29 acre-feet

a customer meter underreports actual use). In most instances, the predominant source of distribution system losses is from leaks that inevitably exist throughout the many miles of pipes and fitting that bring water to BVWD's customers.

BVWD utilizes a 6 percent loss factor to be representative of non-revenue water based on its historical data. This value is used to represent the additional water the BVWD must treat, convey and deliver to assure the proposed project's customer demands are satisfied. As shown in Table 5.17-8, ESTIMATED POTABLE WATER DEMAND, non-revenue demand is estimated to be approximately 5 AFY.

Taking the outdoor, indoor, and loss factors into account, Table 5.17-8, provides the total estimated water demand for the proposed project through year 2040. The proposed project would require an initial 2 AFY of water for construction and then an initial 41 AF operational water between year 2020 and year 2025. As shown in Table 5.17-8, the proposed project is estimated to have a total annual water demand of approximately 80 AFY by year 2030. The 80 AFY is expected to occur within 10 years following project initiation.

Table 5.17-8
ESTIMATED POTABLE WATER DEMAND

	Unit Count or Acreage					Demand Factor	Demand (af/yr)				
Category	**2020**	**2025**	**2030**	**2035**	**2040**	**(af/yr or af/ac)**	**2020**	**2025**	**2030**	**2035**	**2040**
Residential											
Rural Residential (indoor)	0	73	151	151	151	0.15	0	11	23	23	23
Rural Residential (outdoor)	0	73	151	151	151	0.29	0	21	44	44	44
With Secondary Unit (indoor)	0	7	15	15	15	0.28	0	2	4	4	4
With Secondary Unit (outdoor)	0	7	15	15	15	0.21	0	1	3	3	3
						Residential Total	*0*	*36*	*75*	*75*	*75*
Other Project Demands											
Median Landscaping	20	46	46	46	46	n/a	(Met with Recycled Water)				
Wastewater Facility	0	1	1	1	1	0.10	(Nominal, Not Included)				
Construction Water	1	1	0	0	0	2	2	2	0	0	0
						Non-Residential Total	*2*	*2*	*0*	*0*	*0*
						Indoor Subtotal	0	13	27	27	27
						Outdoor Subtotal	2	25	48	48	48
						Project Subtotal	*2*	*38*	*75*	*75*	*75*
						Indoor Non-Revenue Water 6%	0	1	2	2	2
						Outdoor Non-Revenue Water 6%	0	2	3	3	3
						Total Indoor	0	14	29	29	29
						Total Outdoor	2	27	51	51	51
						Total Proposed Project Demand	**2**	**41**	**80**	**80**	**80**

Source: Tully & Young. *Water Supply Evaluation for Tierra Robles Project*. April 26, 2017.

Compliance with EO B-29-15 and EO B-37-16. As mentioned above in Section 5.17.2, REGULATORY SETTING, EO B-29-15 was established with the goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. EO B-36-15 directed the SWRCB to extend of urban water use restrictions through October 31, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives which set strict limits on water usage in the State. EO B-37-16 emphasizes wise water use and less water waste to become permanent requirements in order to prepare for more frequent and persistent periods of limited water supply.

In addition, the maximum allowable flowrates for fittings and fixtures, including the following, have recently been updated in response to the Governor's EO B-29-15 and EO B-37-16:

- Toilets - 1.28 gallons per flush,
- Showers - 2 gallons per minute (gpm) at 80 pounds per square inch (psi) of water pressure,
- Bathroom faucets - 1.2 gpm at 60 psi,
- Kitchen faucets - 1.8 gpm at 60 psi,
- Common area bathroom faucets - 0.5 gpm at 60 psi, and
- Urinals - 0.125 gallons per flush.

EO B-29-15 directives 5, 7, 11, and 16, which are upheld in EO B-36-15 and EO B-37-16, and EO B-37-16 directive 4, are applicable, directly or indirectly, to the proposed project. The proposed project's compliance with the California Health and Safety Code, California Plumbing Code, California Energy Commission's proposed Appliance Efficiency Regulations, and with BVWD's rules, regulations and policies which include adopted shortage measures as amended, modified, or superseded, would result in building features that would address indoor and outdoor water efficiency measures, and would ensure that the project would comply with EO B-29-15 and EO B-37-16, in addition to the other federal, State, and local laws and regulations.

Water Supply Availability Normal-Year (Average) Conditions. As discussed above, Table 5.17-2, SUMMARY OF WATER SUPPLY SOURCES, shows that BVWD obtains water supplies from three sources during normal years: USBR, Anderson-Cottonwood Irrigation District, and groundwater. Table 5.17-3, NORMAL SUPPLY AND DEMAND, shows that BVWD anticipates a water surplus of in excess of 7,874 AFY and 9,204 AFY through year 2040 (i.e., more supply than demand) during average rainfall years.

The overall water demand for BVWD is derived from the BVWD's *Urban Water Management Plan Update 2015*, and provides an in-depth discussion regarding its customer types and determinations of overall demand based on historic trends and projected growth. BVWD anticipates "residential" customers will grow at a 0.9% annual rate from average use values calculated for the period 1995 to 2015 (refer to Table 5.17-9, PROJECTED DEMANDS FROM BVWD'S 2015 UWMP, below). The average use values are also provided in the table.

Table 5.17-9
PROJECTED DEMANDS FROM BVWD'S 2015 UWMP

Use Type	Water Demand (AFY)					
	1995-2015 Avg.	2020	2025	2030	2035	2040
Residential	2,858	3,282	3,432	3,589	3,754	3,926
Rural	2,223	2,552	2,669	2,791	2,919	3,053
Commercial	572	657	687	719	752	786
Public/Institutional	949	1,089	1,139	1,191	1,246	1,303
Construction	16	18	19	20	21	22
Agriculture	5,702	6,547	6,847	7,161	7,489	7,832
Aquaculture	634	727	761	796	832	870
Unmetered	323	371	388	406	424	444
Losses	970	1,114	1,165	1,218	1,274	1,332
Total	**14,247**	**16,357**	**17,107**	**17,891**	**18,711**	**19,568**

Source: Tully & Young. *Water Supply Evaluation for Tierra Robles Project*. April 26, 2017.

The proposed project, considered rural residential by BVWD, is considered to be represented within the growth reflected in the *Urban Water Management Plan Update 2015*. Specifically, the rural classification is expected to grow approximately 830 AF by 2040, or approximately 40 AF per year. Given the proposed

project's estimated demand of 80 AF at build-out, it is considered to represent about 10% of the overall growth in this category of over 800 AF.

New development within BVWD's service area is not considered part of the USBR's water delivery baseline until such time the development's water use have existed for three 100-percent CVP water allocation years. Although the proposed project is not included within the existing water delivery baseline, the project's water use is assumed in the *Urban Water Management Plan Update 2015* water demand projections and surplus water is available to serve the project's 80 AFY water demand under normal-year (average) conditions through year 2040. Therefore, the proposed project water demand would be met and would not contribute to negative impacts on the availability of water for BVWD's existing and other planned future uses under normal-year (average) conditions. Therefore, no water supply mitigation is required for normal-year (average) conditions. In addition, implementation of **MM 5.17-4a** would ensure water efficient features are incorporated into the project design by requiring written verification be provided to the County regarding facility compliance with applicable water efficiency design standards required by the California Uniform Building Code and the BVWD. Impacts would be *less than significant* for normal-year (average) conditions.

Water Supply Availability Dry-Year Conditions. As shown in Table 5.17-4, SINGLE DRY YEAR SUPPLY AND DEMAND, and Table 5.17-5, SUPPLY AND DEMAND COMPARISON – MULTIPLE-DRY YEAR, BVWD water supplies are projected to be insufficient to meet existing and projected water demands under a multiple-dry year period. Although this supply deficit decreases in the second and third dry years, the deficit maintains a water supply shortage of several thousand acre-feet. The additional demand of 80 AFY of water would further impact dry-year water supplies within BVWD's service area and, as a result of not being included within BVWD's existing water delivery baseline, would be served with water supplies calculated and distributed based on allocations established prior to the project. Therefore, absent the delivery of a supplemental water supply to BVWD during dry-year periods, the proposed project would utilize water that would otherwise be available to existing BVWD customers and further exacerbate dry-year water shortages.

To mitigate this effect, the proposed project would be required to provide an alternative water supply during dry-year conditions until such time as the proposed project's demands have existed for three 100-percent water allocation years and are included in BVWD's baseline water demand. Implementation of **MM 5.17-4b** requires the project applicant to identify and implement an Agreement to augment (i.e., supply) BVWD dry-year water supplies until such time as the proposed project's water demands have existed for three 100-percent CVP water allocation years delivered by USBR. Water supplies would be a minimum of 90 percent of the project's prior year water use[23].

In advance of establishing the Tierra Robles Community Services District (TRCSD) or the Tierra Robles Homeowners Association (HOA), the project applicant has identified a potential water supply to provide to BVWD during defined shortage conditions to address mitigation measure **MM 5.17-4b**. The water supply described in detail here would be secured through an Agreement with BVWD concurrent with establishment of the TRCSD or the HOA, with that new entity being the responsible party as to be described in the Agreement with BVWD.

The water supply would be available to BVWD on an annual basis during identified shortage conditions in a quantity that represents a minimum of 90 percent of the Proposed Project's prior year water usage.

[23] A dry-year water supply augmentation amount of 90 percent of the prior year's water demand accounts for a minimum 10 percent water conservation target the project and other BVWD customers would be subject to (based on the prior year's water use).

Shortage conditions shall be defined to exist when BVWD has been notified by the USBR that it will receive less than a 100 percent (full) allocation of its CVP water supplies for the coming delivery season, as that determination has been announced by USBR on or around April 15th of each year.

Proposed Source of Supplemental Water Supply

The project applicant has identified a water supply that meets the conditions described in MM 5.17-4b. This section describes the proposed supplemental dry-year supply and evaluates its feasibility and functionality for purposes of satisfying the mitigation measure.

As represented in several attachments referenced throughout this section, the project applicant has facilitated discussions between Clear Creek Community Services District (CCCSD_ and BVWD for the periodic transfer of a portion of CCCSD's annually available CVP water supply allocation from CCCSD to BVWD.

As detailed in Appendix RDEIR C-2 of this RDEIR, CCCSD would make available for transfer a portion of its CVP allocation in a requested year, not to exceed 100 acre-feet. CCCSD would meet its own customer needs otherwise met by the CVP supply by pumping groundwater through one of three existing, certified drinking water wells.

The source of the transfer water is a contractual entitlement under a CVP water service contract between USBR and CCCSD. BVWD also is a CVP water service contractor in the same area of origin as CCCSD, and therefore the transfer will be conducted in accordance with Section 3405(a)(1)(M) of the Central Valley Project Improvement Act (CVPIA) along with other applicable criteria relating to the substitution of groundwater by CCCSD.

The CVP water to be transferred would originate at Trinity Lake, be diverted through Carr Tunnel into Whiskeytown Reservoir, then, rather than being diverted through the Muletown Conduit to CCCSD, would be released into the Sacramento River after flowing through the Spring Creek and Keswick Powerplants. This water would then be diverted at BVWD's screened diversion located on the Sacramento River within the Redding city limits. No new or additional diversion or conveyance infrastructure would be necessary.

Because absent the transfer, CCCSD would use this portion of its CVP allocation to meet its own customer needs, it will pump groundwater from the Redding Area Groundwater Basin - Anderson (Department of Water Resources designated as Basin 5-006.03) in equivalent annual volumes. The timing of pumping, however, may vary from the timing of when CCCSD would have otherwise taken delivery of its CVP supply as CCCSD will manage its remaining CVP allocation in a transfer year along with its groundwater pumping in a manner that best suits its operational and customer needs.

The annual transfer of up to 100 acre-feet of CCCSD's CVP allocation will need to be approved by USBR. This approval may occur annually, with CCCSD and BVWD requesting the approval from USBR as currently occurs by several CVP contractors in the Sacramento Valley under the provisions of USBR's Accelerated Water Transfer and Exchange Program for Sacramento Valley Central Valley Project Contractors (U.S. Bureau of Reclamation's Finding of No Significant Impact FONSI 16-01-NCAO, May 2016).

Authorization to Pursue

A letter sent from CCCSD to BVWD details the proposed transfer and outlining specific provisions. On June 17, 2020, at a regularly scheduled meeting, the CCCSD Board of Directors unanimously authorized its General Manager to participate in negotiations with BVWD to formulate the necessary agreement as detailed in the letter. A copy of the CCCSD meeting minutes is included as Appendix RDEIR C-2 of the RDEIR.

At a regularly scheduled meeting on June 22, 2020, the BVWD Board of Directors also authorized its General Manager to enter into negotiations with CCCSD in response to the letter. A copy of the BVWD meeting minutes is included as Appendix RDEIR C-3 to this RDEIR.

Analysis of Supply Feasibility

The feasibility of the proposed CCCSD transfer of CVP water during shortage conditions to BVWD for its use depends on (1) the reliability of CCCSD's CVP supply to be available to transfer, (2) the potential impacts to local groundwater conditions underlying CCCSD when groundwater is substituted for the CVP supply, and (3) the approval procedures for a transfer of CVP supply among CVP contractors. These factors are addressed in the analysis that follows.

Clear Creek Community Services District Water Supplies

CCCSD has at least two secure water supplies available to meet its municipal and industrial (M&I) and agricultural (Ag) water needs. In some conditions, CCCSD has further augmented these supplies through water transfers, as determined appropriate by its Board of Directors. The primary supplies include:

- CVP Water Service Contract for 15,300 acre-feet
- Three State-permitted, 1500 gpm drinking water wells

CVP Water Service Contract

CCCSD holds a contractual entitlement for water under the water service contract with USBR for 15,300 acre-feet of water for agricultural and municipal and industrial purposes (Contract# 14-06-200-489-A-LTR1). Like all CVP water service contracts, CCCSD's CVP supply can be constrained on an annual basis, where the allocated quantity is based upon the delivered quantity during the prior three years of 100% allocations. This is the same condition faced by BVWD and resulting in the shortage concern being addressed by MM 5.17-4b.

Table 5.17-10, CLEAR CREEK CSD CVP DELIVERIES provides the historic delivery records for CCCSD's use of CVP water supplies, as recorded between authorized M&I and Ag customers. All CVP water diverted to serve CCCSD's CVP contract is treated to drinking water standards at a water plant located at the base of the Whiskeytown Reservoir dam, whether the water will serve M&I or Ag needs. The separation of M&I and Ag in Table 5.17-10 associates with CCCSD's operations, deliveries and billing. The total CVP deliveries indicate the general demand in a 100% allocation condition, such as 2017, in contrast to the limited availability of CVP water under CVP shortage conditions, such as 2014 through 2016. However, even during the 5% allocation condition of 2015, CCCSD still had an allocation of 578 acre-feet of CVP project water supplies. If such a condition were to repeat, the up-to 100 acre-feet transferred to BVWD could still be accommodated, with the CCCSD demand met instead with increased pumping from its existing municipal water wells.

Table 5.17-10
CLEAR CREEK CSD CVP DELIVERIES

	CVP Deliveries (acre-feet/year)		
	AG	M&I	Total
2014	157	1,388	1,545
2015	0	578	578
2016	250	466	716
2017	1,518	1,946	3,464
2018	1,635	2,424	4,058
2019	1,548	2,239	3,787

Source: Clear Cree CSD
Notes: CSD = Community Services District
CVP = California Water Project
AG = Agricultural water use
M&I = Municipal and Industrial water use

Drinking Water Wells

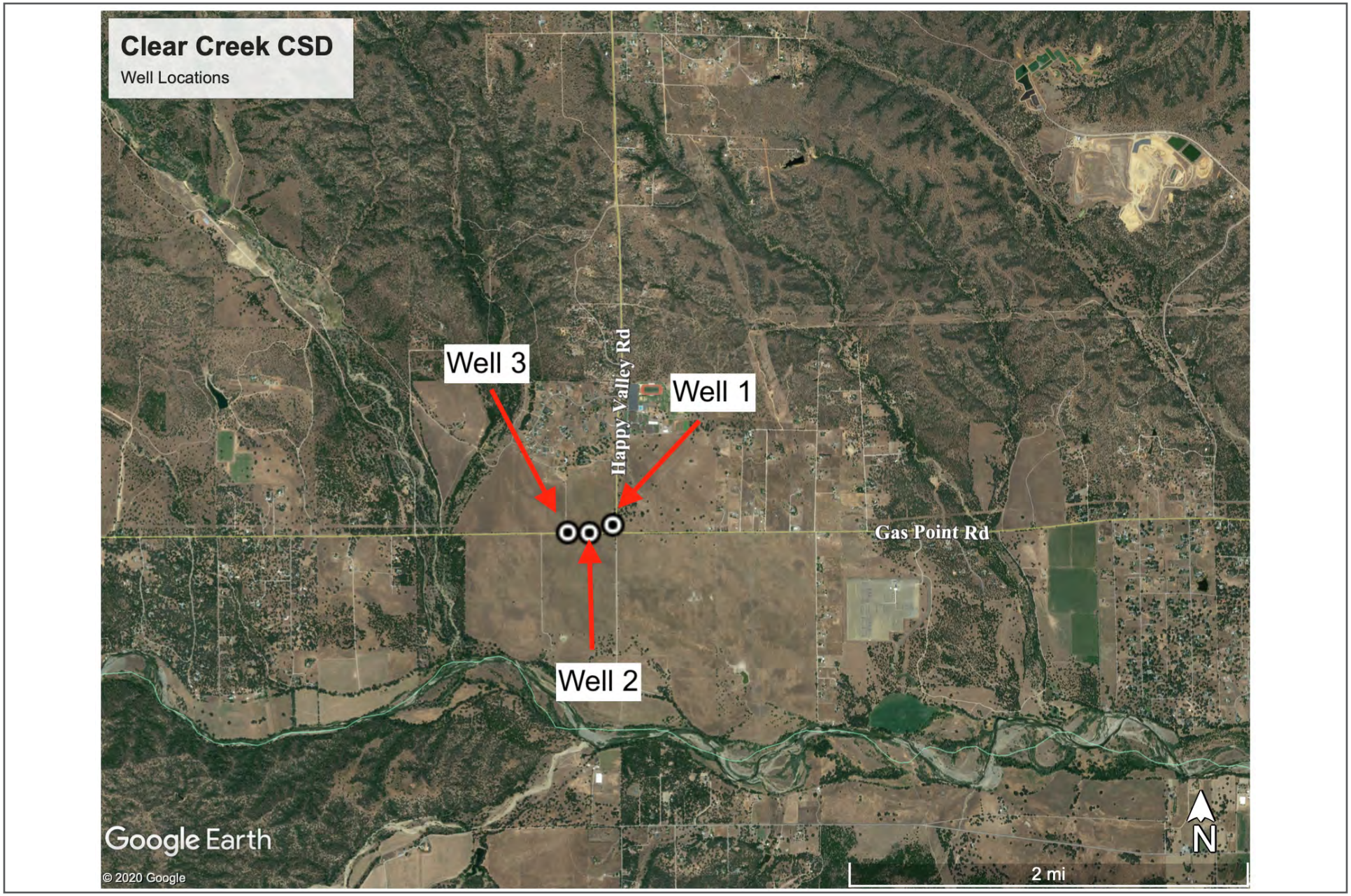
CCCSD drilled three municipal service wells in the 1990's. All three wells are maintained in an active status as certified through the State of California's Division of Drinking Water, with CCCSD regularly conducting required testing to maintain the status and availability for these wells to meet potable water needs. FIGURE 5.17-1, CLEAR CREEK CSD WELL LOCATIONS MAP, shows the location of the CCCSD wells.

