Otay Ranch Resort Village–
Air Quality Impact Report

Prepared
for the County of San Diego

Scientific Resources Associated
AECOM, Inc.
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Scientific Resources Associated

AECOM

Prepared for:
County of San Diego Department of Planning and Development Services
San Diego, California

Air Quality Technical Report

Otay Ranch Resort Village Project

TM 5361, GPA 04-003, SP 04-002, REZ 04-009, ER LOG 04-19-0005

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GLOSSARY OF TERMS AND ACRONYMS

ADT	average daily trips
AMSL	above mean sea level
AQIA	Air Quality Impact Analysis
ARB	California Air Resources Board
ATCM	air toxics control measures
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CO	carbon monoxide
County	County of San Diego
County's Air Quality Guidelines	County of San Diego *Guidelines for Determining Significance and Report Format and Content Requirements, Air Quality*
cy	cubic yard
diesel PM	diesel particulate matter
EMFAC	California Air Resources Board's Emissions Factor model
GPA	General Plan Amendment
GPU	General Plan Update
HRA	health risk assessments
HRA Guidance	Office of Environmental Health Hazard Assessment's Guidance Manual for Preparation of Health Risk Assessments
LOS	level of service
lbs	pounds
MEI	maximally exposed individual
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide

NO_X	oxides of nitrogen
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
Otay SRP	Otay Subregional Plan
Pb	lead
proposed project	Otay Ranch Resort Village Specific Plan project
PM_{10}	suspended particulate matter
$PM_{2.5}$	fine particulate matter
ppm	parts per million
RAQS	San Diego Regional Air Quality Strategy
ROG	reactive organic gases
SCAQMD	South Coast Air Quality Management District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SANDAG	San Diego Association of Governments
SIP	State Implementation Plan
SLT	screening level thresholds
SO_2	sulfur dioxide
SO_X	sulfur oxides
TAC	toxic air contaminants
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter

EXECUTIVE SUMMARY

The Otay Ranch Resort Village / Village 13 (proposed Project) would develop single-family and multi-family residences, a resort hotel, commercial and retail uses, public and private parks, and manufactured open space. The proposed Project would also reserve an elementary school site and public safety site (e.g., fire department, sheriff's storefront); however, these uses would be developed by the agencies operating them (e.g., Chula Vista Elementary School District, County of San Diego Consolidated Fire District). A majority (58%) of the Project site would be dedicated to habitat preserve land. The goal of the proposed Project is to develop a residential community and resort hotel with ancillary uses, which would utilize the unique Project site while preserving open space and providing non-vehicular transportation opportunities (e.g., biking and walking paths) and recreational activities to local residents and visitors.

The Project site is currently undeveloped open space and would require grading and earthmoving prior to construction. In addition, the proposed Project would involve onsite rock crushing activities during mass grading of the site, with the crushed rock to be re-used for onsite project construction. This report analyzes the potential air quality impacts resulting from both construction and operation of the proposed Project.

Construction activities are anticipated to occur over an approximately 11-year period. Emissions from construction activities have been estimated using the California Air Resources Board-approved CalEEMod Model, Version 2013.2.2 (ENVIRON 2013). CalEEMod quantifies emissions from construction activities, operational activities, and area sources. The implementation of applicable regulatory control measures and the associated emissions reductions during construction, as required by law, for dust and volatile organic compounds (VOC) were included in this analysis.

Based on the modeling conducted, construction emissions from the proposed Project would result in a significant impact on regional air quality by exceeding Maximum Daily Thresholds for emission levels of VOC, NO_X, CO, PM_{10} and $PM_{2.5}$. Implementation of the aforementioned federally and state mandated control measures would reduce project-generated construction emissions, but emissions would continue to exceed the County's screening level thresholds (SLT). Therefore, mitigation measures (MM AQ-1) have been identified in Section 4.2.1.3 to further reduce impacts from construction emissions. However, air quality impacts from construction emissions would remain significant.

In addition, toxic air contaminant (TAC) emissions associated with construction emissions have the potential to expose nearby sensitive receptors to significant concentrations of diesel particulate matter. Implementation of mitigation measures described below would reduce these impacts to a less-than-significant level.