During the CVP allocation reductions experienced in 2014, 2015 and 2016, the CCCSD utilized one of the three potable well sites to augment supplies to meet its customer needs while the other two remained in stand-by status. During transfer years, CCCSD will either continue utilizing its one well for a longer period of the year or will also utilize one of the additional permitted wells to be determined based upon customer need, operational considerations, and other appropriate factors. TABLE 5.17-11, CLEAR CREEK CSD HISTORIC GROUNDWATER PUMPING presents the historic pumping by CCCSD at its three municipal wells.

Table 5.17-11
CLEAR CREEK CSD HISTORIC GROUNDWATER PUMPING

	Well Pumping (acre-feet/year)		
	AG	M&I	Total
2014	28	122	150
2015	221	303	524
2016	33	147	180
2017	0	0	0
2018	0	0	0
2019	0	0	0

Source: Clear Cree CSD
Notes: CSD = Community Services District
CVP = California Water Project
AG = Agricultural water use
M&I = Municipal and Industrial water use



SOURCE: Google Earth, 2020

N.T.S.

Clear Creek CSD Well Locations Map

Figure 5.17-1

Figure 5.17-2, CLEAR CREEK CSD MONTHLY GROUNDWATER PUMPING presents the monthly pumping during each of these years. As evident from the figure, most of the pumping occurred during fall 2014 through spring 2015, then again in fall of 2015 through spring 2016. This historic pumping occurred using only one of CCCSD's three available production wells.

While CCCSD has additional well capacity to help address shortage conditions, during the most recent CVP shortage conditions, CCCSD chose to also purchase surface water from a local water right holder – as a less-expensive solution than further operating its production wells. This additional surface water was used as a supplemental source for CCCSD in 2014, 2015 and 2016, as shown in FIGURE 5.17-3, CLEAR CREEK CSD ANNUAL DELIVERY BY SOURCE.

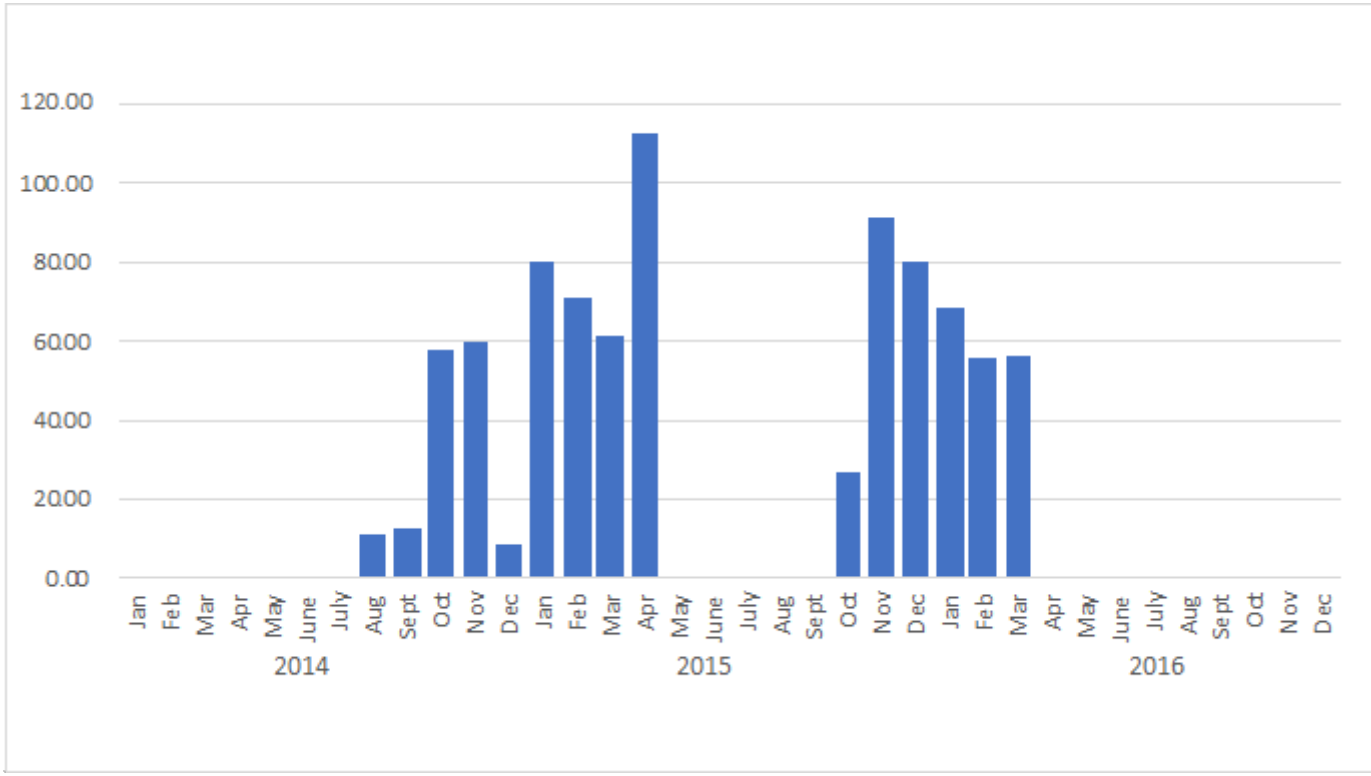
Groundwater Conditions in Sub-basin

The proposed supply provided to BVWD relies on CCCSD increasing reliance on the local groundwater basin and transferring an increment of its CVP allocation to BVWD. The ability for the local groundwater basin to support the planned short-term additional pumping by CCCSD is dependent on the current and historic conditions of the basin from which the CCCSD wells extract. CCCSD overlies the Anderson Sub-basin as defined by DWR Bulletin 118 (Basin 5-006.03). The Anderson Sub-basin and the neighboring Enterprise Sub-basin (Basin 5-6.04) are currently combined within the Enterprise Anderson Groundwater Sustainability Agency (EAGSA) which is preparing a Groundwater Sustainability Plan (GSP) pursuant to the Sustainable Groundwater Management Act (SGMA). The GSP is required to be submitted to the State by January 31, 2022. Information on the basin and details regarding the GSP are available at the EAGSA website, including a draft GSP chapter describing the Anderson Sub-basin settings.[24]

While the publicly available chapters of the GSP as of early September 2020 do not yet include a definition of the basin's sustainable capacity, the long-term trends presented in the draft basin settings can inform an evaluation of the ability for CCCSD to periodically increase its pumping by up to 100 acre-feet annual. Specifically, the draft description of the Anderson Sub-basin includes the following:

> "Historical groundwater-level records for the Anderson Sub-basin indicate groundwater levels have been relatively consistent, generally without long-term trends of increasing or decreasing groundwater levels, as indicated by the hydrographs for wells 29N/04W-02P01 and 30N/05W-02Q01 (Figure 3-14). However, some well locations in the Anderson Sub-basin exhibit spatial and temporal variability with groundwater levels generally increasing at location 30N/04W-23G01 and decreasing groundwater levels at 29N/04W-523 04R03. Groundwater levels in 30N/04W-23G01 have generally increased from approximately 385 feet elevation during the 1976-1977 drought to nearly 400 feet elevation in 2011. Recent groundwater levels (since 2013) show declines during the recent dry and critical water years. Conversely, groundwater levels at location 29N/04W-04R03 indicate longer-term declining groundwater levels. Groundwater levels at 29N/04W-04R03 have generally decreased from approximately 450 feet elevation in 1970 to approximately 440 feet elevation in 2004. Groundwater levels in 29N/05W-11A02 have been more variable over time, increasing from approximately 450 feet elevation in the early 1970s to approximately 465 feet elevation in 1985, at which point groundwater levels remained relatively consistent until the two droughts

[24] City of Redding https://www.cityofredding.org/departments/public-works/eagsa, Accessed September 6, 2020

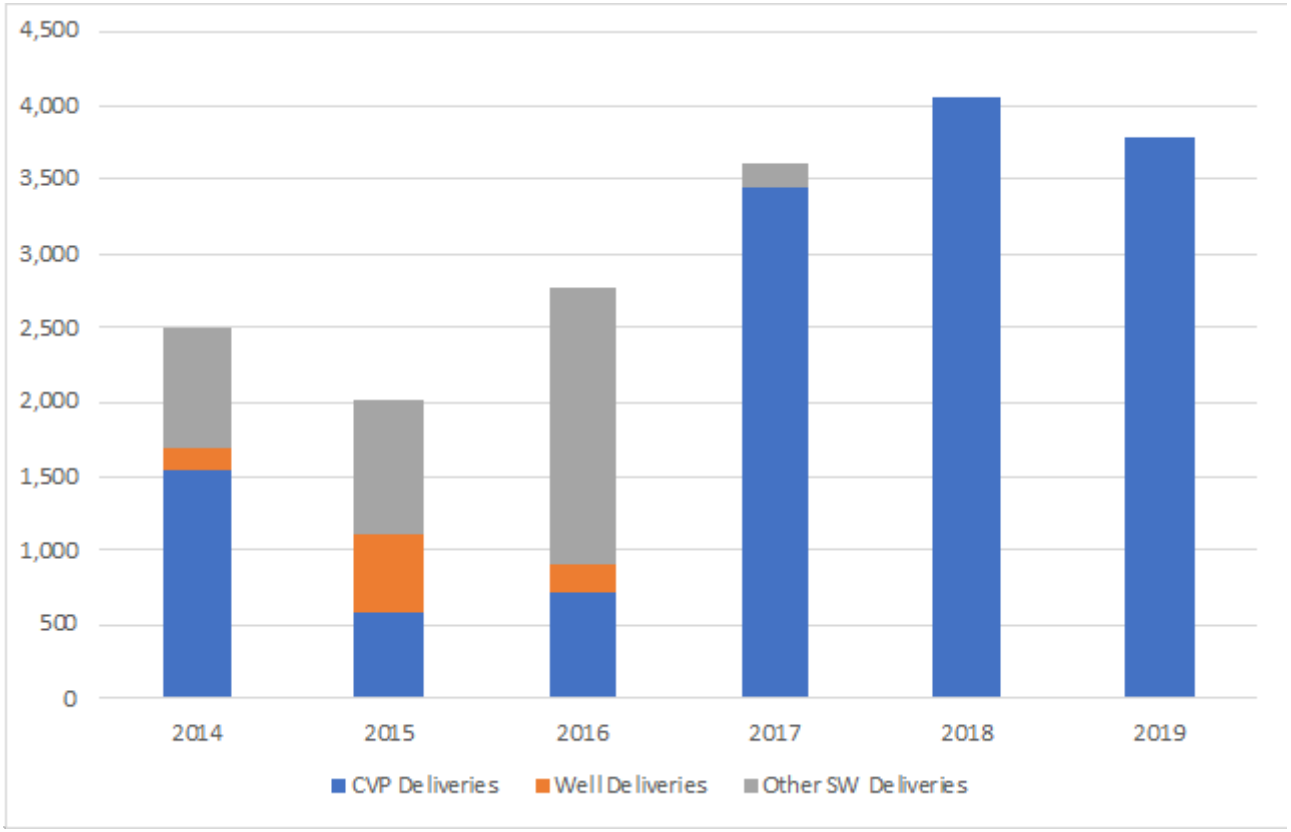


SOURCE: Clear Creek Community Services District, 2020

N.T.S.

Clear Creek CSD Monthly Groundwater Pumping

Figure 5.17-2



SOURCE: Clear Creek Community Services District, 2020

N.T.S.

Clear Creek CSD Annual Delivery by Source

Figure 5.17-3

> between 2007 and 2015, when groundwater levels decreased to approximately 455 feet elevation."[25])

FIGURE 5.17-4, GROUNDWATER LEVELS ADJACENT TO CLEAR CREEK CSD WELLS presents an excerpt of the draft GSP's hydrographs for wells in proximity to the CCCSD wells shown in Figure 5.17-1. As noted upon inspection, the wells in the Anderson Sub-basin have been stable for several decades. Specifically, the hydrograph for Well 29N/05W-11A02 is from a location within a mile of the CCCSD production wells and shows long-term stability since the 1980's.

Further, the recent pumping by CCCSD (see Table 5.17-11, above), which has been as much as 500 acre-feet in 2015, has not had a notable effect on local groundwater conditions. While not modelled, it is unlikely that the periodic additional pumping of 100 acre-feet per year would change the conditions represented in the hydrographs for the following reasons:

- The historical trends of the groundwater hydrographs have shown minimal fluctuation in the groundwater elevations over time;
- Past use of the wells has resulted in pumping for only a portion of the year (4 to 5 months) allowing for groundwater recharge and not resulting in overdraft conditions; and
- Pumping 100-acre feet over the course of a year is not a substantial increase in the amount of groundwater relative to past groundwater pumping quantities.

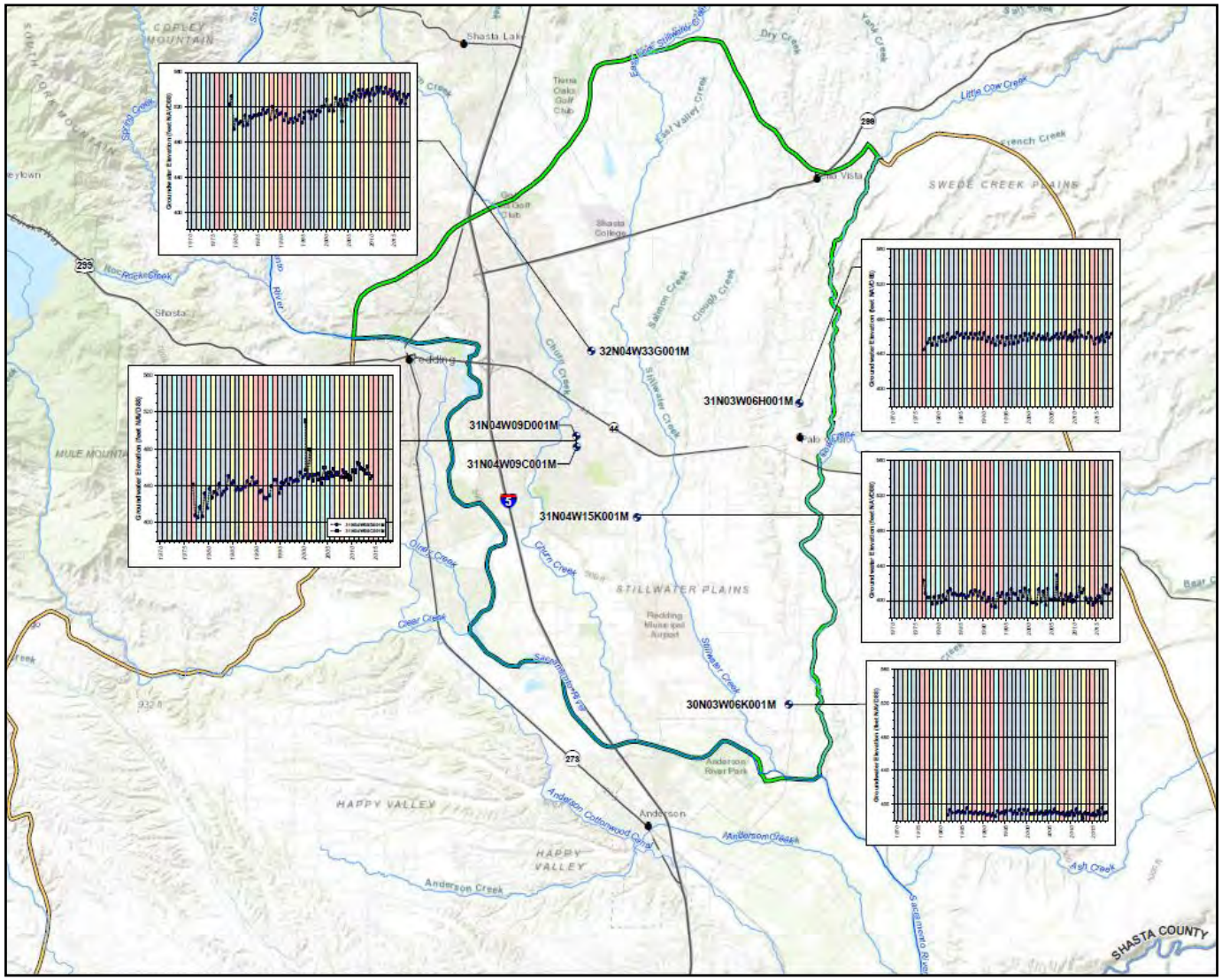
While no impacts to groundwater supply have been identified, it is recommended that the agreement between BVWD and CCCSD be conditioned distribute the pumping throughout a particular year, whereby month-to-month pumping would be negligible, as a way to further protect from any noticeable changes in groundwater levels.

Anticipated Transfer Process

Transferring a CVP allocation to another CVP contractor within the same watershed is subject to approval of USBR, whether as an annual or a longer-term transaction. USBR routinely approves annual transfers among CVP contractors in the Sacramento Valley as authorized under the Central Valley Project Improvement Act[26] ("CVPIA") and as evaluated in the *Accelerated Water Transfer and Exchange Program for Sacramento Valley Central Valley Project Contractors Environmental Assessment/Finding of No Significant Impact-Contract Years 2016-2020* (EA/FONSI) prepared in January 2016[27]. While this EA/FONSI covered the period 2016 through 2020, it replaced a prior EA/FONSI for the contract period 2011-2015 and prior 5-year periods. The relevant action evaluated by the EA/FONSI is reflected in the following excerpt:

> "Reclamation proposes to approve, subject to written consent, transfers or exchanges of Project water in the Sacramento Valley, pursuant to Section 3405(a) of the CVPIA, under an accelerated process. Approvals would be provided throughout the term of Contract

[25] Draft Anderson Subbasin Groundwater Sustainability Plan Chapter 3: Basin Setting p. 3-12 https://www.cityofredding.org/departments/public-works/eagsa
[26] Title XXXIV of the CVPIA of October 30, 1992, Section 3405(a)(1)(M)
[27] U.S. Bureau of Reclamation, https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=25686, Accessed July 27, 2020)



SOURCE: Draft Anderson Subbasin Chapter 3: Basin Setting, Figure 3-14: Select Hydrographs

N.T.S.

Groundwater Levels Adjacent to Clear Creek CSD Wells

Figure 5.17-4

> Years 2016 through 2020 (April 1, 2016, through February 28, 2021). Each transfer or exchange approved via the AWTP must be completed in the water or contract year for which the water is requested. However, subsequent approval(s) may be provided for the same or a similar transfer or exchange over the term of the AWTP." (EA/FONSI, p. 5).

Notable with the accelerated transfer program is Reclamation's written consent process, repeatable during the entire period of each EA/FONSI. Essentially, Reclamation requires the CVP contractor to submit a consent-request letter detailing the proposed transfer and undertakes a simplified review and approval process. USBR is anticipated to prepare and adopt an EA/FONSI for each subsequent 5-year contract period upon the expiration of the current EA/FONSI.