Operation of the proposed Project would result in emissions from mobile and area sources. Mobile sources and area source emissions were also estimated using the CalEEMod model. Based on the modeling conducted, emissions from operation of the proposed Project would exceed the County's SLT for VOC, CO and PM_{10} and result in significant direct and cumulative air quality impacts. Implementation of the mitigation measures identified in Section 4.2.2.2 (MM AQ-2) would reduce project-generated operational emissions, but emissions would continue to exceed the County's SLT even with implementation of operational mitigation measures identified in Section 4.2.2.2.

Lastly, odor emissions associated with short-term construction and long-term operational activities would not expose a substantial number of receptors to objectionable odors.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report analyzes the air quality impacts from both construction and operation of the Otay Ranch Resort Village / Village 13 (proposed Project). The proposed Project consists of residential- and resort-oriented development. The goal of the proposed Project is to develop a residential community and resort hotel with ancillary uses, which would utilize the unique project location while preserving open space and providing non-vehicular transportation opportunities (e.g., biking and walking paths) and recreational activities to local residents and visitors.

The purpose of this analysis is to

- characterize existing air quality conditions at the Project site and in the region,
- identify applicable rules and regulations,
- analyze impacts to air quality from construction and operation of the proposed Project, and
- identify measures to mitigate or minimize pollutant emissions associated with the proposed Project.

This report was prepared in accordance with the County of San Diego (County) *Guidelines for Determining Significance and Report Format and Content Requirements, Air Quality* (County's Air Quality Guidelines) (County of San Diego 2007).

1.2 PROJECT LOCATION AND DESCRIPTION

1.2.1 Project Location

The proposed Project would be developed on approximately 1,869 acres located directly northeast of Lower Otay Lake and east/southeast of Upper Otay Lake, located in the unincorporated area of the County of San Diego, on the Proctor Valley Parcel of the Otay Subregional Plan, Volume II ("Otay SRP") (see Figure 1). The Project site is located along the existing Otay Lakes Road (see Figure 2).

1.2.2 Project Setting

The Applicants have applied for approval of the Otay Ranch Resort Village Specific Plan and Tentative Maps (i.e., "Otay Ranch Resort Village") located northeast of Lower Otay Lake in south San Diego County. The proposed Specific Plan application includes amendments to the Otay Subregional Plan, Volume 2 ("Otay SRP"). The Otay SRP governs land uses and intensities of development permitted under the County General Plan for this Specific Plan Area (identified as Village 13 in the SRP). An amendment to the Otay SRP constitutes a County General Plan Amendment (GPA).

The Otay Ranch Resort Village is located in the County of San Diego, in the Proctor Valley Parcel of the Otay SRP approximately one-quarter mile east of the City of Chula Vista. Access is provided via Telegraph Canyon Road, which transitions into Otay Lakes Road and forms the southern boundary of the Project site.

The Otay Ranch Resort Village's approximate 1,869-acre planning area consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa

extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions. The project area lies within the watershed of the Otay River, a westerly flowing stream which drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Lake. The Otay Ranch Resort Village site vegetation consists of native coastal sage scrub and grassland habitats disturbed by grazing. Some riparian vegetation occurs in drainage areas of the site.

The Otay Ranch Resort Village is located at the interface of urban development and scenic open space. The Otay Valley Parcel of Otay Ranch, the EastLake Vistas residential community, the EastLake Woods residential community, and the U.S. Olympic Training Center compose the edge of urban development to the west. Lower Otay Lake, a recreational reservoir and water supply owned by the City of San Diego, is located to the south. Upper Otay Lake and the Birch Family Estate are located to the northwest. A temporary ultra-light gliding and parachuting airport is located at the eastern end of the Lower Otay Lake on City of San Diego property. An inactive quarry operation is located further to the east.

1.2.3 Proposed Development Plan

The land uses proposed by the Otay Ranch Resort Village are depicted in Figure 3 (Site Utilization Plan) and defined in Table 1 (Otay Ranch Resort Village Land Use Summary). The proposed land uses consist of single-family neighborhoods, a mixed use residential and commercial use neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, open space, Preserve land, and park and recreational uses.