CVPIA Section 3405(a)(1)(M), allowing the CVP-to-CVP in watershed transfer of project water, specifically states: "Transfers between Central Valley Project contractors within countries, watersheds, or other areas of origin, as those terms are utilized under California law, shall be deemed to meet the conditions set forth in subparagraphs (A) and (I) of this paragraph." While this provision addresses many of the requirements for a transfer, Reclamation still has the obligation to review even a CVP-to-CVP transfer for three additional factors: (1) potential impacts to groundwater [Section 3405(a)(1)(J)], (2) potential impacts to the transferor's finances or operations [Section 3405(a)(1)(K)], and (3) potential significant affects to USBR's operations to meet fish and wildlife resource goals.

CCCSD's participation in the transfer through an agreement with BVWD and the project applicant would be anticipated to address the second factor such that there is no unreasonable impact to CCCSD's operations or finances. And, as described previously, because the transfer would involve CVP Project Water that would not otherwise be entering the Sacramento River and counted toward USBR's temperature control objectives if it were delivered to CCCSD, then released into the Sacramento River for diversion by BVWD, would have no effect on USBR operations to meet various fishery objectives.

However, to make the proposed CVP supply available to BVWD, CCCSD will rely on an equivalent increase in groundwater pumping to meet customer demands. Therefore, USBR will want to assure the substitution of groundwater, per Section 3405(a)(1)(J), will not impact local groundwater conditions. The information presented previously regarding the groundwater basin's current and historic conditions can represent a proxy for the evaluation that USBR will undertake upon such time as the transfer is proposed.

To further illustrate how the proposed supplemental water supply could be used to meet MM 5.17-4b, a sample operation is provided that simulates the historic 2015 conditions faced by CCCSD, modified to show the transfer of CVP water to BVWD and subsequent increased groundwater production by CCCSD. FIGURE 5.17-5, EXAMPLE INCREASED CLEAR CREEK CSD PUMPING SCENARIO, presents the historic condition compared to a proposed increase in groundwater production to make the CVP water supply available to BVWD.

In this example, the red numbers in the Well Pumping column show the amount acre-feet of groundwater that would be pumped over the course of four months during a dry year when additional water was needed by BVWD to serve the proposed project. In the CVP Delivery column, the red numbers show the reduction in CVP water that BVWD would pump from the Sacramento River. The reduction in CVP delivery water is equal to the amount of groundwater pumped by the CCCSD.

2015 Historic Condition

Year	Month	CVP Delivery			Well Pumping			Purchased			Total Delivered
		Ag	M&I	Total	Ag	M&I	Total	Ag	M&I	Total	
2015	Jan	0.00	0.00	0.00	21.90	58.50	80.40	0.00	0.00	0.00	80.40
	Feb	0.00	0.00	0.00	14.90	56.10	71.00	0.00	0.00	0.00	71.00
	Mar	0.00	43.67	43.67	54.05	7.19	61.24	0.00	0.00	0.00	104.91
	Apr	0.00	3.17	3.17	58.08	54.93	113.01	0.00	0.00	0.00	116.18
	May	0.00	0.00	0.00	0.00	0.00	0.00	57.69	126.62	184.31	184.31
	June	0.00	14.67	14.67	0.00	0.00	0.00	87.92	142.08	230.00	244.67
	July	0.00	55.76	55.76	0.00	0.00	0.00	122.67	127.33	250.00	305.76
	Aug	0.00	119.15	119.15	0.00	0.00	0.00	119.52	65.48	185.00	304.15
	Sept	0.00	176.32	176.32	0.00	0.00	0.00	66.00	0.00	66.00	242.32
	Oct	0.00	161.95	161.95	26.92	0.00	26.92	0.00	0.00	0.00	188.87
	Nov	0.00	0.49	0.49	25.56	65.75	91.31	0.00	0.00	0.00	91.80
	Dec	0.00	2.74	2.74	19.45	60.65	80.10	0.00	0.00	0.00	82.84
Annual Total		0.00	577.92	577.92	220.86	303.12	523.98	453.80	461.51	915.31	2017.21

Example with Transfer of 100 acre-feet of CVP Delivery to BVWD (changes shown in RED)

Year	Month	CVP Delivery			Well Pumping			Purchased			Total Delivered
		Ag	M&I	Total	Ag	M&I	Total	Ag	M&I	Total	
2015	Jan	0.00	0.00	0.00	21.90	58.50	80.40	0.00	0.00	0.00	80.40
	Feb	0.00	0.00	0.00	14.90	56.10	71.00	0.00	0.00	0.00	71.00
	Mar	0.00	43.67	43.67	54.05	7.19	61.24	0.00	0.00	0.00	104.91
	Apr	0.00	3.17	3.17	58.08	54.93	113.01	0.00	0.00	0.00	116.18
	May	0.00	0.00	0.00	0.00	0.00	0.00	57.69	126.62	184.31	184.31
	June	0.00	14.67	14.67	0.00	0.00	0.00	87.92	142.08	230.00	244.67
	July	0.00	**35.76**	35.76	0.00	**20.00**	20.00	122.67	127.33	250.00	305.76
	Aug	0.00	**89.15**	89.15	0.00	**30.00**	30.00	119.52	65.48	185.00	304.15
	Sept	0.00	**146.32**	146.32	0.00	**30.00**	30.00	66.00	0.00	66.00	242.32
	Oct	0.00	**141.95**	141.95	26.92	**20.00**	46.92	0.00	0.00	0.00	188.87
	Nov	0.00	0.49	0.49	25.56	65.75	91.31	0.00	0.00	0.00	91.80
	Dec	0.00	2.74	2.74	19.45	60.65	80.10	0.00	0.00	0.00	82.84
Annual Total		0.00	477.92	477.92	220.86	403.12	623.98	453.80	461.51	915.31	2017.21

SOURCE: Tully & Young, 2020

N.T.S.

Example of Increased Clear Creek CSD Pumping Scenario

Figure 5.17-5

How this works mechanically is CCCSD would pump 100-acre feet of groundwater from their existing wells over the course of multiple months during a dry year. This water would be transported through CCCSD's existing underground aqueduct from its facilities near the Whiskeytown Reservoir Dam and released into the Sacramento River just below the Keswick Dam northeast of city of Redding. BVWD would pump a commensurate amount of water from the Sacramento River from their existing intake station approximately 0.25-mile down river from the Sundial Bridge in Redding. No new facilities or infrastructure would be required to complete this transfer.

Therefore, based upon the information provided by the project applicant, the publicly available data regarding groundwater conditions, and historic use data provided by CCCSD, the proposed supplemental water supply would be a feasible method to address MM 5.17-4b.

Mitigation Measures:

MM 5.17-4a: Prior to issuance of a building permit, the project applicant shall provide written verification to the Shasta County Department of Resource Management of facility compliance with applicable water efficiency design standards required by the California Uniform Building Code.

MM 5.17-4b: Concurrent with the establishment of the Tierra Robles Community Services District or Tierra Robles Homeowners Association, the project applicant shall provide to the Shasta County Department of Resource Management documentation demonstrating that the applicant has secured an Agreement with BVWD to provide BVWD with adequate water supplies on an annual basis during identified shortage conditions in a quantity that represents a minimum of 90 percent of the project's prior year water usage. Shortage conditions shall be defined to exist when BVWD has been notified by the USBR that it will receive less than a 100 percent (full) allocation of its CVP water supplies for the coming delivery season, as that determination has been announced by USBR as of April 15th of each year. The augmenting water supplies shall be made available to BVWD through the Agreement until such time as BVWD has completed three years of full CVP water allocation after commencement of operations at the project site. For any shortage condition that occurs after three years of full CVP allocation, the project applicant shall no longer be required to provide BVWD with augmenting water supplies, but the project applicant shall then be fully subjected to the shortage provisions administered by BVWD to all its customers. The project applicant shall demonstrate that any water supply provided to BVWD under the Agreement satisfies all CEQA and NEPA compliance requirements, as well as any other permitting or regulatory approvals, as may be associated with a water supply identified in the Agreement.

Level of Significance After Mitigation: Impacts would be *less than significant* with mitigation incorporated.

5.17.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.17-8 ***Implementation of the proposed project would contribute to cumulative demands for domestic water.***

Significance: Potentially Significant Impact.

Cumulative Setting: Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The proposed project's contribution to an increased need for water service is considered in the context of other past, present, and reasonably foreseeable future projects in the area. If constructed, these projects would cumulatively contribute to impacts on water service; however, public agencies and utilities are given an opportunity to respond to an inquiry for information regarding the potential increase in demand for their services. Development fees, if applicable, would be assessed on a project-specific basis to mitigate any increased demand on water service.

Water Supply Availability Normal-Year (Average) Conditions. As noted in Impact 5.17-4, adequate water supplies are available from BVWD to serve the proposed project and uses within the BVWD's service area under normal wet year conditions. Implementation of **MM 5.17-4a** would ensure the proposed project includes water efficient features as required by current design standards. Cumulative water supply demand under normal-year conditions are considered *less than significant*.

Water Supply Availability Dry-Year Conditions. During multiple-dry years, there would be insufficient water to meet demands within the BVWD service area, with or without the proposed project. As discussed in Impact 5.17-4, above, when USBR declares a "Condition of Shortage", the Shortage Policy sets forth an available volume for BVWD based upon the BVWD's actual diverted water supply (also known as baseline volume) during the prior three years when BVWD water allocations were 100 percent. Until such time as the proposed project's demands are able to be included in the BVWD's baseline quantities, the proposed project would be required to provide an alternative water supply to BVWD, a minimum of 90 percent of the project's prior year water use, during shortage conditions. Implementation of mitigation measure **MM 5.17-4b** requires that the project applicant identify and implement an Agreement with BVWD to augment BVWD water supplies during dry years to off-set the proposed project's water demand.

Once the proposed project has met the requirements to be considered within the BVWD water delivery baseline, then the proposed project, along with all other existing customers included in the water baseline, would be subject to all BVWD Water Supply Contingency Plan measures. As previously discussed, the proposed project is considered rural residential by BVWD and is represented within the growth reflected in the *Urban Water Management Plan Update 2015*. Specifically, the rural classification water demand is expected to grow to approximately 830 AF by 2040, or approximately 40 AFY. Given the proposed project's estimated demand of 80 AFY at build-out, it is considered to represent about 10% of the overall growth in this category of over 800 AF.

The proposed project would not combine with other past, present, or reasonably foreseeable future projects within BVWD with respect to water supply and demand because the proposed project is within BVWD's anticipated demand projections, would mitigate its dry-year water demand until included within BVWD's water delivery baseline, and would be subject to all water conservation requirements mandated

by BVWD. Similar to that of the proposed project, other future projects within BVWD's service area would be required to demonstrate that adequate water supplies are available at the time when development is proposed, consistent BVWD requirements and SB 610, as applicable. Cumulative water service impacts are considered *less than significant*.

Mitigation Measures: Implement **MM 5.17-4a** and **MM 5.17-4b**.

Level of Significance After Mitigation: Implementation of mitigation measures identified for this proposed project, combined with adherence with applicable County, BVWD, and other local utility purveyor design and development standards on a project-by-project basis, would serve to reduce potential cumulative water service impacts to *less than significant* levels.

5.18 ENERGY CONSUMPTION

NOTE TO READER: This section of the Partial Recirculated Draft Environmental Impact Report (RDEIR) includes an updated analysis of potential energy consumption impacts. This section was revised to update the analysis based upon updated energy modeling completed for the project as part of the greenhouse gas emissions calculations. This section is recirculated in its entirety.

This section evaluates energy consumption and conservation associated with the proposed project and analyzes project compliance with applicable regulations. Consideration of the project's consistency with applicable plans, policies, and regulations, as well as the introduction of new energy conservation regulations, is included in this section. Energy modeling outputs are included as Appendix RDEIR-A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA.

Public Resources Code Section 21100(b)(3) and *State CEQA Guidelines* §15126.2(b) require EIRs to describe, where relevant, the wasteful, inefficient, and unnecessary consumption of energy caused by a project. In 1975, largely in response to the oil crisis of the 1970s, the California legislature adopted Assembly Bill (AB) 1575, which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct state responses to energy emergencies, and—perhaps most importantly—promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code Section 21100(b)(3) to require EIRs to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F of the *State CEQA Guidelines*.

State CEQA Guidelines Appendix F assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy. For the reasons set forth below, this EIR concludes that the proposed project would not result in this type of energy consumption and therefore would not create a significant impact on energy resources.

5.18.1 ENVIRONMENTAL SETTING

Energy consumption is analyzed in this EIR due to the potential direct and indirect environmental impacts associated with the project. Such impacts include the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emissions of pollutants during both the construction and long-term operational phases.

ENERGY USAGE

Energy usage is typically quantified using the British Thermal Unit (Btu). In general, the approximate amount of energy contained in a gallon of gasoline, a cubic foot of natural gas, and a kilowatt hour (kWh) of electricity are 120,333 Btu's, 1,036 Btu's, and 3,412 Btu's, respectively.[1]

[1] EIA (U.S. Energy Information Administration). *Energy Units & Calculations Explained.* [Online]: https://www.eia.gov/energyexplained/index.cfm?page=about_energy_conversion_calculator. Accessed January 30, 2020.

Total energy usage in California was 7,966 trillion Btu's in 2018 (the most recent year for which this specific data is available). Of California's total energy usage in 2018, the consumption breakdown by sector was 1,439 trillion Btu for residential uses (18.1 percent), 1,509 trillion Btu for commercial uses (18.9 percent), 1,848 trillion Btu for industrial uses (23.2 percent), and 3,170 trillion Btu for transportation (39.8 percent).[2]

Given the nature of the proposed project (i.e., a Planned Development in Shasta County), the remainder of this discussion will focus on the three most relevant sources of energy: electricity, natural gas, and gasoline for vehicle trips associated with residential uses.

ELECTRICITY

Electricity usage in California differs substantially by land use, type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity consuming devices within a building. The average annual usage of electricity is roughly 6,500 kWh/residence.[3]

In 2019, total electrical power generation for California was 277,704 gigawatt-hours (GWh), about 2.7 percent lower than 2018.[4] In 2019, the forecast for California's electricity consumption in 2030 was about 5 percent below 2018 levels at 321,300 GWh. This decrease in demand is partially related to the 2019 Title 24 buildings standards update which requires photovoltaic (solar) installations on new homes, in addition to other factors such as efficiency program savings and refreshed electricity rate projections.[5]

NATURAL GAS

Natural gas usage in California varies substantially by the type of land use, construction materials used in a building, and the efficiency of all gas-consuming devices within a building. Natural gas is being used to power vehicles. In 2019, California used a total of nearly 2.1 million cubic feet of natural gas.[6] The natural gas was used to produce electricity (30 percent), in industrial uses (37 percent), in commercial uses (12 percent), in residential uses (20 percent), and in vehicles (1 percent).[7]

GASOLINE FOR MOTOR VEHICLES

The primary factors linked to increasing gasoline consumption are: (1) population growth; (2) declining per-mile cost of gasoline; (3) land use patterns increasing the distance between jobs and housing; and (4) a shift in consumer preferences to larger, less fuel-efficient motor vehicles. The fuel economy standard for new passenger cars in 2017 was 38.5 miles per gallon (mpg), and 29.4 mpg for new light trucks (gross

[2] EIA (U.S. Energy Information Administration). *California Profile Overview.* [Online:] http://www.eia.gov/state/?sid=CA#tabs-2. Accessed October 14, 2020.
[3] EIA (U.S. Energy Information Administration). *Household Energy Use in California*. [Online]: http://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/ca.pdf. Accessed October 14, 2020.
[4] CEC (California Energy Commission). *Total System Electric Generation*. [Online]: http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html. Accessed October 14, 2020.
[5] CEC (California Energy Commission). 2016. *California Energy Demand Update Forecast*, 2017-2027. December. [Online]: file:///C:/Users/alex.jewell/Downloads/TN232922_20200506T151733_Adopted%202019%20Integrated%20Energy%20Policy%20Report.pdf . Accessed =October 14, 2020.
[6] EIA (U.S. Energy Information Administration). *Natural Gas Delivered to Consumers in California (Including Vehicle Fuel)*. [Online]: https://www.eia.gov/dnav/ng/hist/n3060ca2m.htm. Accessed October 14, 2020.
[7] EIA (U.S. Energy Information Administration). *California Natural Gas Summary*. [Online]: https://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_sCA_m.htm. Accessed October 14, 2020.

vehicle weight of 8,500 pounds or less).[8] Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not currently subject to fuel economy standards. Compliance with Federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States.

5.18.2 REGULATORY SETTING

The following is a description of State and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process.

STATE

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24)

Title 24, California's energy efficiency standards for residential and non-residential buildings, was established by the California Energy Commission (CEC) in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and non-residential buildings. California's energy efficiency standards are updated on an approximate three-year cycle. On January 1, 2020, the 2019 Title 24 standards became effective with more stringent requirements. The 2019 standards are expected to substantially reduce the growth in electricity and natural gas use. Additional savings result from the application of the standards on building alterations. For example, requirements for cool roofs, lighting, and air distribution ducts are expected to save additional electricity. These savings are cumulative, doubling as years go by.

California Green Building Standards

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2019 and went into effect January 1, 2020.

2006 Appliance Efficiency Regulations

The California Energy Commission adopted Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) on October 11, 2006. The regulations were approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both Federally regulated appliances and non-Federally regulated appliances. While these regulations are now often viewed as "business-as-usual," they exceed the standards imposed by all other states and they reduce GHG emissions by reducing energy demand.

[8]National Highway Traffic Safety Information (NHTSA) https://one.nhtsa.gov/cafe_pic/CAFE_PIC_fleet_LIVE.html ; Accessed October 14, 2020

2008 California Energy Action Plan Update

The California Public Utilities Commission and California Energy Commission *2008 Energy Action Plan Update* provides a status update to the *2005 Energy Action Plan II,* which is the State's principal energy planning and policy document. The plan continues the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for State energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are energy efficiency, demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure), and the use of renewable sources of power. If these actions are unable to satisfy the increasing energy and capacity needs, the plan supports clean and efficient fossil fuel-fired generation.

Senate Bills 1078 and 107; Executive Orders S-14-08, S-21-09, and SB 2X

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) accelerated the due date of the 20 percent mandate to 2010 instead of 2017. These mandates apply directly to investor-owned utilities. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SBX1-2 (2011) codified the 33 percent by 2020 goal.

Executive Order B-30-15; Senate Bills 100 and 350

In April 2015, Governor Brown issued Executive Order B-30-15, which established a GHG reduction target of 40 percent below 1990 levels by 2030. SB 350 (Chapter 547, Statutes of 2015) advanced these goals through two measures. First, the law increases the renewable power goal from 33 percent renewables by 2020 to 50 percent by 2030. Second, the law requires the CEC to establish annual targets to double energy efficiency in buildings by 2030. The law also requires the California Public Utilities Commission to direct electric utilities to establish annual efficiency targets and implement demand-reduction measures to achieve this goal. In 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

State Vehicle Standards (AB 1493)

AB 1493 (Pavley Regulations and Fuel Efficiency Standards), enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for model years 2009–2016 and a second set of emissions standards for model

years 2017 to 2025. By 2025, when all rules will be fully implemented, new automobiles will emit 34 percent fewer CO2e emissions and 75 percent fewer smog-forming emissions.