- The proposed specific plan includes approximately 525.0 acres designated for 1,881 single-family detached homes. Five single-family neighborhoods are planned with average densities ranging from 3.2 to 4.4 dwelling units per acre.

- A Multiple Use neighborhood of 14.1 acres is proposed to contain 57 residential units in either an attached or detached configuration. The Multiple Use area includes up to 20,000 square feet of commercial uses.

- Approximately 17.4 acres are identified for a resort hotel complex with a maximum of 200 guest rooms and up to 20,000 square feet of ancillary uses including meeting rooms, a conference center, offices, shops, and restaurants.

- The specific plan proposes to reserve a 2.1 acre public safety site and a 10.0 acre elementary school site.

- Nine parks are planned on 28.6 acres, the largest of which is a 10.3 acre public neighborhood park site. The remaining parks range from 1.3 acres to 3.6 acres.

- The Otay Ranch Resort Village planning area also includes about 144 acres of Open Space and approximately 1,089 acres of Preserve land. Open Space generally consists

of large manufactured slopes outside of neighborhoods and brush management areas. Preserve land is usually undisturbed lands or restored habitats set aside for dedication to the Otay Ranch Preserve Owner Manager in satisfaction of Otay Ranch RMP conveyance requirements.

- Internal circulation comprises about 39.0 acres of the planning area.

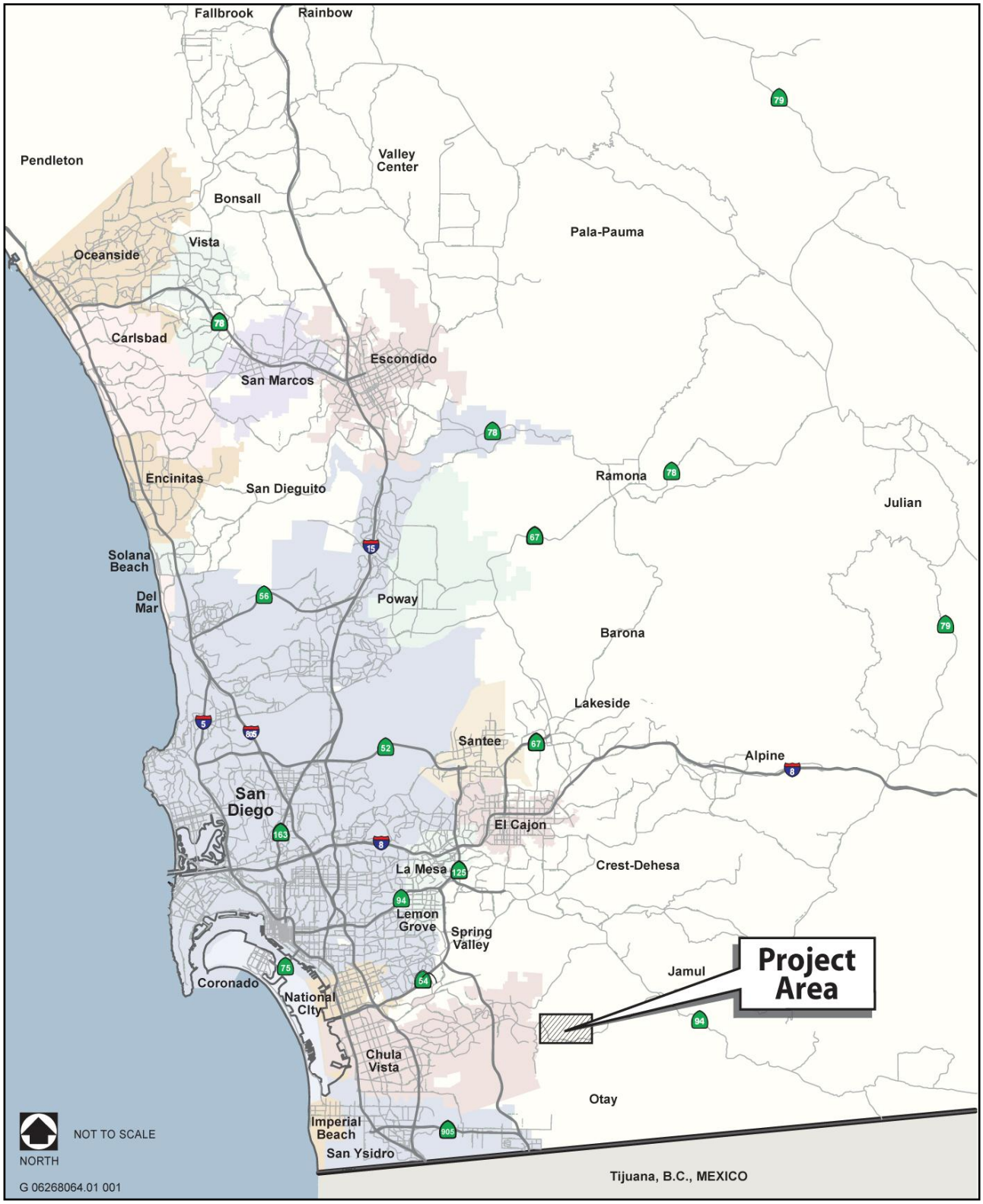

Figure 1 - Project Surrounding Area

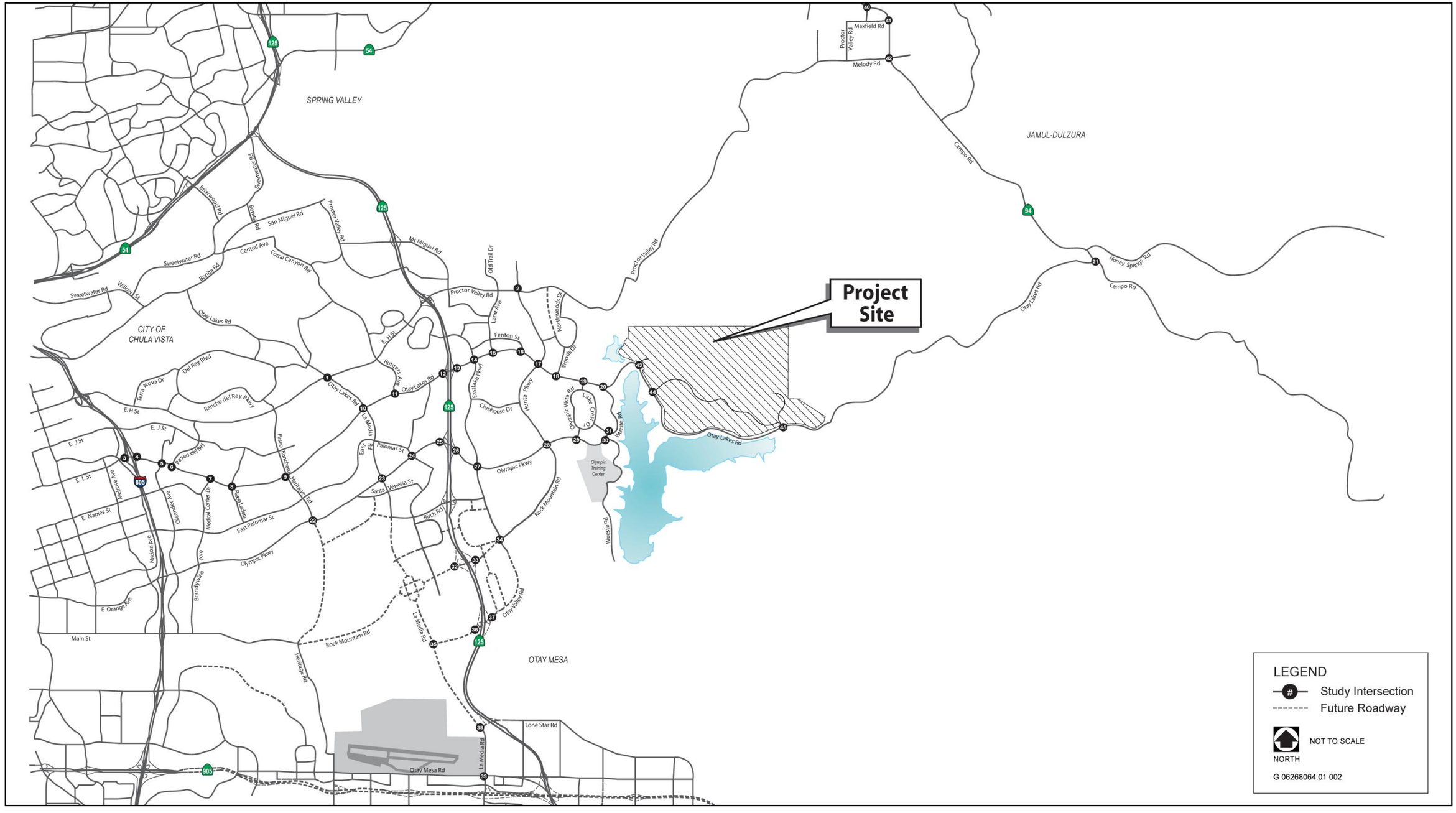

Figure 2 - Existing Project Site

Figure 3 – Site Utilization Plan

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1.2.2.1 Construction

Construction of the proposed Project is anticipated to occur over an approximately 11-year period. At the time of this writing, detailed construction scheduling and activity information is not available. Construction of the proposed Project is assumed to be non-sequential to adjust to market conditions. Site grading and earthmoving would be extensive due to the topography of the Project site. The maximum daily construction emissions that would occur during development of the proposed Project have been modeled to evaluate impacts of the proposed Project. Assumptions used to model construction emissions are provided in Section 3.2.1 and Appendix A.

Blasting Operations

Blasting operations would be required on the Project site prior to and during grading and development. Detailed information for the proposed blasting operations, as provided by the project applicants, is listed in Section 3.2.1.

Site Grading and Earthmoving Phases

Grading of the Project site is planned to occur over approximately 11 years. The proposed Project would require grading and earthmoving for a total of approximately 16.5 million cubic yards (cy) in a cut and fill operation. The project earthwork would balance on site and no export of materials would be required. The grading and earthmoving associated with the project development was estimated based on the proportion of land uses being developed at the site.

In accordance with Section 87.428 of the County's *Grading, Clearing, and Watercourses Ordinance,* specific dust control measures have been identified for implementation during grading activities, and have been included in the construction emissions modeling, including, but not limited to, watering the project site three times a day or applying non-chemical soil stabilizers to disturbed areas during grading activities. With respect to architectural coatings, a limited VOC content per gallon of coating is required by San Diego Air Pollution Control District Rule 67.