Renewable Portfolio Standard

In 2002, California established its Renewable Portfolio Standard program[9] with the goal of increasing the annual percentage of renewable energy in the state's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (*Public Utilities Code* Section 399.15(b)(1)). Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its AB 32 authority to enact regulations to help the State meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the state's load-serving entities to meet this target. In October 2015, Governor Brown signed into legislation Senate Bill 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Signed in 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

Recent CEQA Litigation

In California, Clean Energy Committee v. City of Woodland (2014) 225 Cal.App.4th 173 ("CCEC"), the Court observed that *State CEQA Guidelines* Appendix F lists environmental impacts and mitigation measures that an EIR may include. Potential impacts requiring EIR discussion include:

- *The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed.*
- *The effects of the project on local and regional energy supplies and on requirements for additional capacity.*
- *The effects of the project on peak and base period demands for electricity and other forms of energy.*
- *The degree to which the project complies with existing energy standards.*
- *The effects of the project on energy resources.*
- *The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.*

LOCAL

Shasta County General Plan

[9] The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country.

The Shasta County *General Plan* includes several objectives and policies related to energy. The objectives and policies that would apply to the proposed project are provided below.

- *Objective E-2*. Increase utilization of renewable energy resources by encouraging development of solar, hydroelectric, biomass, waste-to-energy, and cogeneration sources.

- *Policy E-b*. Encourage development patterns which reduce the number of miles driven in personal vehicles through consideration of higher density and mixed land uses, transit- and pedestrian-oriented developments, and increased jobs-to-housing balance. At the community level, the County shall adopt land use plans which reduce the need to travel outside the community for basic commercial services.

- *Policy E-c.* The County should develop energy thresholds and standards which assist applicants for development projects in designing conservation features into their proposals. Energy threshold standards could also be used to assist in the evaluation of potential energy consumption impacts which may be environmentally significant.

- *Policy E-g.* Revision or development of landscaping and tree protection standards should provide consideration to improving building energy efficiency and shading of streets and parking areas during the hot summer season.

- *Policy E-h.* Subdivision design review should include standards for street and building orientation which allow appropriate solar access as well as landscape shading for cooling and heating in urban and town centers.

5.18.3 STANDARDS OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

In accordance with the *State CEQA Guidelines*, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. An EIR is required to focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the nature of the project. According to Public Resources Code Section 21100(b)(3) and Appendix G of the *State CEQA Guidelines*, the proposed project would have a significant impact related to energy, if it would:

- Result in wasteful, inefficient, and unnecessary consumption of energy resources during project construction or operations. Refer to Impact 5.18-1, below.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Refer to Impact 5.18-2, below.

Based on these standards, the effects of the proposed project have been categorized as either a "*less than significant"* impact or a "*potentially significant"* impact. Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "*significant and unavoidable"* impact.

5.18.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

METHODOLOGY

The impact analysis focuses on the three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with new development as well as the fuel necessary for project construction. The analysis of electricity/natural gas usage is based on California Emissions Estimator Model (CalEEMod) greenhouse gas (GHG) emissions modeling, which quantifies energy use for occupancy. The results of the CalEEMod modeling are included in Appendix RDEIR A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA. Modeling was based primarily on the default settings in the computer program for Shasta County. The amount of operational fuel use was estimated using the California Air Resources Board's Emissions Factor 2014 (EMFAC2014) computer program, which provides projections for typical daily fuel usage in Shasta County. The amount of construction-related fuel use was estimated using ratios provided in the Climate Registry General Reporting Protocol for the Voluntary Reporting Program, Version 2.1. The results of EMFAC2014 modeling and construction fuel estimates are included in Appendix RDEIR A-1.

Energy consumption impacts are analyzed below according to topic. Mitigation measures directly correspond with an identified impact.

IMPACT 5.18-1 ***Project implementation would not use fuel or energy in a wasteful manner.***

Significance: Less Than Significant Impact.

Impact Analysis:

Short-Term Construction

In 1994, the U.S. Environmental Protection Agency (EPA) adopted the first set of emission standards (Tier 1) for all new off-road diesel engines greater than 37 kilowatts (kW). The Tier 1 standards were phased in for different engine sizes between 1996 and 2000, reducing NO_X emissions from these engines by 30 percent. The EPA Tier 2 and Tier 3 standards for off-road diesel engines are projected to further reduce emissions by 60 percent for NO_X and 40 percent for particulate matter from Tier 1 emission levels. Tier 4 standards were established in 2004 and reduce NO_x, PM_{10}, and $PM_{2.5}$ emissions by 90 percent and were phased in between 2008 and 2014. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary consumption.

Depending on market conditions, the project is expected to be constructed in phases generally over a period of 10 to 15 years. Construction would consist of site preparation, grading, paving, building construction, and architectural coating. Table 5.18-1, CONSTRUCTION FUEL CONSUMPTION, provides an estimate of construction fuel consumption for the project based on information provided by the CalEEMod air quality computer model.

Table 5.18-1
CONSTRUCTION FUEL CONSUMPTION

Equipment	Quantity	Horsepower	Load Factor	Fuel Consumption Rate[1] (gallons per hour)	Duration[2] (total hours)	Total Fuel Consumption[3,4] (gallons)
Site Preparation						
Rubber Tired Dozers	3	247	0.40	3.95	240	948
Tractors/Loaders/Backhoes	4	97	0.37	1.44	320	459
Grading						
Excavators	2	158	0.38	2.40	480	1,153
Graders	1	187	0.41	3.07	240	736
Rubber Tired Dozers	1	247	0.40	3.95	240	948
Scrapers	2	367	0.48	7.05	480	3,382
Tractors/Loaders/Backhoes	2	97	0.37	1.44	480	689
Building Construction						
Cranes	1	230	0.29	2.68	2,100	5,627
Forklifts	3	89	0.20	0.71	7,200	5,126
Generator Sets	1	84	0.74	2.49	2,400	5,967
Tractors/Loaders/Backhoes	3	97	0.37	1.44	6,300	9,044
Welders	1	46	0.45	0.83	2,400	1,987
Paving						
Pavers	2	130	0.42	2.18	4,800	10,483
Paving Equipment	2	132	0.36	1.90	4,800	9,124
Rollers	2	80	0.38	1.22	4,800	5,837
Architectural Coating						
Air Compressors	1	78	0.48	1.50	1,800	2,696
					TOTAL[4]	***64,208***

Notes:
1 . Derived using the following equation:
Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor
Where: Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.
2. Total hours of duration derived from CalEEMod modeling results.
3. Total Fuel Consumption calculated using the following equation: *Total Fuel Consumption = Duration in Hours x Fuel Consumption Rate*
4. Values may be slightly off due to rounding.
Source: Refer to Appendix RDEIR A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for CalEEMod assumptions used in this analysis.

Project construction would occur over six phases, with Phase 1 utilizing the most construction equipment. Table 5.18-1 depicts the "worst-case" construction phase with regards to the highest amount of fuel utilized during construction. As shown in Table 5.18-1, Phase 1 construction would consume a total of approximately 64,208 gallons of fuel. The remaining five phases would each consume less than Phase 1. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. It is noted that the project would be required to comply with **MM 5.3-1**, which requires all construction equipment to be at least Tier 4 certified (refer to Section 5.3, AIR QUALITY). As noted above, these engines use highly efficient combustion engines to minimize unnecessary fuel consumption. Therefore, it is expected that construction fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. A *less than significant* impact would occur in this regard.

Long-Term Operation

Transportation Energy Demand. Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NHTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with Federal fuel economy standards is

not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. Table 5.18-2, PROJECT OPERATIONAL FUEL CONSUMPTION, provides an estimate of the daily fuel consumed by vehicles traveling to and from the proposed project site.

Table 5.18-2
PROJECT OPERATIONAL FUEL CONSUMPTION

Vehicle Type	Percent of Vehicle Trips[1]	Daily Trips[2]	Daily Vehicle Miles Traveled[3]	Average Fuel Economy (miles per gallon)[4]	Total Daily Fuel Consumption (gallons)[5]
Passenger Cars	86	1,530	15,419	21.6	714
Light/Medium Trucks	4	64	649	17.2	38
Heavy Trucks/Other	10	179	1,804	6.1	296
TOTAL[6]	***100***	***1,774[7]***	***17,872[8]***	--	***1,047***

Notes:
1. Percent of Vehicle Trip distribution based on trip characteristics within the CalEEMod model.
2. Daily Trips calculated by multiplying the total daily trips by percent vehicle trips (i.e., Daily Trips x percent of Vehicle Trips).
3. Daily Vehicle Miles Traveled (VMT) calculated by multiplying percent vehicle trips by total VMT (i.e., VMT x percent of Vehicle Trips).
4. Average fuel economy derived from the Department of Transportation.
5. Total Daily Fuel Consumption calculated by dividing the daily VMT by the average fuel economy (i.e., VMT/Average Fuel Economy).
6. Values may be slightly off due to rounding.
7. Based upon data within the *Tierra Robles Traffic Technical Memorandum*, prepared by Omni-Means, dated August 17, 2017; refer to Appendix RDEIR B-2, SUPPLEMENTAL TRAFFIC IMPACT ANALYSIS.
8. Daily vehicle miles traveled is based upon data within the CalEEMod model; refer to Appendix RDEIR A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA.

Source: Refer to Appendix RDEIR A-1, AIR QUALITY/GREENHOUSE GAS EMISSIONS DATA, for CalEEMod assumptions used in this analysis.

As indicated in Table 5.18-2, operation of the proposed project is estimated to consume approximately 1,047 gallons of fuel daily. However, the project would not result in any unusual characteristics that would result in excessive long-term operational fuel consumption. The project would be required to comply with **MM 5.7-1** in Section 5.7, GREENHOUSE GASES AND CLIMATE CHANGE, which requires the Tierra Robles Homeowners Association (TRHOA) bylaws to include a ride-sharing program and mechanism for coordination and communication between residents regarding ride-sharing. The TRHOA bylaws shall also include a requirement that monthly newsletters published by the TRHOA promote ride-sharing programs through the monthly newsletter and association meetings. Ride-sharing would minimize single occupant vehicle trips and minimize transportation fuel consumption. As such, fuel consumption associated with vehicle trips generated by the project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region. A *less than significant* impact would occur in this regard.

Building Energy Demand. The proposed project would be expected to demand 1,431 megawatt hours (MWh) of electricity and 2.4 million kilo British Thermal Units (kBTU) of natural gas per year.[10] The project would involve operations typical of residential uses, requiring electricity for typical lighting, climate control, and day-to-day activities. In addition, the project would include the operation of a community wastewater treatment facility that would require energy consumption. Although the wastewater treatment facility would require additional energy consumption, the project's grey water diverter system would help reduce the total energy consumption at the wastewater treatment facility. The grey water diverter system would allow diversion of flow from washing machines, showers, and bath tubs to a manual

[10] It is noted that the project's 1,431 megawatt hours (MWh) of electricity and 2.4 million kBTU of natural gas annual consumption includes the operation of the community wastewater treatment facility.

diverter valve. Typical operations would direct flow to provide subsurface irrigation for appropriate drought tolerant trees and shrubs within the individual yard, reducing domestic water demand. During periods of rainfall the flow would be directed to the onsite septic tank. Furthermore, the treatment system would also be designed to meet the reuse requirements for discharge of Title 22 Disinfected Secondary Effluent.

In addition, as stated in Section 5.3, AIR QUALITY, the proposed project would incorporate several energy efficiency measures, including energy-efficient lighting and air conditioning units (refer to **MM 5.3-3**). Further, the project would include passive solar design in all residential units and would be required to comply with Shasta County *General Plan* polices discussed in Section 5.18.2, above. Following compliance with all applicable mitigation measures and Shasta County *General Pan* objectives and policies, as well as inclusion of energy efficient design, the project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

Energy Efficiency Measures. Title 24, California's Energy Efficiency Standards for Residential and Non-residential Buildings, was established by the CEC in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and non-residential buildings. In 2019, the CEC updated Title 24 standards with more stringent requirements. The 2019 Standards are incorporated within the California Building Code and are expected to substantially reduce the growth in electricity and natural gas use.[11] Additional savings result from the application of the Standards on building alterations. For example, requirements for cool roofs, lighting, and air distribution ducts are expected to save additional electricity. These savings are cumulative, doubling as years go by.

Additionally, implementation of the project's design features (i.e., high efficiency lighting and air conditioning units, passive solar design, grey water diverter systems, etc.) would further reduce energy consumption. The project would be required to adhere to all federal, State, and local requirements for energy efficiency, including the Title 24 standards, as well as the project's design features. The proposed project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. A *less than significant* impact would occur in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

Impact 5.18-2	**Project implementation would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.**

Significance: Less Than Significant Impact.

Impact Analysis: Project design and operation would comply with State Building Energy Efficiency Standards, appliance efficiency regulations, and green building standards. As discussed above in Impact

[11] The 2019 standards went into effect on January 1, 2020.

5.18-1, project development would not cause inefficient, wasteful or unnecessary energy use, and impacts would be less than significant.

Shasta County does not have a stand-alone Energy Plan. The County's General Plan includes objectives and policies for energy resources. The General Plan objectives and policies encourage the utilization of renewable energy, reducing vehicle miles traveled, the use of shade trees in parking areas, and passive solar design. The General Plan objectives and policies are measures where the County is responsible for implementation. The proposed project would not conflict with the General Plan objectives and policies or obstruct their implementation.

The proposed project is a residential development that would implement various project design features (i.e., high efficiency lighting and air conditioning units, passive solar design, grey water diverter systems, etc.) that would reduce energy consumption. The project would be required to adhere to all federal, State, and local requirements for energy efficiency, including the Title 24 standards, as well as the project's design features. Further, consistent with General Plan objectives and policies, the project would include passive solar design in all residential units. As noted above, the proposed project would incorporate several energy efficiency measures, including energy-efficient lighting and air conditioning units (refer to **MM 5.3-3** in Section 5.3, AIR QUALITY).

The project would also include electric vehicle charging infrastructure to allow for the future installation of electric vehicle chargers, as this is already required by the California Building Standards Code (Title 24). The project is already required to minimize energy consumption and exceed Title 24 standards. The 2019 version of Title 24 will use approximately 53 percent less energy than those under the 2016 standards. **MM 5.7-1** in Section 5.7, GREENHOUSE GASES AND CLIMATE CHANGE, requires houses to be designed to exceed 2019 Title 24 standards by a minimum of 20 to 30 percent. California's Building Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6) contains requirements for the thermal emittance, three-year aged reflectance, and Solar Reflectance Index (SRI) of roofing materials used in new construction and re-roofing projects. Additionally, outdoor electrical outlets are required by the California Electrical Code (Title 24, Part 3), which would reduce fuel consumption of landscape equipment.

The Renewable Portfolio Standard (RPS) requires the state's electricity providers are to procure a minimum of 33 percent of their energy portfolio from renewable sources by 2020 and 50 percent by 2030 and would continue to implement programs consistent with the requirements of SB 350. Furthermore, SB 100 (September 2018) increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. It should be noted that RPS is not accounted for in the energy consumption calculations provided above. Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are also conservatively not included in the energy calculations above. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations.

Following compliance with all applicable mitigation measures and Shasta County *General Pan* objectives and policies, as well as inclusion of energy efficient design, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. A *less than significant* impact would occur in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would *be less than significant*.

5.18.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.18-3 ***The proposed project, in combination with cumulative development within Shasta County, would not use fuel or energy in a wasteful manner.***

Significance: Less Than Significant Impact.

Cumulative Setting: The cumulative setting for energy use includes Shasta County and the incorporated cities of Redding, Anderson, and Shasta Lake.

Impact Analysis: The anticipated project impacts, in conjunction with cumulative development in the site vicinity, would increase urbanization and result in increased energy consumption. Potential land use impacts are site-specific and require evaluation on a case-by-case basis. Each cumulative project would require separate discretionary approval and CEQA assessment, which would address potential energy consumption impacts and identify all feasible mitigation measures to mitigate against the wasteful use of energy.

As noted above, the proposed project would not result in significant energy consumption impacts. The proposed project would not be considered inefficient, wasteful, or unnecessary with regard to energy. Thus, the proposed project and identified cumulative projects are not anticipated to result in a significant cumulative impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Cumulative impacts related to energy consumption would be *less than significant*.

5.19 Wildfire

NOTE TO READER: The purpose of this section of the Partial Recirculated Draft EIR (RDEIR) is to identify, to the extent feasible, the potential for wildland fires in connection with the proposed Project site, to identify potential risks to human health including residents in existing homes and businesses surrounding the site, future residents of the proposed Project, as well as workers and construction workers, and to identify Shasta County (County) and state policies and regulations to reduce risk.

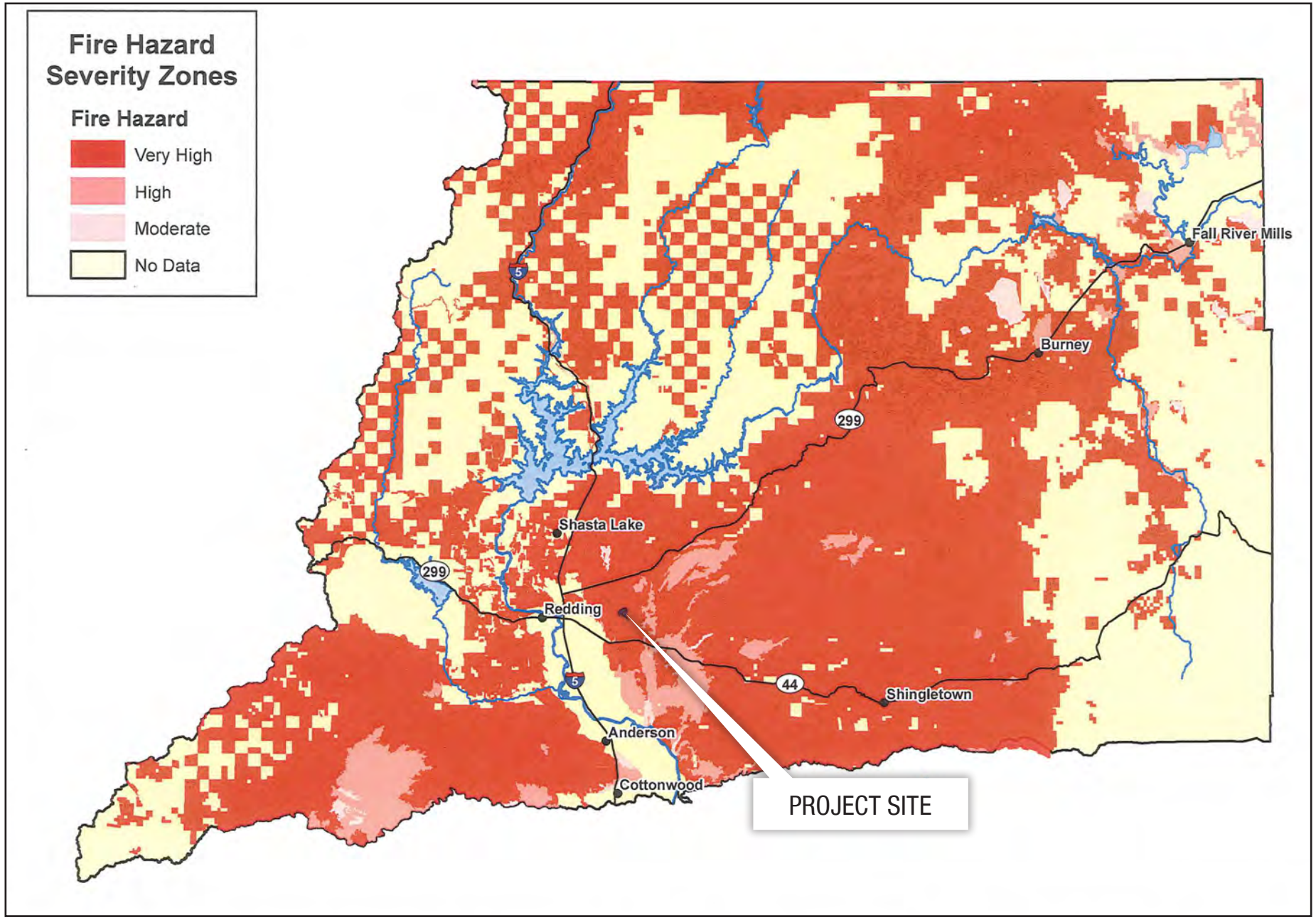
It should be noted potential impacts from wildfire were evaluated in Chapter 5.8, HAZARDS AND HAZARDOUS MATERIALS of the 2017 Draft EIR for the proposed Project. In 2018, subsequent to the release of the Draft EIR, the State CEQA Guidelines were updated. As part of that update, Appendix G was revised to include wildfire as a separate topic of discussion. As such, this section is included in this RDEIR. This section includes much of the wildfire discussion in analysis previously included in Section 5.8 of the Draft EIR as well as additional analysis consistent with the current Appendix G checklist in the State CEQA Guidelines.

The following analysis of the potential environmental impacts related to wildfire is primarily derived from the following sources:

- California Department of Forestry and Fire Protection. *State Responsibility Areas*. November 2007.
- Shasta County. *Shasta County General Plan*. September 2004.
- Shasta County. *Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan*. November 7, 2017.
- Wildland Resource Managers. *Tierra Robles Wildland Fuel/Vegetation Management Plan.* July 2015.
- Cornelius Nuworsoo, Ph.D., AICP. *Tierra Robles Area Evacuation Traffic Study*. January 2020 (included as Appendix RDEIR D-1)

5.19.1 Environmental Setting

The California Department of Forestry and Fire Protection (CAL FIRE) manages significant fire hazards in the state through its Fire and Resources Assessment Program (FRAP). These maps place areas of the state into different fire hazard severity zones (FHSZ) based on a hazard scoring system using subjective criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather where urban conflagration could result in catastrophic losses. As part of this mapping system, land where CAL FIRE is responsible for wildland fire protection and generally located in unincorporated areas is classified as a State Responsibility Area (SRA). As shown in FIGURE 5.19-1, FIRE HAZARD SEVERITY ZONES IN SRA, the Project site is located within a State Responsibility Area and the entire site is located within the Very High Fire Hazard Severity Zone.



N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • RECIRCULATED EIR

Very High Fire Severity Zone

Figure 5.19-1

Fire protection services for the Project area are provided by the California Department of Forestry and Fire Protection (CAL FIRE), based in the Redding area. The Shasta County Fire Department (SCFD) contracts with CAL FIRE to manage and oversee the operation of SCFD. Both the SCFD/CAL FIRE maintain automatic and mutual aid agreements with adjacent fire districts, including the Redding Fire Department (RFD).

The proposed Project is within Battalion 4 (Redding). Battalion 4 is located on the valley floor and along the Interstate 5 and Sacramento River corridor, running north and south, between the borders of Siskiyou and Tehama counties. Battalion 4 is interspersed with three incorporated cities, which include the City of Redding, the City of Anderson, and the City of Shasta Lake. There are three unincorporated communities within the Battalion which are served by independent Fire Districts: Mountain Gate, Happy Valley, and Cottonwood. The northern portion of Battalion 4, north of Shasta Lake, lies within federal direct protection area and is administered by the United States Forest Service (USFS), Shasta -Trinity National Forest. While the statutory responsibility for all wildland fires on these lands rests with the USFS, the protection responsibility for all medical aids, traffic collisions, hazardous conditions, and fires - involving boats, automobiles, structures, and other improvements - is served by the SCFD, administered by CAL FIRE under cooperative agreement.

WILDLAND FIRES

Wildland fires are those that burn natural or wild vegetation located on undeveloped lands. In Shasta County, human activities are the causes of approximately 90% of wildland fires and lightning causes approximately 10%. Wildland fires present a major safety hazard to rural development located in forest, brush, and grass covered areas. The majority of wildland fires in the County occur in upland areas where fire hazards can be extreme due to an abundance of highly flammable vegetation and long, dry summers.

The County uses the California Department of Forestry and Fire Protection (CAL FIRE) fire hazard severity classification system for California's wildlands. This system assesses the fire potential for wildlands based on three factors: fuel load, climate, and topography. Each of these factors is discussed below.

Fuel Load- Vegetation is the major source of fire fuel. The quantity of available vegetative fuel determines the intensity of a wildland fire. Types of fuel loads are classified into three categories:

- *light (grass)*. areas dominated by grasses, annual herbs, and barren land. This is the lightest fuel load; it burns easily but is the easiest to control.

- *medium (shrub)*- areas in which brush, shrubs, and other perennial vegetation less than six feet in height are dominant.

- *heavy (woods brush wood*). areas in which vegetation six feet or more in height is dominant. This is the hardest vegetative type to start burning but, due to the heavy fuel load, it is the hardest to control once burning.

Other factors that strongly influence the potential for wildfires include climate/weather and topography. The combination of wind, low relative humidity, and seasonal lack of precipitation increases the potential for wildfire. The County climate is typified by long, dry, and hot summers. These conditions reduce the moisture in vegetation, thereby increasing its susceptibility to fire and once burning, wind can cause a fire to spread rapidly. In addition, topography such as areas with steep slopes can cause fires to burn faster and decrease mobility of emergency equipment. Thus, as slope increases, the ability to control fire decreases.

ONSITE WILDFIRE HAZARDS

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures and may originate from a variety of ignition sources.[1] Three different types of wildfires exist. A "surface fire" is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees. A "ground fire" is usually started by lightning and burns on or below the forest floor in the organic layer down to the mineral soil. "Crown fires" spread rapidly by wind and move quickly by jumping along the tops of trees.

There are four principal vegetative communities on the proposed Project site: 1) annual grassland, 2) blue oak woodlands, 3) blue oak/interior live oak/gray pine and 4) interior live oak/shrub. The United States Department of Agriculture (USDA) developed fire behavior models based on fire danger ratings for each vegetative type. These vegetation communities and the applicable fire behavior model are shown on FIGURE 5.19-2, ONSITE FIRE BEHAVIOR FUEL MODEL AREAS, and are described below.

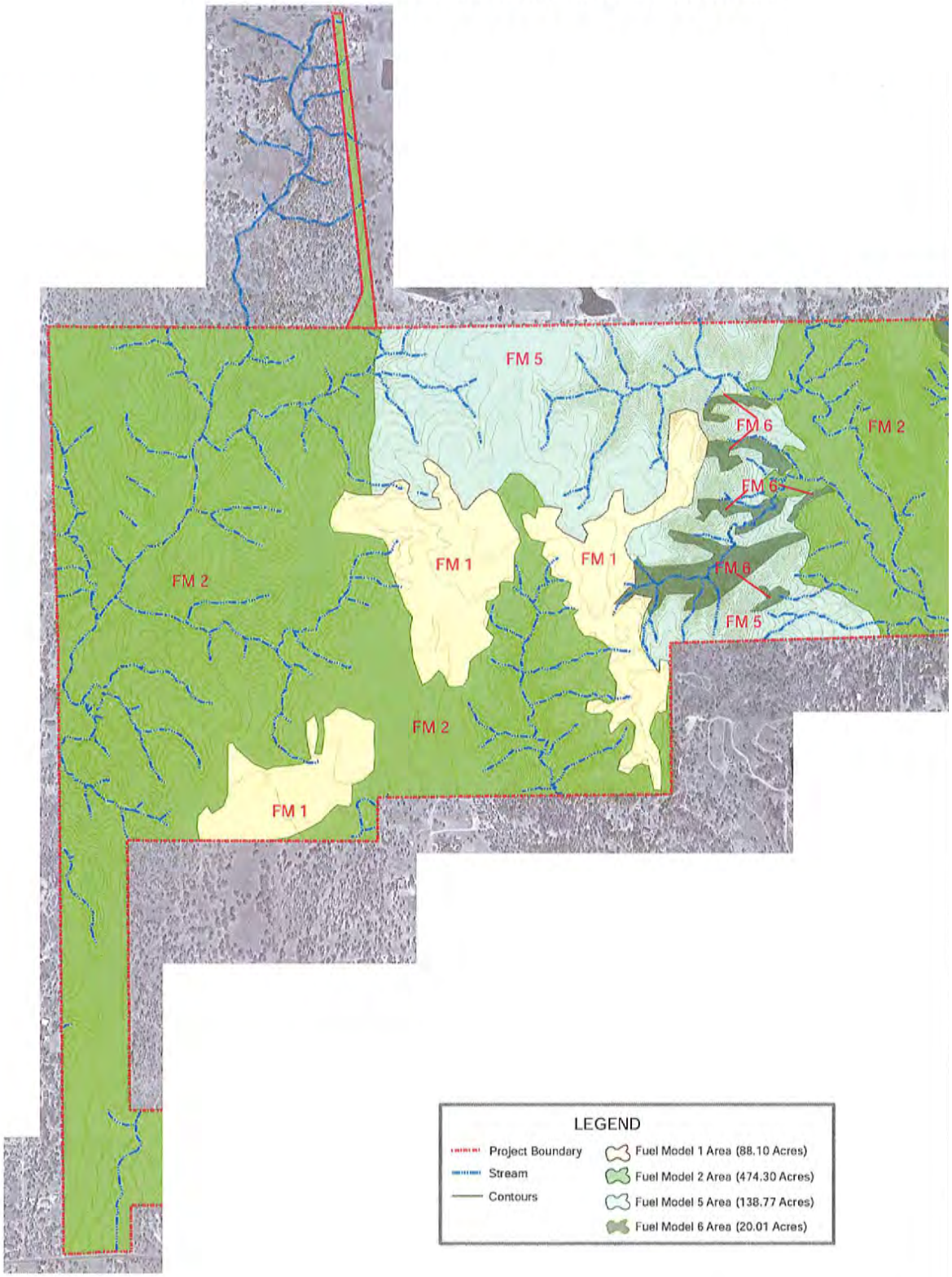
- *Annual Grasslands* – Fire Behavior Fuel Model 1. Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area.

- *Blue Oak Woodlands* – Fire Behavior Fuel Model 2. Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, in addition to litter and dead-down stem wood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and oak/pine stands that cover one-third to two-thirds of the area may generally fit this model. Such stands may include clumps of fuels that generate higher intensities and that may produce firebrands.

- *Blue Oak/Interior Live Oak/Gray Pine* – Fire Behavior Fuel Model 5. Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuels loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material.

- *Interior Live Oak* - Fire Behavior Fuel Model 6. Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h at mid-flame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older

[1] *Shasta County Multi-Jurisdictional Hazard Mitigation Plan*, Section 4.3.2, page 4-28. 2011.



SOURCE: Wildland Resource Managers, Lehmann & Assoc. Consulting, S2-J2 Engineering

N.T.S.

On site Fire Behavior Fuel Model Areas

Figure 5.19-2

but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4.

Late spring through mid-fall are known as the "fire season" in California due to the lack of moisture and dry fuel conditions. These factors coupled with the vegetation found on the Project site contribute to a high risk of fire.

SURROUNDING LAND USES

The proposed Project site is located within a primarily rural residential area, with parcels varying in size from 1 to 20 acres, and limited agricultural uses (refer to Table 5.19-1, EXISTING SURROUNDING LAND USES).

Table 5.19-1
EXISTING SURROUNDING LAND USES

Direction from Proposed Project Site	Existing Land Uses	Existing General Plan Designation	Existing Zoning Districts
North	Vacant, Rural Residential, Old Alturas Road / Seven Lakes Road	Rural Residential A (RA)	Exclusive Agriculture (EA), Unclassified (U)
East	Vacant, Rural Residential, Rustic Oak Lane, Adar Lane, Sparrow Lane, Cholet Way, Deschutes Road	Rural Residential A (RA)	Rural Residential 5-acre minimum (R-R-BA-5); Rural Residential 3-acre minimum (R-R-BA-3); Rural Residential 2.5-acre minimum (R-R-BA-2.5); Rural Residential with Mobile Home 3-acre minimum (R-R-T-BA-3); Rural Residential with Mobile Home 2.5-acre minimum (R-R-T-BA-2.5); Rural Residential with Mobile Home (R-R-T); Unclassified (U)
South	Vacant, Rural Residential, Boyle Road, Pebble Creek Lane, Northgate Drive, Petunia Lane, Cheshire Way	Rural Residential A (RA)	Rural Residential with Mobile Home (R-R-T), Rural Residential with Mobile Home 3-acre minimum (R-R-T-BA-3), Rural Residential 3-acre minimum (R-R-BA-3), Rural Residential with Mobile Home 2.5-acre minimum (R-R-T-BA-2.5), Unclassified (U)
West	Vacant, Rural Residential, Rae Lane, Oak Knoll Road, Falling Oaks Road, Old Alturas Road	Rural Residential A (RA)	Rural Residential with Mobile Home 3-acre minimum (R-R-T-BA-3); Rural Residential with Mobile Home (R-R-T); Unclassified (U)

Source: Shasta County. *Shasta County General Plan*; *Shasta County Zoning Plan*; Google Earth 2017.

5.19.2 Regulatory Setting

FEDERAL

There are no relevant federal regulations in regard to wildfires.

STATE

State General Plan Requirements

State law requires the legislative body of a city or county to adopt a comprehensive, long-term general plan that includes various elements, including a safety element for the protection of the community from unreasonable risks associated with among other things, wildland and urban fires. State responsibility areas (SRA), as defined in California Public Resources Code §4102, and very high fire hazard severity zones (VHFHSZ), as defined in California Government Code (CGC) §51177 & 51178, are required to be updated in

safety elements as necessary to address the risk of fire in these areas pursuant to CGC §65302(g)(3). The Project site is within an SRA and a VHFHSZ (CAL FIRE, 2007).

California Environmental Quality Act (CEQA)

CEQA, PRC §21000, et seq., was amended in 2018 to address numerous legislative changes to CEQA, to clarify certain portions of existing State CEQA Guidelines, and to update the State CEQA Guidelines to be consistent with recent court decisions.

Impacts of wildfire to development and a development's contribution to the potential creation of wildfire risk at the Wildland-Urban Interface (WUI) are now addressed as a separate "Environmental Factor" to be addressed in the Environmental Checklist Form in Appendix G of the State CEQA Guidelines. The Natural Resources Agency expanded the requirements of SB 1241 to also include development projects "near" SRA's and Very High FHSZs.

California Public Resources Code Section 4290

Regulations under California Public Resources Code Section 4290 (PRC 4290) have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction and development in State Responsibility Areas (SRA). The future design and construction of structures, subdivisions and developments in State Responsibility Area (SRA) shall provide for basic emergency access and perimeter wildfire protection measures as specified in PRC 4290. These measures shall provide for emergency access; signing and building numbering; and vegetation modification. The fire protection standards contained within PRC 4290 specify the minimums for such measures.

Public Resources Code Section 4291

Regulations under California Public Resources Code Section 4291 (PRC 4291) ensure continued maintenance of properties in conformance with the defensible space requirements outlined in PRC 4290, assure continued availability, access, and utilization of the defensible space provided during a wildfire, and require provisions for annual maintenance be included in the development plans and/or shall be provided as a condition of the permit, parcel or map approval. PRC 4291 is the law requiring annual defensible space be provided around all structures in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material.

California Subdivision Map Act

California Government Code Section 66474.02 of the Subdivision Map Act ("SMA") requires that three (3) specific findings of fact must be made in approving subdivisions in areas designated as high fire hazard severity zones or state responsibility areas. The findings of fact are:

1. The design and location of each lot in the subdivision, and the subdivision as a whole, are consistent with any applicable regulations adopted by the State Board of Forestry and Fire Protection pursuant to PRC 4290 and PRC 4291.

2. Supported by substantial evidence in the record, structural fire protection and services will be available for the subdivision through any of the following entities:

    a. A county, city, special district, political subdivision of the state, or another entity organized solely to provide fire protection services that is monitored and funded by a county or other public entity.

    b. The Department of Forestry and Fire Protection by contract entered into pursuant to Sections 4133, 4142, or 4144 of the Public Resources Code.

3. To the extent practicable, ingress and egress for the subdivision meets the regulations regarding road standards for fire equipment access-adopted pursuant to PRC 4290 and any applicable local ordinance.

California Building Standards Codes

The State of California provides minimum standards for building design through the California Building Code (CBC). The CBC is based on the International Building Code (IBC), which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified to address particular California concerns. The primary codes with respect to development in or near the WUI include the California Building Code, Chapter 7A "Materials and Construction Methods for Exterior Wildfire Exposure" and the California Fire Code, Chapter 49 "Requirements for Wildland-Urban Interface Fire Areas". These codes require what materials are required to be used for construction for any Building Permit submitted after January 1, 2009 within the geographical areas with FHSZs designated as Very High, High, or Moderate in SRA's and Very High within Local Response Areas (LRA). Maps of these areas were developed in 2007 for California and each county.

LOCAL

Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan

The Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan (SCHMP) includes resources and information to assist in planning for hazards. The SCHMP provides a list of actions that may assist Shasta County and the City of Anderson in reducing risk and preventing loss from future hazard events. The emphasis of the SCHMP is on the assessment and avoidance of identified risks, implementing loss reduction measures for existing exposures, and insuring critical services and facilities survive a disaster. Hazard mitigation strategies and measures avoid losses by limiting new exposures identified in hazard areas, alter the hazard by eliminating or reducing the frequency of occurrence, avert the hazard by redirecting the impact by means of a structure or adapt to the hazard by modifying structures or standards.

Shasta County General Plan

The Fire Safety and Sheriff Protection Element, Public Safety Group, of the Shasta County General Plan contains policies regarding fire protection and development practices within an identified high-risk fire hazard area. These policies are intended to protect persons and structures from fires and ensure that

development minimizes the risk of creating fire hazards or defending against those hazards. The following General Plan objectives and policies are applicable to the proposed Project:

Section 5.4 – Fire Safety and Sheriff Protection

- *Objective FS-I.* Protect development from wildland and non-wildland fires by requiring new development projects to incorporate effective site and building design measures commensurate with level of potential risk presented by such a hazard and by discouraging and/or preventing development from locating in high risk fire hazard areas.

- *Objective FS-2.* Protection of life and property from crime by encouraging new development projects to incorporate effective defensible space design techniques.

    - *Policy FS-a*. All new land use projects shall conform to the County Fire Safety Standards.

    - *Policy FS-b*. Known fire hazard information should be reported as part of every General Plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to the requirements of the California Environmental Quality Act (CEQA).

    - *Policy FS-e*. Development in areas requiring expanded levels of police and fire services shall participate in adopted County programs designed to offset the added costs for providing the expanded level of services.

The Fire Safety and Sheriff Protection Element discusses conditions and issues relevant to the protection of public health and safety related to fires and are required based on the State mandated general plan safety element in Government Code Section 65302(g).