Road Construction and Circulation

The primary access road to the Project site is Otay Lakes Road, which transitions to Telegraph Canyon Road approximately 3.5 miles west of the Project site. The Otay SRP classifies Otay Lakes Road as a six-lane Prime Arterial. In the County General Plan Mobility Element, Otay Lakes Road is classified as a four-lane Major Road with Intermittent Turn Lanes from the City/County boundary to the second project entry (i.e., Strada Piazza). The Project proposes an amendment to the Otay SRP to reclassify Otay Lakes Road as a four-lane Boulevard with Intermittent Turn Lanes from the City/County boundary to the second project entry, and a two-lane community collector east of the second project entry.

Internal roadway circulation would be developed as part of each construction phase and is anticipated to comprise approximately 39.0 acres of the total Project site.

1.2.2.2 Operation

The proposed Project would develop 1,881 single-family residences on approximately 525 acres; 57 multi-family attached residences on approximately 14.1 acres, including up to 20,000 square feet of commercial space; nine parks on approximately 28.6 acres; a 200-room resort hotel with up to 20,000 square feet of ancillary uses including meeting rooms, a conference center, office, shops, and restaurants on approximately 17.4 acres; an elementary school for up to 800 students on a 10-acre site; a 2.1-acre public

safety site (e.g., fire station and sheriff storefront); and approximately 144 acres of open space. The Project site would also include approximately 1,089 acres of land dedicated to wildlife preserve.

Operational emissions associated with full buildout of the proposed Project have been used to evaluate the air quality impacts in this analysis.