Shasta County Emergency Operations Plan

The Shasta County Sheriff's Office of Emergency Services (OES) coordinates with Federal, State, and local agencies to prepare, respond, and recover from emergencies and natural disasters. The OES also coordinates and maintains the county Emergency Operation Center (EOC). The EOC can be used during a major incident to carry out the principles of emergency preparedness and emergency management between multiple agencies. The OES is responsible for maintaining and updating the County Emergency Operation Plan (EOP), which is an all hazards plan for Shasta County. The primary purpose of the EOP is to outline the County's all-hazard approach to emergency operations in order to protect the safety, health, and welfare of its citizens throughout all emergency management mission areas. The EOP is implemented whenever the County must respond to an emergency incident or planned event whose size or complexity is beyond that normally handled by routine operations. Emergency Function (EF) 4 coordinates and manages all fire detection, control, and suppression efforts within the jurisdiction. This support function consists of two distinct components: urban/structural fires and wildland fires. EF 6 provides mass care/sheltering, housing, and human services support for victims of natural and technological emergencies and disasters.

The EOP includes Incident Annexes (IAs) to supplement the EOP to identify critical tasks associated with to specific natural, technological, and human-caused hazards identified in the County's most current Hazard Identification and Vulnerability Assessment. IAs identify step-by-step actions for each hazard through the pre-incident, response, and recovery phases of an incident. Major Fire is identified specifically as IA 3 in the EOP. IA 3 contains a major fire checklist with three discrete categories: Pre-Incident Phase, Response Phase, and Recovery Mobilization.

Shasta County Communities Wildfire Protection Plan

In 2015, Shasta County updated the existing strategic fuel management plans and community wildfire protection plans and consolidate them into a single county-wide plan. The result was the adoption of the 2016 Shasta County Communities Wildfire Protection Plan (SCWPP). The SCWPP incorporated input from a multidisciplinary team of stakeholders and agencies from which a list of ten goals and objectives was developed. The overall intent included but was not limited to controlling of fuel inventories, conducting an asset/risk and prioritization assessment, development of a fuel reduction plan, development of maps to aid in planning, identification of fuel breaks, a priority list for fire safe projects, and encouraging ongoing maintenance (Shasta County, 2016).

Within the SCWPP, there are a total of ten planning areas that cover the 2,462,080-acre Shasta County planning area. The proposed Project is located on the eastern border of the Stillwater/Churn Creek area that is generally located in an around the City of Redding. The eastern half of the Project site is in the CCPA which extends eastward approximately 40 miles. According to the SCWPP, the area generally consists of rangeland but also contains numerous small communities. The SCWPP notes that these areas have experienced significant fires in the past and with current urbanization can expect future fires to be more damaging.

Stillwater-Churn Creek Planning Area

The Stillwater-Churn Creek Planning Area (SWCPA) watershed is located in southwestern Shasta County and encompasses approximately 94,096 acres. The SWCPA includes the eastern and northern suburbs of Redding, most of Shasta Lake City, and many rural homes and subdivisions outside of the cities' boundaries and includes the western portion of the proposed Project. Near the Project site, the SWCPA contains many "bedroom communities" for the city of Redding, and with other parts containing low density residential areas and rural subdivisions. Overall, topography and weather are the same within the Project area in the SWCPA as discussed above. The SCWPP does not rate the fire hazard severity of SWCPA but the Project site is mapped with vegetative characteristics of short grass and blue and valley oak woodland. There are no fuel modification plans or projects within the Project site identified in the SWCPA (Shasta County, 2016). Due to the proximity to the CCPA, wildfire risk would still be considered very high.

Cow Creek Planning Area

The CCPA encompasses approximately 275,000 acres and includes the communities of Palo Cedro, Bella Vista, Whitmore, Oak Run, Round Mountain, Montgomery Creek, and Backbone Ridge. Landownership is approximately 98% private and 2% is managed by public agencies with the Project site being within private

land. Topography within the CCPA varies from flat to mountainous and begins on the east at an elevation of approximately 340 feet to approximately 7,300 feet on the east. The Project site is in the westerly area of CCPA and is relatively flat and rolling with a few steeper areas. The summers within and around the Project site are hot and dry and winters are cool with annual precipitation approximately 25 inches. The entire CCPA is mapped with a very high fire hazard severity rating and consists of predominantly oak woodland and grassland vegetation. There are no fuel modification plans or projects within the Project site identified in the CCPA (Shasta County, 2016).

Shasta County Code of Ordinances

Title 16 – Buildings and Construction

The Chapters of the Shasta County Code under Title 16 - Building and Construction apply to all unincorporated areas; Chapter 16.04.130 addresses Fire Standards and Equipment, and Chapter 16.10.290 addresses Fire Safety Regulations. Chapter 16.08.101 – Codes Adopted, notes that the building standards, rules and regulations contained in the most recent edition of the codes specified in the California Health and Safety Code (Sections 17922 and 18938), and in Chapter 1 of Title 24, Part 2, of the California Code of Regulations (CCR) are adopted by reference by the County. The purpose of these codes is to prescribe the minimum requirements necessary to establish a reasonable level of fire safety to protect life and property from hazards created by fire, explosion, and dangerous conditions.

Chapter 8.10 – Defensible Space for Fire Protection

Chapter 8.10 – Defensible Space for Fire Protection, of the Shasta County Code is applicable to Urban Lands within the unincorporated area of Shasta County, consisting of lands located in either a zoning district in which the Shasta County Zoning Plan permits the creation of parcels that are two acres or less in size or a Planned Development zoning district. As Urban Lands, the requirements of this chapter apply within the Project area. This chapter requires responsible parties to maintain defensible space of up to 30 feet from the property line of the responsibly party's parcel when the accumulation of fuel on the parcel endangers or encroaches on a defensible space of 100 feet from the exterior perimeter of any improvement on an adjacent property that also lies entirely or partially within an Urban Lands area. The Fire Warden may require a distance greater than 30 feet but not to exceed 100 feet when it is determined that the greater distance is necessary to provide defensible space for improvements on an adjacent property.

5.19.3 THRESHOLDS OF SIGNIFICANCE

The County will use the Environmental Checklist Form in Appendix G of the State CEQA Guidelines, to determine if the proposed Project could potentially have a significant impact related to wildfire. Such an impact would occur if the proposed Project would violate the following criteria:

- Substantially impair an adopted emergency response plan or emergency evacuation plan;

- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
- 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;
- 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.
-

5.19.4 POTENTIAL IMPACTS AND MITIGATION MEASURES

Methodology

The potential impacts associated with the proposed Project are evaluated on a qualitative basis through a comparison of existing conditions within the proposed Project site and the anticipated Project effects. The potential for impacts from wildfires would occur if the effect described under the criteria below occurs. The evaluation of impacts of the proposed Project is based on professional judgment, analysis of the County's and state fire management policies, and the significance criteria established by Appendix G of the State CEQA Guidelines, which the County has determined to be appropriate criteria for this RDEIR.

IMPACT 5.19-1	***The Project Would Substantially Impair an Adopted Emergency Response Plan or Emergency Evacuation Plan.***

Significance: Less Than Significant Impact.

Construction of the Project would use ignition-resistant construction methods and materials to improve the ignition resistance of buildings, especially from firebrands. Therefore, development of the Proposed Project would be consistent with the 2019 California Building Code (or the most current version) and the California Fire Code (Part 9 of Title 24 of the California Code of Regulations). Fire Code Chapter 49 cites specific requirements for wildfire-urban interface areas that include, but are not limited to, creating and maintaining defensible space and managing hazardous vegetation and fuels.

As discussed in Chapter 3.0, PROJECT DESCRIPTION, The Tierra Robles Wildland Fuel/Vegetation Management Plan (TRWF/VMP) is intended to provide the management direction for the reduction of flammable vegetation from around buildings, roadways and driveways in accordance with the California Department of Forestry and Fire Protection/Shasta County Fire Department (CAL FIRE/SCFD) requirements. In order to address the need to reduce fuel loading and associated fire hazards while enhancing the onsite wildlife habitats, the TRWF/VMP divides the proposed Project into distinct Resource Management Areas

(RMA's) based on common vegetative and topographic features. The RMAs include general management prescriptions applicable to all RMAs as well as specific prescriptions tailored to individual conditions of each RMA (refer to Draft EIR Appendix 15.2, TIERRA ROBLES COMMUNITY SERVICES DISTRICT).

Implementation of the TRWF/VMP would allow for on-the-ground maintenance activities that would hand treat accumulated fuels build-ups to reduce the threat of catastrophic wildfire. The proposed Project would strategically reduce hazardous fuels by removing brush and limbing trees as prescribed in the TRWF/VMP (refer to Section 5.8, HAZARDS AND HAZARDOUS MATERIALS, and Draft EIR Appendix 15.2, TIERRA ROBLES COMMUNITY SERVICES DISTRICT, respectively). Treatments are intended to slow the rate of fire spread, reduce fire intensity, and modify fire behavior. Tree thinning would be accomplished using chainsaws and hand labor to cut trees. Slash would be disposed through chipping, piling and burning, and/or through sale of fuelwood.

For these reasons, the proposed Project would not impair and would be consistent with the County's EOP and EF 4 regarding fire detection, control, and suppression efforts within the jurisdiction.

To minimize operational impacts to emergency access, all on-site roadways would be designed in compliance with the Shasta County Fire Safety Standards as outlined in Chapters 8.10 and 16 of the Shasta County Code of ordinances prior to issuance of building permits. Primary access to and from the proposed Project would be from Boyle Road at the southern end of the Project site, with a north-south oriented internal arterial roadway (Tierra Robles Parkway) that connects with Old Alturas Road (via Chatham Ranch Drive) at the north end of the Project site. The proposed internal street network consists of approximately 15 roadway segments and would be designed and constructed to meet applicable County street standards. A secondary access is proposed at the southerly terminus of Tierra Robles Lane at Northgate Drive. The proposed connection with Northgate Drive would be gated per County fire standards and used for reciprocal emergency access only. As a result, Project operations would have a less than significant impact related to emergency response or evacuation activities within the development.

Emergency Evacuation

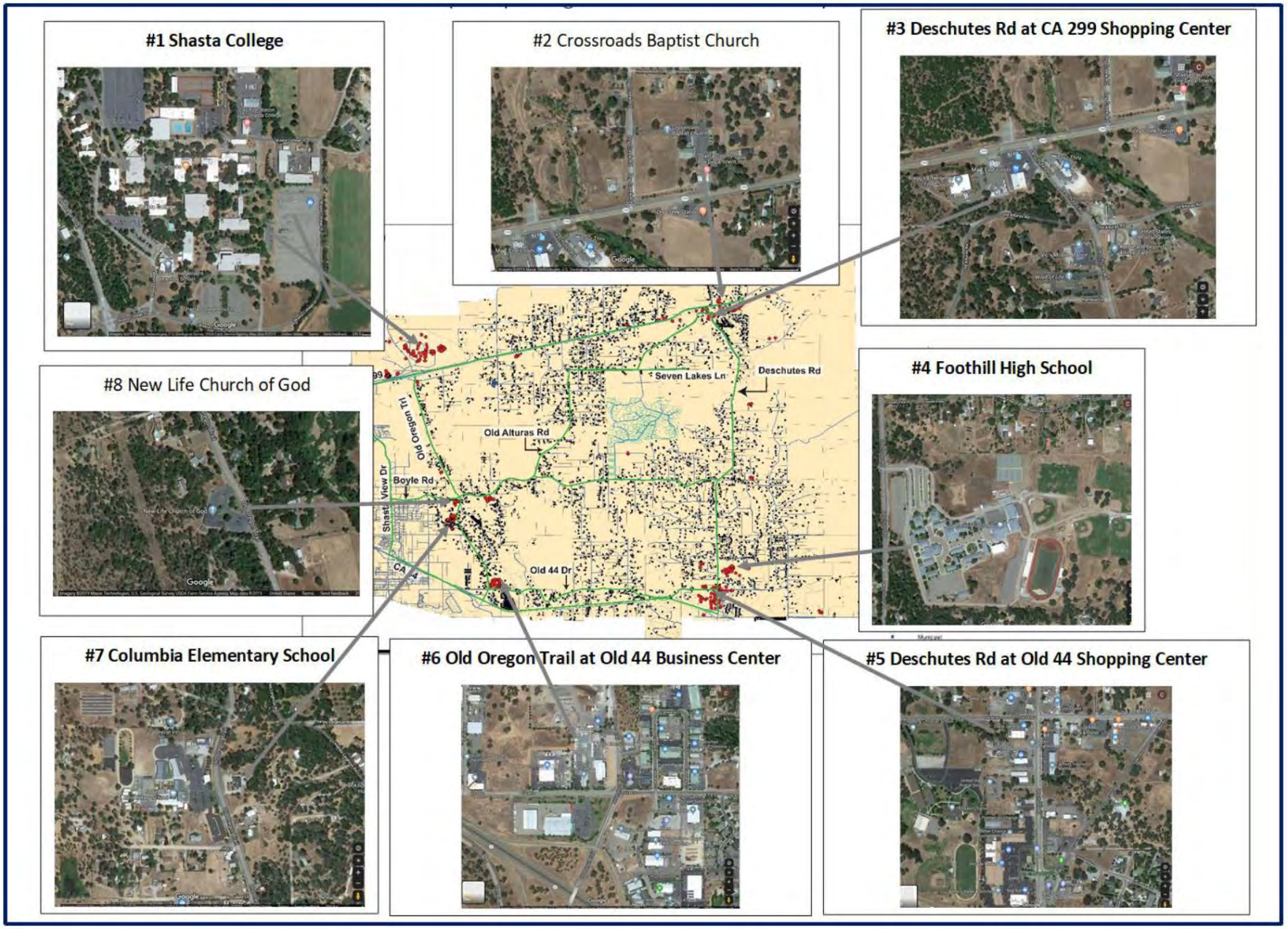
A Project specific traffic evacuation study was prepared by Cornelius Nuworsoo, Ph.D., AICP (January 2020) to determine if the proposed Project would result in a substantial increase in evacuation times or a substantial decrease in traffic speeds during a wildfire evacuation event (refer to Appendix RDEIR D-1, *Tierra Robles Area Evacuation Traffic Study*). The County does not have any specific thresholds regarding minimum evacuation times for a specific project or area such as the proposed Project. The report identified eight potential temporary refuge areas consisting of large community facilities in the surrounding area. These refuge areas are large, well known sites such as schools, shopping centers, and churches. Subject to field decisions by the fire authorities, these locations would provide short-term refuge for evacuated residents of the proposed Project. These locations are open facilities that are accompanied by large unvegetated parking areas and they can reasonably be relied upon to be available in the event of an emergency evacuation. These potential temporary refuge areas are listed below and shown in FIGURE 5.19-3, TEMPORARY REFUGE AREAS. These areas include:

1. Shasta College
2. Crossroads Baptist Church
3. Deschutes Road at CA 299 Shopping Center
4. Foothill High School
5. Deschutes Road at Old 44 Shopping Center
6. Old Oregon Trail at Old 44 Business Center
7. Columbia Elementary School
8. New Life Church of God

Based on evacuation routes to the eight temporary refuge areas, the study evaluated five different evacuation scenarios to reflect different origins of a wildfire. The availability of multiple refuge areas under each scenario poses an advantage as traffic flow would distribute to multiple locations instead of one. The distribution of traffic can result in lower evacuation times than if all motorists headed to a single location. These scenarios include:

- Split evacuations toward all directions north, south, east, and west of the Project area
- All evacuations to the north – toward Refuge Areas 1, 2, and 3
- All evacuations to the south – toward Refuge Areas 4, 5, and 6
- All evacuations to the east – toward Refuge Areas 2, 3, 4, and 5
- All evacuations to the west – toward Refuge Areas 1, 6, 7, and 8

The traffic volume anticipated to flow through the study network was estimated according to best practice assumptions in traffic flow analysis. An estimate of traffic volume estimates during evacuation events is provided in Table 5.19-2, SUMMARY OF TRAFFIC VOLUME ESTIMATES FOR EVACUATION EVENTS. Projections indicate the equivalent of approximately 8,542 passenger cars would flow through the study network as motorists from existing development in the surrounding area head toward appropriate refuge



SOURCE: De Lapide & Associates, 2020.

Temporary Refuge Areas for Evacuation

Figure 5.19-3

areas. The traffic volume estimate represents a conservative worst-case analysis because it assumes all existing and planned housing units are occupied at the time of evacuation.

Assigned volumes assumed the use of any or all 8 designated refuge areas, as appropriate, as evacuation destinations for particular circumstances that are captured under the five scenarios. The selection of through-roads for assigned volumes assumed motorists would head toward the closest refuge areas under specific scenarios. Evacuation paths were determined as the shortest travel distance paths to the nearest applicable refuge areas.

Table 15.19-2
SUMMARY OF TRAFFIC VOLUME ESTIMATES FOR EVACUATION EVENTS

Item	Volume
Traffic volume without adjustments (vehicles)	7,124
Universal Adjustments	
3.5% heavy vehicle (HV) adjustment	249
Rounding up adjustment	33
Subtotal adjustments	283
Subtotal typical network volume (passenger cars)	**7,407**
Scenario-Dependent Adjustments	
Potential additional CA 299 thru volume (passenger cars)	660
Potential additional CA 44 thru volume (passenger cars)	475
Grand total maximum potential network volume (passenger cars)	8,542
Source: Cornelius Nuworsoo, Ph.D., AICP, 2020	

The next set of five tables show summaries of evacuation results that include residual delays along the way. The times are estimates of how long it would take to completely evacuate the Tierra Robles study area under optimal throughput conditions.

Table 5.19-3, MODEL SUMMARY FOR SCENARIO 1 (EVACUATION TOWARD ALL DIRECTIONS) shows the summary for the "baseline" scenario under which evacuation is toward all cardinal directions (north, south, east, and west) to access all temporary refuge areas. This would be a likely scenario when a wildfire begins in a central location of the study area without obstructing any of the through-roads. It provides the most favorable evacuation scenario in terms of number of available refuge locations against which to compare all other scenarios.

The two most proximate refuge locations to most of the area residents are Refuge Area 3 and Refuge Area 4 which the last sets of vehicles would reach in approximately one hundred minutes. Note that it would take about 45 minutes to traverse the longest-delayed roadway segment under this scenario, but residual delay

at multiple segments along the way would nearly double the travel time for the last sets of vehicles to reach these refuge locations.

Refuge Area 2 and Refuge Area 8 are located near other major refuge areas and are offside relative to the travel paths enabled by the configuration of the area road network. The simulation of flows through the study network under this first scenario and under subsequent scenarios, indicate that areas 2 and 8 are minor locations compared to all the others. Few residents can reach these two refuge locations without passing by another more major location.

Table 5.19-3
MODEL SUMMARY FOR SCENARIO 1 (EVACUATION TOWARD ALL DIRECTIONS)

Scenario	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
All Directions	1	833	20	41	0.69	3.6	5.3
All Directions	2 & 3	2,213	18	101	1.68	4.2	2.5
All Directions	4	2,125	18	97	1.61	4.0	2.5
All Directions	5	630	20	32	0.53	2.6	4.9
All Directions	6	637	22	30	0.50	1.7	3.3
All Directions	7	950	18	46	0.77	3.6	4.7
All Directions	8	19	18	2	0.04	0.5	14.0

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020

Table 5.19-4, MODEL SUMMARY FOR SCENARIO 2 (EVACUATION TOWARD NORTH DIRECTION) shows the summary for the scenario under which evacuation is toward the north cardinal direction to access Refuge Areas 1, 2, and 3. This would be a likely scenario when a wildfire begins south of the study area.

The most proximate refuge locations to most of the area residents are Refuge Area 1 and Refuge Area 3 which the last sets of vehicles would reach in approximately two hours and three and one-half hours respectively. Note that it would take about two and one-half hours to traverse the longest-delayed roadway segment under this scenario, but residual delay at multiple segments along the way would increase the travel time for the last sets of vehicles to reach these refuge locations by approximately another hour.

Table 5.19-5, MODEL SUMMARY FOR SCENARIO 3 (EVACUATION TOWARD SOUTH DIRECTION) shows the summary for the scenario under which evacuation is toward the south cardinal direction to access Refuge Areas 4, 5, and 6. This would be a likely scenario when a wildfire begins north of the study area.

The most proximate refuge locations to most of the area residents are Refuge Area 4 and Refuge Area 6 which the last sets of vehicles would reach in nearly three and one-half hours and two hours, respectively. Note that it would take about two hours to traverse the longest-delayed roadway segment under this scenario, but residual delay at multiple segments along the way would increase the travel time for the last sets of vehicles to reach these refuge locations by approximately one and one-half hours.

Table 5.19-4
MODEL SUMMARY FOR SCENARIO 2 (EVACUATION TOWARD NORTH DIRECTION)

Scenario	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
North Direction	1	2,439	18	114	1.90	6.0	3.1
North Direction	2	582	21	27	0.45	1.2	2.7
North Direction	3	4,386	17	198	3.30	8.5	2.6

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020

TABLE 5.19-5
MODEL SUMMARY FOR SCENARIO 3 (EVACUATION TOWARD SOUTH DIRECTION)

Scenario	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
South Direction	4	4,338	17	194	3.23	4.1	1.3
South Direction	5	630	24	27	0.46	0.5	1.2
South Direction	6	2,439	18	113	1.88	6.3	3.4

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020

Table 5.19-6, MODEL SUMMARY FOR SCENARIO 4 (EVACUATION TOWARD EAST DIRECTION) shows the summary for the scenario under which evacuation is toward the east cardinal direction to access Refuge Areas 2, 3, 4, and 5. This would be a likely scenario when a wildfire begins west of the study area.

The most proximate refuge locations to most of the area residents are Refuge Area 3 and Refuge Area 4 which the last sets of vehicles would reach in nearly two and a quarter hours. Note that it would take about one hour to traverse the longest-delayed roadway segment under this scenario, but residual delay at multiple segments along the way would increase the travel time for the last sets of vehicles to reach these refuge locations by approximately one and a quarter hours.

Table 5.19-6
MODEL SUMMARY FOR SCENARIO 4 (EVACUATION TOWARD EAST DIRECTION)

Scenario	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
East Direction	2	314	21	27	0.45	1.2	2.7
East Direction	3	2,750	19	133	2.22	5.3	2.4
East Direction	4	3,074	15	138	2.31	5.9	2.6
East Direction	5	1,268	19	61	1.02	4.0	4.0

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020

Table 5.19-7, MODEL SUMMARY FOR SCENARIO 5 (EVACUATION TOWARD WEST DIRECTION) shows the summary for the scenario under which evacuation is toward the west cardinal direction to access Refuge Areas 1, 6, 7, and 8. This would be a likely scenario when fire begins east of the study area. This might even be the most likely scenario given the pattern of development and proximity of the wildland-urban interface to the eastern boundary of the study area.

The most proximate refuge locations to most of the area residents are Refuge Area 1 and Refuge Area 7 which the last sets of vehicles would reach in nearly two and one-half hours. Note that it would take about one and one-half hours to traverse the longest-delayed roadway segment under this scenario, but residual delay at multiple segments along the way would increase the travel time for the last sets of vehicles to reach these refuge locations by approximately one hour.

Table 5.19-7
MODEL SUMMARY FOR SCENARIO 5 (EVACUATION TOWARD WEST DIRECTION)

Scenario	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
West Direction	1	3,046	17	137	2.28	6.4	2.8
West Direction	6	1,268	18	67	1.11	6.3	5.6
West Direction	7	3,074	15	146	2.43	8.5	3.5
West Direction	8	19	18	2	0.04	0.5	14.0
Source: Cornelius Nuworsoo, Ph.D., AICP, 2020							

As previously noted, the analysis above includes the proposed Project as well as other existing and planned development in the surrounding area. To determine proposed Project's contribution to the evacuation times, the following tables evaluate the Project's effect on potential evacuation scenarios. Since each evacuation scenario has multiple refuge areas, the first step is to select those temporary refuge areas that include a partial or the entire traffic from the proposed Project. Table 5.19-8, LONGEST CLEARANCE TIMES TO REFUGE AREAS BY EVACUATION SCENARIO includes all refuge areas with the longest clearance times by scenario and identifies those that include traffic from the proposed Project. Depending on the scenario, four out of eight refuge areas (#1, #3, #4, and #7) would contain traffic from the proposed development. This produced a total of eight instances of those refuge areas with the longest clearance times across the five scenarios.

Table 5.19-8
LONGEST CLEARANCE TIMES TO REFUGE AREAS BY EVACUATION SCENARIO

Scenario & Direction	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)	Include Traffic from Tierra Robles?
1-All	3	2,213	18	101	1.68	4.2	2.5	Yes (p)
1-All	4	2,125	18	97	1.61	4	2.5	Yes (p)
2-North	1	2,439	18	114	1.90	6	3.1	No
2-North	3	4,386	17	198	3.30	8.5	2.6	Yes (w)
3-South	4	4,338	17	194	3.23	4.1	1.3	Yes (w)

Scenario & Direction	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)	Include Traffic from Tierra Robles?
3-South	6	2,439	18	113	1.88	6.3	3.4	No
4-East	3	2,815	19	133	2.22	5.3	2.4	Yes (p)
4-East	4	2,867	15	138	2.22	5.9	2.7	Yes (p)
5-West	1	3,046	17	137	2.28	6.4	2.8	Yes (p)
5-West	7	3,074	15	146	2.43	8.5	3.5	Yes (p)

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020
Notes: Yes (p) = yes, partial Tierra Robles development traffic included
Yes (w) = yes, entire Tierra Robles development traffic included
No = no Tierra Robles development traffic included

Table 5.19-9, LONGEST CLEARANCE TIMES TO REFUGE AREAS WITHOUT TIERRA ROBLES DEVELOPMENT TRAFFIC shows the estimated characteristics of traffic flow without the proposed Project. Overall, with removal of Project traffic, network speeds and related clearance times would not result in a substantial change and thus would not result in enough relief for arrival at the refuge areas with the longest clearance times to make noticeable differences on evacuation.

Table 5.19-9
LONGEST CLEARANCE TIMES TO REFUGE AREAS WITHOUT TIERRA ROBLES DEVELOPMENT TRAFFIC

Scenario & Direction	Refuge Area	Vehicles (passenger cars)	Early Departure Network Speed (mph)	Total Clearance Time (minutes)	Total Clearance Time (hours)	Max Travel Distance (miles)	Last Vehicle Speed (mph)
1-All	3	1,920	18	88	1.47	4.2	2.8
1-All	4	2,073	18	94	1.57	4.0	2.5
2-North	1	2,439	18	114	1.90	6	3.1
2-North	3	4,029	17	183	3.05	8.5	2.8
3-South	4	3,980	17	179	2.99	4.1	1.4
3-South	6	2,439	18	113	1.88	6.3	3.4
4-East	3	2,713	19	120	2.00	5.3	2.6
4-East	4	3,023	15	136	2.27	5.9	2.6
5-West	1	2,740	17	124	2.07	6.4	3.1
5-West	7	3,023	15	144	2.39	8.5	3.6

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020

Table 5.19-10, CHANGES IN FLOW CHARACTERISTICS WITH TIERRA ROBLES DEVELOPMENT TRAFFIC shows the estimated increases in vehicles and clearance times. The last sets of vehicles to arrive at refuge areas would endure nearly the same levels of delay through the network. Estimates of increases in their travel speeds would be no more than 0.3 miles per hour, if any. The proposed Project is estimated to add approximately 5 percent of the passenger car equivalent traffic volume to the study area traffic during evacuations. With the addition of Project traffic, the largest travel time increase for the last sets of vehicles to arrive at refuge areas would be no more than 15 minutes out of the maximum estimate of nearly 3.5 hours.

Table 5.19-10
CHANGES IN FLOW CHARACTERISTICS WITH TIERRA ROBLES DEVELOPMENT TRAFFIC

Scenario & Direction	Refuge Area	Change in Vehicles (passenger cars)	Change in Early Departure Network Speed (mph)	Change in Total Clearance Time (minutes)	Change in Total Clearance Time (hours)	Change in Max Travel Distance (miles)	Last Vehicle Speed (mph)
1-All	3	+293	0	+13	+0.21	0.0	+0.3
1-All	4	+52	0	+3	+0.04	0.0	0.0
2-North	1	0	0	0	0.00	0.0	0.0
2-North	3	+357	0	+15	+0.25	0.0	+0.2
3-South	4	+358	0	-15	+0.24	0.0	+0.1
3-South	6	0	0	0	0.00	0.0	0.0
4-East	3	+307	0	-13	+0.22	0.0	+0.2
4-East	4	+52	0	-2	+0.04	0.0	0.0
5-West	1	+306	0	-13	+0.21	0.0	+0.3
5-West	7	+52	0	-2	+0.04	0.0	+0.1

Source: Cornelius Nuworsoo, Ph.D., AICP, 2020
Note: "change" equals with Tierra Robles characteristic minus without Tierra Robles characteristic

As such, the evacuation traffic analysis concludes that while the proposed Project would add to the volume of traffic (approximately 5%) within the surrounding area, the addition of Project traffic would not substantially increase the clearance times to evacuation centers. Further, with the addition of the proposed Project, the last sets of vehicles to arrive at refuge areas would be approximately 15 minutes out of the maximum estimate of nearly 3.5 hours.

Therefore, with the addition of Project traffic the roadway network, speeds and related clearance times would not substantially change. . The Project would not result in a delay for arrival at refuge areas with the longest clearance times to make noticeable differences on evacuation. While the Project would add to the volume of traffic in the area, the scenario evaluated in Table 5.19-10 demonstrates that the Project plus existing development would not substantially delay the arrival of evacuating cars at refuge areas. . As such, the Project would not contribute to a delay during an emergency wildfire evacuation such that it would substantially impair the execution of the County's EOP.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

IMPACT 5.19-2	***Would the Project Due to Slope, Prevailing Winds, and Other Factors, Exacerbate Wildfire Risks, and Thereby Expose Project Occupants to, Pollutant Concentrations from a Wildfire or the Uncontrolled Spread of a Wildfire.***

Significance: Less Than Significant Impact with Mitigation Incorporated.

The proposed Project has been designed to complement the existing topography and would not substantially alter the existing topography of the Project site and would not change the prevailing wind patterns. Implementation of the proposed Project would result in the construction of low density rural residential uses within an area designated as a very high fire hazard zone.

Many locations throughout Shasta County, including the proposed Project site, are identified as having a very high wildland-fire hazard potential due to an intermixture of urban/rural uses and natural areas with high fuel loads and varied terrain. The presence of urban development adjacent to wildlands increases the likelihood of wildland fires, and the presence of wildlands adjacent to urban development allows fire to spread rapidly to and through developed areas.

The *Shasta County Multi-Jurisdictional Local Hazard Mitigation Plan* (SCHMP) and the *Fire Hazard Severity Zones in State Responsibility Areas Map* identifies the proposed Project site as being located in a VHFHSZ. As a result, development of the proposed Project would expose people and structures to a potential risk of loss, injury, or death involving wildland fires. The VHFHSZ includes not only the Project site, but the adjacent properties as well. These properties are generally undeveloped with limited residential development, and where residential development does occur the structures are generally surrounded by continuous vegetation and fuels that allow wildland fires to spread rapidly.

As mentioned above under Section 5.19.3, REGULATORY SETTING, the Public Safety Group, Fire Safety and Sheriff Protection subsection, of the Shasta County *General Plan* contains policies regarding fire protection and development practices within an identified high-risk fire hazard area. These policies are intended to protect persons and structures from fires and ensure that development minimizes the risk of creating fire hazards or defending against those hazards. The proposed Project complies with all applicable goals and policies in the Shasta County *General Plan* related to urban and wildland fires.

The proposed Project includes a number of measures to reduce fire hazards. As noted above under Impact 5.8-2, all proposed roadways, driveways, and buildings would be constructed in accordance with the Shasta County Fire Safety Standards. These standards also require the clearing of combustible vegetation around all structures for a distance of not less than 30 feet on each side, or to the property line. The California Public Resources Code 4291 includes a "Defensible Space" requirement of clearing 100 feet

around all buildings, or to the property line, whichever is less. Water to the Project area would be supplied by the Bella Vista Water District and fire hydrants would be placed as specified by California's State Fire Code. In addition, the applicant has prepared a Wildland-Fuel Vegetation Management Plan (herein referenced as the *Tierra Robles Wildland Fuel/Vegetation Management Plan)* to address onsite vegetation management in both areas within 100 feet of structures and 10 feet on either side of driveways for clear access for emergency vehicles, and in designated onsite management and open space areas (refer to *Resource Management Areas*, below).

Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan (SCHMP)

The SCHMP evaluates hazards for a wide array of potential issues within the County. One specific issue identified in the SCHMP is wildland fire. The LHMP states that the area of the proposed Project area "is typically grassy woodland with blue oak, valley oak, gray pine, and annual grasses. Significant fires have occurred on the valley floor, especially during north wind events, because the primary fuel is annual grasses. Each year the fire danger is recurring."[2] As noted in the County's SCHMP, the proposed Project site is located within a VHFHSZ and within the Cow Creek Fuel Reduction Planning Area.

The SCHMP identifies several mitigation strategies that the County should implement to reduce losses from future hazard events, including wildland fires. In order to implement the mitigation strategies, a series of hazard mitigation goals were developed for the Cow Creek Watershed. Goal WDF-1 addresses wildland fires and specifically states that it is the County's desire to promote disaster resistant future development.[3] Later in the SCHMP this goal is further defined as a *Very High* priority action item supported by several implementation strategies, including the following key strategy: "provide a network of fuel breaks and large fuel treatment areas at strategic locations in the watershed, helping to reduce or eliminate the spread of wildlife in the watershed."[4] The provisions of the SCHMP are consistent with the Shasta County *General Plan* related to mitigation of wildfire hazards and the proposed Project is consistent with the Shasta County *General Plan* objectives and policies noted above.

Tierra Robles Wildland Fuel/Vegetation Management Plan

The proposed Project would establish the Tierra Robles Community Services District (TRCSD) or Tierra Robles Homeowners Association (TRHOA) to manage utilities and the Project site. This would include management of the proposed Tierra Robles Wildland Fuel/Vegetation Management Plan (TRWF/VMP), Open Space Management, and Oak Woodland Management Plan. These activities would occur within five Resource Management Areas (RMAs) that specifically pertain to wildfire and are discussed in additional detail further below. The listed plans guide the TRCSD or TRHOA on how to manage the vegetative communities including oak woodlands within the subdivision and RMAs for the protection from wildland fires and to ensure the approved plans are implemented to help safeguard future residents. In addition, the TRCSD or TRHOA would be the enforcing agency to ensure the residents implement their part of the fuel management plan.

[2] *Shasta County Multi-Jurisdictional Hazard Mitigation Plan*, page 4-30. 2011.
[3] *Shasta County Multi-Jurisdictional Hazard Mitigation Plan*, page 5-21. 2011.
[4] *Shasta County Multi-Jurisdictional Hazard Mitigation Plan*, page 5-47. 2011.

The TRWF/VMP provides direction for the reduction of flammable vegetation from around buildings, roadways and driveways in accordance with CAL FIRE and Shasta County Fire Department (SCFD) requirements. To address the minimization of fuel loads and reduce the associated fire hazards, while enhancing the onsite wildlife habitats, the TRWF/VMP would divide the proposed Project into five distinct RMA's. RMA's are based on common vegetative and topographic features. Implementation of the TRWF/VMP would include ground level maintenance activities including hand removal with hand tools and chain saws of accumulated fuel to reduce the threat of catastrophic wildfire. Hazardous fuel conditions would be managed by removal of brush and limbing of trees. Treatments would slow the rate of fire spread, reduce fire intensity, and modify fire behavior. Slash would be disposed through chipping, piling and burning, and/or through sale of fuelwood.

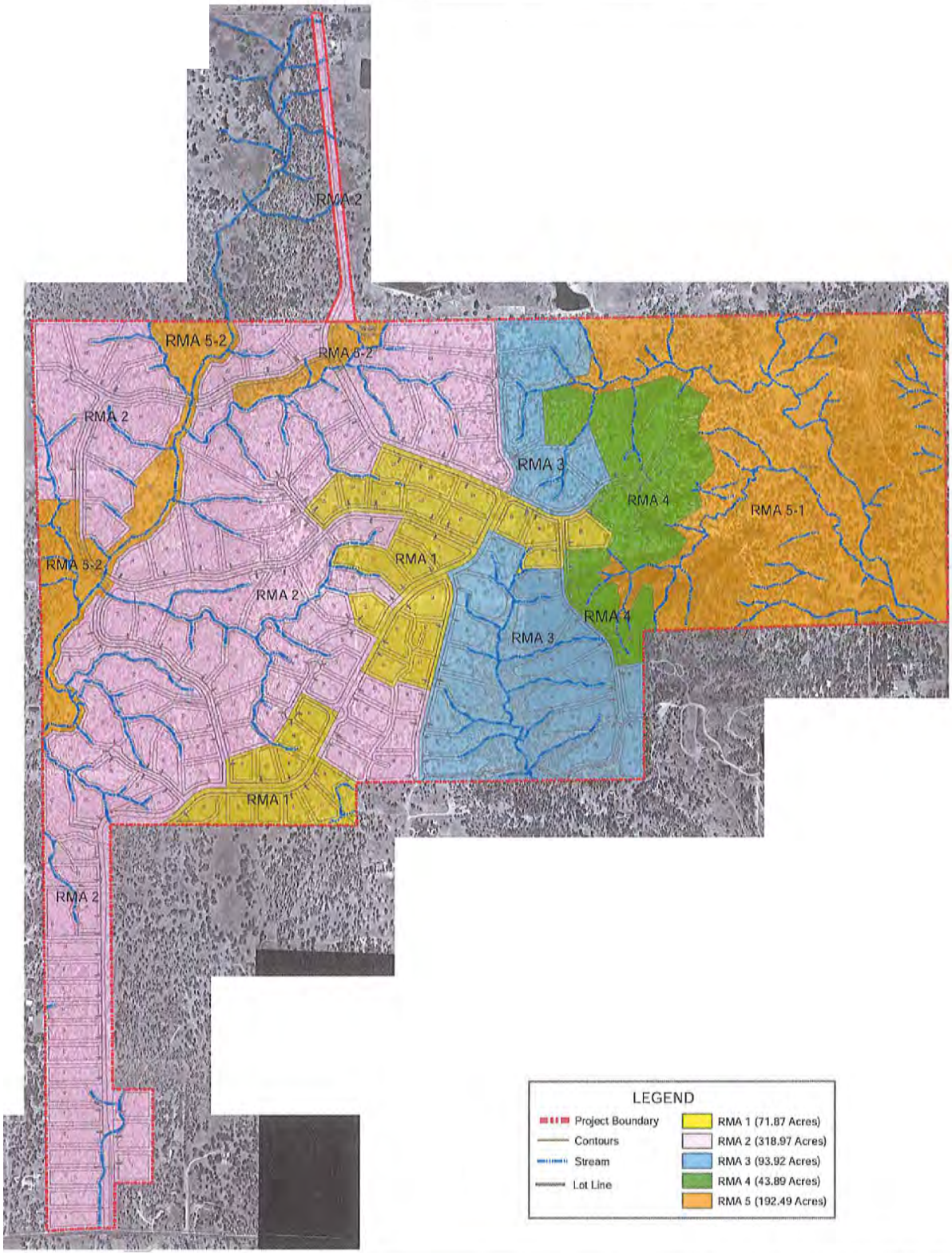
In order to comply with the requirements of CAL FIRE/SCFD, the property was subdivided into five Resource Management Areas (RMA's). These areas, while not geographically contiguous, represent five distinct and identifiable habitat types where appropriate fire fuel management prescriptions can be implemented based on specific environmental concerns and unique fire hazard conditions within each RMA. The descriptions of each of the five RMA's and specific vegetation management prescriptions are summarized below. Detailed fuel management prescriptions for each RMA are provided in the *Tierra Robles Wildland Fuel/Vegetation Management Plan* (refer to Draft EIR Appendix 15.2). In addition, refer to FIGURE 5.19-4, RESOURCE MANAGEMENT AREAS.