2.0 EXISTING CONDITIONS

2.1 EXISTING SETTING

The Project site is comprised of approximately 1,869 acres of open space directly northeast of Lower Otay Lake and east of Upper Otay Lake. The Project site does not include any temporary-use structures (e.g., farm house, agricultural storage shed) that would require demolition; however, the site would require site grading and earthmoving prior to building construction.

Sensitive air quality receptors are land uses where persons are especially sensitive to elevated pollutant concentrations. Generally, these persons are the young, the elderly, and the sick. Therefore, the sensitive land uses are schools, hospitals, resident health care facilities, and day care centers. For the purposes of California Environmental Quality Act (CEQA) analysis in the County, the definition of a sensitive receptor also includes residents (County of San Diego 2007).

There are three schools in proximity of the Project site: East Lake Middle School (0.9 miles or 4,700 feet to the west), Salt Creek Elementary School (1.2 miles or 6,600 feet to the west), and Arroyo Vista Elementary School (1.6 miles or 8,200 feet to the west). The closest single-family residence is located approximately 1,700 feet from the northwest edge of the Project site. This represents the nearest sensitive receptor.

2.2 CLIMATE AND METEOROLOGY

Air quality is affected by both the rate and location of pollutant emissions as well as meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality.

2.2.1 Regional Climate

The proposed Project is located in the San Diego Air Basin (SDAB), whose area is equivalent to that of the County. The climate of the County is characterized by warm, dry summers and mild, wet winters. One of the main determinants of the climatology is a semi-permanent high-pressure cell (the Pacific high-pressure cell) in the eastern Pacific Ocean. In the summer, this high-pressure cell is located well to the north, causing storm tracks to be directed north of California. The high-pressure cell maintains clear skies for much of the year. However, when the high-pressure cell moves southward during the winter, this pattern changes, and low-pressure storms are brought into the region, causing widespread precipitation. In the County, the months of heaviest precipitation are November through April, averaging about 9 to 14 inches annually. The mean temperature is 61.0 degrees Fahrenheit (°F), and the mean maximum and mean minimum temperatures are 68.5°F and 53.5°F, respectively.

A common atmospheric condition known as a temperature inversion affects air quality in the County. During an inversion, air temperatures get warmer rather than cooler with increasing height. Subsidence inversions occur during the warmer months (May through October) as warm descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the layers of air represents a temperature inversion that traps pollutants below it. The inversion layer is approximately 2,000 feet above mean sea level (AMSL) during the months of May through October. During the winter months (November through April), the temperature inversion is approximately 3,000 feet AMSL. Inversion layers are

important elements of local air quality because they inhibit the dispersion of pollutants, thus resulting in a temporary degradation of air quality.

2.2.2 Local Microclimate

The Project site's climate is predominantly characterized by year-round warm temperatures, coastal-influenced high humidity, and a majority of days with sunshine. Average high temperatures at the nearest operating climate monitoring station, which is located in Chula Vista, California, approximately 6 miles west of the Project site, range from 74.2°F in July to 64.2°F in January. Average low temperatures range from 64.2°F in July to 43.8°F in January (WRCC 2014).

2.3 REGULATORY SETTING

2.3.1 Federal and State Standards

The federal Clean Air Act (CAA) (USC § 7401) requires the adoption of National Ambient Air Quality Standards (NAAQS) to protect the public health, safety, and welfare from known or anticipated effects of air pollution. The NAAQS are revised and changed when scientific evidence indicates a need. Current standards are set for ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), suspended particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb). These pollutants are collectively referred to as criteria air pollutants. The California Air Resources Board (ARB) has also established standards for criteria air pollutants (California Ambient Air Quality Standards [CAAQS]) that are generally more restrictive than the NAAQS. ARB has also established standards for pollutants in addition to the criteria air pollutants. Federal and state standards are shown in Table 1.

2.3.2 Regional Standards

In the County, the San Diego Air Pollution Control District (SDAPCD) is the agency responsible for protecting the public health and welfare through the administration of Federal and state air quality laws and policies. Included in the SDAPCD's tasks are the monitoring of air pollution, the preparation of the County's portion of the State Implementation Plan (SIP), and the promulgation of Rules and Regulations. The SIP includes strategies and tactics to be used to attain and maintain acceptable air quality in the County; this list of strategies is called the San Diego Regional Air Quality Strategy (RAQS). The rules and regulations include procedures and requirements to control the emission of pollutants and prevent significant adverse impacts. The SDAPCD rules and regulations that are applicable to the proposed project are listed in this section.

San Diego Air Pollution Control District (SDAPCD) Rules and Regulations

- Rule 10 (Permits Required)
- Rule 50 (Visible Emissions)
- Rule 51 (Nuisance)
- Rule 52 (Particulate Matter)
- Rule 54 (Dust and Fumes)
- Rule 55 (Fugitive Dust Control)
- Rule 66.1 (Miscellaneous Surface Coating Operations and Other Processes Emitting VOCs)
- Rule 67.1 (Architectural Coatings)
- Rule 67.7 (Cutback and Emulsified Asphalts)
- Rule 69.5 (Natural Gas Fired Water Heaters)

2.4 BACKGROUND AIR QUALITY

Specific geographic areas are classified as either "attainment" or "nonattainment" areas for each pollutant based on the comparison of measured data with federal and state standards. If an area is re-designated from nonattainment to attainment, the CAA requires a revision to the SIP, known as a maintenance plan, to demonstrate how the air quality standard will be maintained for at least 10 years.

Table 1 – National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National[a]		California[b]
		Primary[c, d]	Secondary[c, e]	Concentration[c]
Ozone	1 hour	—	Same as primary standard	0.09 ppm (180 µg/m^3)
	8 hour	0.075 ppm (147 µg/m^3)		0.070 ppm (137 µg/m^3)
Respirable particulate matter	24 hour	150 µg/m^3	Same as primary standard	50 µg/m^3
	Annual arithmetic mean	—		20 µg/m^3
Fine particulate matter	24 hour	35 µg/m^3	Same as primary standard	No separate state standard
	Annual arithmetic mean	12.0 µg/m^3	15 µg/m^3	12 µg/m^3
Carbon monoxide	8 hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1 hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
	8 hour (Lake Tahoe)	—	—	6 ppm (7 mg/m^3)
Nitrogen dioxide	Annual arithmetic mean	0.053 ppm (100 µg/m^3)	Same as primary standard	0.030 ppm (57 µg/m^3)
	1 hour	0.100 ppm	None	0.18 ppm (339 µg/m^3)
Sulfur dioxide	Annual arithmetic mean	0.030 ppm (80 µg/m^3)[h]	—	—
	24 hour	0.14 ppm (365 µg/m^3)[h]	—	0.04 ppm (105 µg/m^3)
	3 hour	—	0.5 ppm (1,300 µg/m^3)	—
	1 hour	75 ppb (196 µg/m^3)	—	0.25 ppm (655 µg/m^3)
Lead[f]	30-day average	—	—	1.5 µg/m^3
	Calendar quarter	1.5 µg/m^3	Same as primary standard	—
	Rolling 3-month average[g]	0.15 µg/m^3		—
Visibility-reducing particles	8 hour	No national standards		Extinction coefficient of 0.23 per kilometer —visibility of 10 miles or more (0.07 to 30 miles for Lake Tahoe) because of particles when the relative humidity is less than 70%. Method: Beta attenuation and transmittance through filter tape.
Sulfates	24 hour			25 µg/m^3
Hydrogen sulfide	1 hour			0.03 ppm (42 µg/m^3)
Vinyl chloride[f]	24 hour			0.01 ppm (26 µg/m^3)

Notes: mg/m^3 = milligrams per cubic meter; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

Pollutant	Averaging Time	National[a]		California[b]
		Primary[c, d]	Secondary[c, e]	Concentration[c]

[a] National standards (other than those for ozone and particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. Environmental Protection Agency for further clarification and current federal policies.