- *RMA 1.* Primarily located on the high terrace area of the central portion of the Project area, RMA 1 is characterized by annual grasses with scattered larger blue oaks with well-developed crowns. The guidelines state that grasses should be maintained at four inches of height or less and trees should be limbed up to eight feet about ground height. Piled grass cuttings and limbs are permitted to be burned onsite on burn days approved by the SCFD.

- *RMA 2.* This RMA consists of blue oak woodland with an annual grass understory and occasional grey pines. Tree size varies widely in this area. The management guidelines require standing and declining trees to be retained unless they pose a hazard to the land users. Smaller trees shall be thinned out in accordance with the *Tierra Robles Wildland Fuel/Vegetation Management Plan* and oaks should be limbed up to eight feet above ground height. Piled grass cuttings and limbs are permitted to be burned onsite on burn days approved by the SCFD. Additionally, shrubs planted on sloped ground shall be planted at spaces no less than twice the height of the shrubs being planted.

- *RMA 3.* This RMA is characterized by blue oaks with interior live oaks and scattered grey pines. The guidelines for RMA 3 are substantially similar to those of RMA 2 with the addition of the need to retain live oak clumps, the need to remove mid-story brush to a spacing of twice the height of the brush, and the need to remove dead and down brush and limbs.

- *RMA 4.* This RMA is unique among the RMA's 1-4 in that it has large regions of continuous fuel ladder from the understory to the canopy. The guidelines for RMA 4 incorporate many aspects noted for other RMA's above but adjust those guidelines to account for the addition of sloped terrain and increased need to manage the fuel in those areas.



SOURCE: Wildland Resource Managers, Lehmann & Assoc. Consulting, S2-J2 Engineering

N.T.S.

TIERRA ROBLES PLANNED DEVELOPMENT • RECIRCULATED EIR

Resource Management Areas

Figure 5.19-4

- *RMA 5.* This RMA has no building envelopes and consists of large tracts of open space land. RMA 5 is not contiguous and exists primarily in two tracts. The first being found in the eastern portion of the property and contains an unnamed drainage that is referred to in these materials as "East Creek". This section is designated RMA 5-1. The second tract of RMA 5, which is designated RMA 5-2, runs along Clough Creek along the northwestern portion of the property.

  Together RMA 5-1 and RMA 5-2 constitute over 26% of the total project area. The specific guidelines for the management of this area can be found in the *Tierra Robles Wildland Fuel/Vegetation Management Plan* (refer to Draft EIR Appendix 15.2). The fuel load in RMA 5-1 will be managed through the use of livestock grazing from January to May of each year. RMA 5-2 will be managed by the TRCSD or TRHOA as per the *Tierra Robles Wildland Fuel/Vegetation Management Plan.*

- General Management Requirements for All RMA's. In an effort to comply with California Public Resources Code Sections 4290 and 4291, the following prescriptions will be required for all RMAs:

  - Structures. 30 feet out from every structure remove all dead plants, grass, and weeds. Remove dead or dry leaves and pine needles from yard, roof and rain gutters. Keep tree branches 10 feet away from chimney and other trees.

  - Structures. 30 to 100 feet from every structure cut or mow annual grass to a maximum height of 4 inches. Create horizontal spacing between shrubs and trees. Create vertical spacing between grass, shrubs, and trees.

  - Vegetation. On flat to mild slopes (0-20%) planted shrubs should be spaced apart 2 times the height of the shrub (2-foot high shrubs planted a minimum of 4 feet apart).

The TRWF/VMP would be implemented and overseen by the TRCSD or TRHOA and future residents. The intent of the TRWF/VMP, using vegetation management techniques, to reduce fuel loads within the Project site and reduce the potential for catastrophic wildfire. Reduction of fuels would minimize the areas with and volume of flammable materials within proximity to residential sites. This also would help reduce the potential for spreading of wildfire into off-site areas. As part of the original Draft EIR, mitigation measure (**MM 5.8-1**) was proposed and listed specific methods to ensure compliance with the TRWF/VMP and other fire safety requirements. This included conformance with applicable Shasta County Fire Standards and PRC Sections 4291-4299. **MM 5.8-1** was included to *Chapter 5.8 Hazards and Hazardous Materials*. **MM 5.8-1** and would still be applicable to the proposed Project.

Mitigation Measure:

The text of MM 5.8-1 is provided below for reference.

MM 5.8-1: Prior to the issuance of a building permit, all required fuel-reduction work associated with construction of the onsite roadway network, the wastewater treatment plant and associated infrastructure facilities shall be completed by the Project applicant to the satisfaction of the Shasta County Fire Department. Monitoring of fire prescription activities within Resource Management Areas 1 through 4 shall be the sole responsibility of the Tierra Robles Community Services District (TRCSD) and shall occur as each private residential lot is developed and monitored to ensure substantial compliance with fire fuel management prescriptions and site development guidelines as identified in the Tierra Robles Wildland Fuel/Vegetation Management Plan, Shasta County Fire Safety Standards, and California Public Resources Code Section 4291, Defensible Space. Ongoing maintenance activities within Resource Management Area 5 shall be the sole responsibility of the TRCSD. The TRCSD shall provide annual fire fuel monitoring and compliance reports to the Shasta County Fire Department documenting conformity with fire fuel prescription activities and methods, including reporting of any enforcement actions taken to fulfill the requirements of the above referenced guidelines and standards. The specific reporting methods to be used to ensure compliance shall be determined by the TRCSD and approved by the Shasta County Fire prior to issuance of a building permit that would allow construction of the first onsite residence.

While implementation of the listed mitigation as well as the other fuel management requirements would reduce the potential for wildfire, the effects cannot be completed eliminated. The fire reduction prescriptions; however, would reduce impacts to the Project site from uncontrolled spread of wildfire. Accordingly, development of the proposed Project, in compliance with applicable Shasta County General Plan would reduce the potential for the proposed Project to be impacted and to result in additional impacts to adjacent residents from wildfire events. Implementation of MM 5.8-1 includes fire fuel prescriptions from the TRWF/VMP, Shasta County Fire Safety Standards, and defensible space requirements pursuant to California PRC Sections 4290 and 4291. It is anticipated that these measures would reduce impacts from an uncontrolled wildfire originating from the Project site or moving toward the Project site from an off-site area. Therefore, the defensible space requirements in these regulations minimize the wildfire risks exacerbated by physical properties such as slopes and wind, and as such, these measures, would reduce impacts associated with the uncontrolled spread of wildfire. Additionally, project structures would be required to comply with the California Fire Code with regard to emergency/fire access and use of building materials coupled with the measures specified in the TRWF/VMP to limit the spread of wildfire to the greatest extent possible. Therefore, impacts related to exposure of project occupants to pollutant concentrations from a wildfire or uncontrolled spread of wildfire would be less than significant.

Level of Significance after Mitigation: Impacts would be mitigated to less than significant.

IMPACT 5.19-3 ***The Project Would 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.***

Significance: Less Than Significant Impact.

The proposed Project includes the extension of utilities and other infrastructure including roadways, water lines, and powerlines into the Project site. The extensions are needed to provide services for the proposed future uses. Electricity would be supplied by Pacific Gas & Electric Company (PG&E). Electric improvements would be constructed only after planning and coordination with PG&E to ensure that services could be efficiently, and safety delivered to the Project site. All new electric lines, with the exception of infrastructure requiring above ground facilities such as utility boxes, would be constructed underground and built in accordance with the requirements of Shasta County and PG&E. This would reduce the potential for the transmission lines to exacerbated fire risk and impacts in this regard would be less than significant.

Natural gas lines are not located in proximity to the Project site and lines would not be extended to serve the proposed Project. Instead of natural gas, future residential and other on-site uses would be served by "trucked" in propane to fill storage tanks at individual residences. Propane would be used for heating and other appliances that are typically fueled by natural gas. All Project plans would be reviewed by the County to ensure that propane tanks are appropriate setback from structures as well as areas with flammable vegetation. This would ensure that associated fire risks, although minimal, are not substantially exacerbated. All propane tanks would be required to be filled by a licensed propane vendor and all appropriate safety procedures during transportation and dispensing would be required to be followed. Once the tanks are installed it is anticipated that only routine maintenance would be needed, and this would occur in disturbed areas. Therefore, conformance with all applicable regulations in this regard would reduce the potential for impacts from fire hazards due to the use and service of propane tanks to less than significant.

The Bella Vista Water District (BVWD) would provide water services to the Project site and would require the extension of water service lines into the Project site. Improvements would be made in adjacent roadways and previously disturbed areas so new water lines could tie into the existing distribution system. Once the lines are installed, it is anticipated that only routine maintenance would be needed, and this work would occur in previously disturbed areas. Therefore, it is anticipated that conformance with all applicable regulations in this regard would reduce the potential for increased fire hazards due from servicing water lines. This impact would be less than significant.

The construction of new on-site roadways would be required. In addition, some off-site roadway and transportation improvements would be made to ensure adequate traffic service is maintained. Off-site roadway improvements would be conducted in existing paved or adjacent areas that are already disturbed. In addition, interior roadway improvements would occur within the existing Project footprint and areas

planned for disturbance. All work would be conducted with all applicable safety measures and impacts in this regard would be less than significant.

The proposed consists of areas that consist of oak woodland and grasslands. The areas surrounding the proposed Project consist of similar vegetative patterns and rural residential uses. All of these areas are within a very high fire hazard severity zone. It should be noted that the addition of internal roadways within the Project site would allow emergency response personnel and vehicles to access the Project site and immediately surrounding areas if necessary, to suppress fires should they occur. Further, the SCFD, as part of the project approval process, would review all plans to ensure they meet fire suppression, fire access, and emergency evacuation requirements.

Based on the above discussion, the listed utility and roadway improvements would not exacerbate the potential for fire risk resulting in additional impacts to the environment. Adherence to standard state and County policies related to minimizing fire hazards would reduce impacts to less than significant. As discussed in Impact 5.19-2 above, vegetation and fuel management would be a required as a part of the TRWF/VMP. The TRWF/VMP would be implemented and overseen by the TRCSD or TRHOA and future residents. In addition, as part of the project approval process, both for the proposed Project as a whole and individual residential homes as they are built, coordination with and approval by the County would be required. The project would include adequate emergency access via existing roads at two access points. The project would require defensible space around proposed buildings, access roads, and water facilities through the implementation of the TRWF/VMP. Potable water, including water for fire suppression, would be provided by BVWD; BVWD's ability to serve the proposed Project during normal, dry, and multiple dry years is addressed in Section 5.17, Utilities and Service Systems. New electrical power on and connecting to the project site would be installed below ground, minimizing potential ignition and related fire risk above ground, at the project site in accordance with California Public Utilities Commission Electric Tariff Rule 15 Section A.3.a. Therefore, impacts related to infrastructure that exacerbates fire risk would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance After Mitigation: No mitigation measures are required. Impacts would be *less than significant*.

IMPACT 5.19-4	***The Project Would 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.***

Significance: Less Than Significant Impact with Mitigation Incorporated.

The topography of the Project site is characterized by level to rolling terrain typically within the western portion of the Project site and steeper slopes and ridges within the eastern portion of the Project site. Most of the Project area is associated with a low-relief, low gradient alluvial terrace surface that is associated with

negligible landslide potential. Sloping ground is present in the eastern part of the Project area along three drainage heads where slopes in excess of 30% exist. These slopes are not an area of known landslide activity, nor were any observed during the preliminary geotechnical investigation completed for the Project. Slopes in the northwestern part of the Project area leading to Clough Creek are generally gently to moderately sloping. Landslide potential on ground within the Project area that slopes <30% is low; for ground sloping >30%, landslide potential is considered moderate.

The majority of the Project site is mapped as Zone X, indicating that the majority of the site lies outside of the 0.2 percent annual chance floodplain (i.e., the 500-year floodplain). A small portion of the Project site along Clough Creek is located in Zone A, indicating that a portion of the site lies within the 1 percent annual chance flood (100-year flood).

Results of a fire would result in the loss, depending on the severity of the fire, of some amount of vegetative ground cover. This would increase the potential for runoff from rain events and increase the potential for erosion, landslides, and increased downstream flows. As discussed in Impacts 5.19-1 through 5.19-3 above, the proposed Project has incorporated design elements and mitigation that would reduce the potential for wildfire to less than significant. While the proposed Project has some areas with steeps slopes these are generally at the drainage heads and development of these areas is limited. It should be noted; however, that one proposed lot, Lot #140, has the potential to be affected by the 100-year floodplain. As part of the Draft EIR, Mitigation Measure (MM 5.9-4) is required to reduce impacts associated with placement of this residence with a flood zone. MM 5.9-4 requires that the finished floor elevation of Lot #140 would be a minimum of one foot above the 100-year floodplain elevation of the Clough Creek drainage. At Lot #140, the floodplain is approximately 607.1 feet and therefore any structure finish flood elevation would be required to be at or above 608.1 feet. Verification would be subject to County Building Division at plan check.

Mitigation Measure

The text of MM 5.9-4 is provided below for reference.

> MM 5.9-4 potential hazards related to downstream flooding are less than significant. The proposed Project site is not located within a 100-year flood hazard area. The proposed Project is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Zone X, which is described by FEMA as an area determined to be outside the 0.2 percent annual chance floodplain. Due to this small percentage, it is not anticipated that flooding hazards would occur within the Project site. In addition, as described in *Section 4.7 Geology and Seismic Hazards*, the proposed Project area is flat and not susceptible to landslides. Thus, impacts would be less than significant.

Based on these factors it is anticipated that the proposed Project would not 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. Impacts in this regard are less than significant and mitigation is not required.

Level of Significance after Mitigation

Impacts would be mitigated to less than significant.

5.18.5 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

IMPACT 5.19-5 ***The Project Would Potentially Result in Cumulative Impacts Concerning Wildfire.***

Significance: Less Than Significant Impact with Mitigation Incorporated.

Cumulative projects that would have the potential to be considered in a cumulative context with the Project's incremental contribution, and that are included in the analysis of cumulative impacts relative wildfire hazards, are identified in Table 4.0, BASIS OF CUMULATIVE IMPACTS, and Table 4.-1, CUMULATIVE PROJECTS CONSIDERED. However, as noted in Chapter 4.0, some cumulative discussions can require a different geographic area than the cumulative projects list. In the case of wildfire, and specifically with regard to evacuations, more than the list of projects were considered. The evacuation analysis considered an evacuation area envelope bound approximately by CA 299 to the north, CA 44 to the south, Old Oregon Trail on the west, and Deschutes Road on the east.

The incremental effects of the proposed Project with other past, present, and reasonably foreseeable projects related to wildfire are anticipated to be minimized through the incorporation of the above listed mitigation (or similar mitigation for other projects as needed), and through project design and management, and through the plan review process.

Like the proposed Project, cumulative development occurring within FHSZs would be subject to risk of wildfire hazards. Development of cumulative projects occurring within FHSZs would be subject to compliance with the 2019 California Building Code (or the most current version) and the California Fire Code (Part 9 of Title 24 of the California Code of Regulations). All proposed construction would be required to meet minimum standards for fire safety. Development occurring within Shasta County would be subject to review by the County staff and SCFD to ensure cumulative development is designed to provide a minimum of fire safety and support fire suppression activities, including compliance with state and local fire codes, fire sprinklers, a fire hydrant system, paved access, and secondary access routes. Implementation of these plans and policies, in conjunction with compliance with the Fire Code and County and SCFD building regulations, would ensure cumulative impacts with respect to wildfire hazards are less than significant.

With regard to emergency evacuation, the Project specific evacuation study considered a broad evacuation area described above. The analysis included the equivalent of approximately 8,542 passenger cars would flow through the studied evacuation network as motorists head toward appropriate refuge areas. This cumulative traffic volume estimate is considered a conservative worst-case analysis because it assumes all existing and planned housing units are occupied at the time of evacuation. The analysis determined that the

Project would not result in a substantial change in the evacuation times and evacuation speeds during an emergency evacuation (less than 15 minutes over a three and one-half hour period, and less than 0.3 mile per hour, respectively). Therefore, potential impacts on an emergency evacuation are not cumulatively considerable and less than significant.

The proposed Project would comply with all applicable, State and local regulations related to reducing the potential for wildfire to occur as well as reducing the severity and after effects of wildfires. The proposed Project includes 5 RMAs for which specific management actions would be prescribed based on the vegetation and other characteristics of the areas. Use of the RMAs would help reduce the potential for wildfire on a cumulative project basis. Inclusion of these strategies as well as MM 5.8-1 would ensure that impacts from wildfires are controlled or minimized and the related impacts would be less than significant.

The proposed Project, in conjunction with other past, present and reasonably foreseeable projects also would not result in cumulative effects associated with landslides and erosion which can be exacerbated by wildfires if a project is located in areas susceptible to landslides or located on areas with steep slopes. This is enforced through compliance with the California Building Code, California Fire Code, County and FFPD requirements, and standard engineering practices (e.g., anchored foundations, stabilized slopes, and retaining walls).

Therefore, the proposed Project would not result in incremental effects to wildfire that could be compounded or increased when considered together with similar effects from other past, present, and reasonably foreseeable probable future projects. The proposed Project would not result in cumulatively considerable impacts to or from wildfires.

Mitigation Measure

Implementation of Mitigation Measure 5.8-1.

Level of Significance after Mitigation: Impacts would be mitigated to less than significant.

REFERENCES

CAL FIRE, 2007. Fire Hazard Severity Zones in SRA, Adopted by CAL FIRE on November 7, 2007. Available: https://osfm.fire.ca.gov/media/6804/fhszs_map45.pdf. Accessed: December 3, 2019.

Cornelius Nuworsoo, Ph.D., AICP. *Tierra Robles Area Evacuation Traffic Study*. January 2020

Shasta County. *Shasta County General Plan*. September 2004.

Shasta County, 2016 – Shasta County Communities Wildfire Protection Plan. Available: http://www.westernshastarcd.org/Docs/ShastaCWPPs-2016.pdf Accessed: December 3, 2019

Shasta County. *Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan*. November 7, 2017.

Weatherspark, 2019. Average Weather in Redding, California – United States. Available: https://weatherspark.com/y/664/Average-Weather-in-Redding-California-United-States-Year-Round. Accessed: December 3, 2019.

Wildland Resource Managers. *Tierra Robles Wildland Fuel/Vegetation Management Plan.* July 2015.