[b] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility-reducing particles—are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] The California Air Resources Board has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[g] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

[h] For certain areas 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Source: ARB 2014a

The SDAB currently meets the NAAQS for all criteria air pollutants except O_3, and meets the CAAQS for all criteria air pollutants except O_3, PM_{10}, and $PM_{2.5}$. For the 8-hour O_3 standard, the SDAB is currently designated as a marginal nonattainment area for the NAAQS. The SDAB is currently an unclassifiable/attainment area for CO. The SDAB is currently classified as a state "serious" O_3 nonattainment area and a state nonattainment area for PM_{10} and $PM_{2.5}$.

Ambient air pollutant concentrations in the SDAB are measured at ten air quality monitoring stations operated by the SDAPCD. The closest SDAPCD air quality monitoring station to the Project site is the Chula Vista monitoring station, located at 80 East J Street in Chula Vista, California, approximately 7.6 miles west of the Project site. The Chula Vista station is in an urbanized area and; therefore, may not completely represent the existing conditions at the Project site, especially for CO, PM_{10}, and $PM_{2.5,}$ which are pollutants attributable to local emission sources. However, the next closest monitoring station is the Otay Mesa Paseo International Airport, which would also misrepresent the existing conditions to due to its proximity to Mexico, which has different emission standards.

Levels of SO_2 are not a regional concern; data for this pollutant were not recorded at the Chula Vista station since before 2005. As part of the Diesel Risk Reduction Plan, in year 2000, the ARB required the use of ultra-low sulfur diesel fuel, which has led to a large decrease in SO_2 emissions throughout the state. As a result, SO_2 concentrations have not been a problem throughout the state and many monitoring stations have stopped monitoring for SO_2. Table 2 presents the most recent data over the past four years from the Chula Vista monitoring station as summaries of the exceedances of standards and the highest pollutant levels recorded for years 2010 through 2013.

As shown, ambient air concentrations of CO and NO_2 at the Chula Vista monitoring station have not exceeded the CAAQS in the past 4 years. The PM_{10} and $PM_{2.5}$ concentrations have not exceeded the federal standards for the past 4 years. Concentrations of O_3 registered at the monitoring station exceeded the 1-hour CAAQS once, in 2010, and the 8-hour NAAQS twice in 2010 and once in 2012.

Table 2 – Ambient Air Quality Summary-Chula Vista Monitoring Station

Pollutant Standards	2010	2011	2012	2013
Carbon Monoxide (CO)				
National maximum 8-hour concentration (ppm)	1.56	*	*	*
State maximum 8-hour concentration (ppm)	1.56	*	*	*
State maximum 1-hour concentration (ppm)	2.1	*		*
Number of Days Standard Exceeded				
NAAQS 8-hour (>9.0 ppm)	0	*	*	*
CAAQS 8-hour (>9.0 ppm)	0	*	*	*
CAAQS 1-hour (>20.0 ppm)	0	*	*	*
Nitrogen Dioxide (NO_2)				
State maximum 1-hour concentration (ppm)	0.050	0.057	0.057	0.057
Annual Average (ppm)	0.012	0.012	0.011	0.011
Number of Days Standard Exceeded				
CAAQS 1-hour	0	0	0	0
Ozone (O_3)				
State max 1-hour concentration (ppm)	0.107	0.083	0.085	0.073
National maximum 8-hour concentration (ppm)	0.083	0.057	0.078	0.062
Number of Days Standard Exceeded				
CAAQS 1-hour (>0.09 ppm)	1	0	0	0
NAAQS 8-hour (>0.075 ppm)	2	0	1	0
Particulate Matter (PM_{10}) [a]				
National maximum 24-hour concentration ($\mu g/m^3$)	43.0	45.0	37.0	38.0
State maximum 24-hour concentration ($\mu g/m^3$)	45.0	46.0	38.0	40.0
State annual average concentration ($\mu g/m^3$)	24.6	21.9	21.5	23.7
Estimated Number of Days Standard Exceeded				
NAAQS 24-hour (>150 $\mu g/m^3$)	0	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)	0	0	0	0
Particulate Matter ($PM_{2.5}$) [a]				
National maximum 24-hour concentration ($\mu g/m^3$)	22.7	27.9	34.3	21.9
State maximum 24-hour concentration ($\mu g/m^3$)	22.7	27.9	34.3	21.9
National annual average concentration ($\mu g/m^3$)	*	*	10.2	9.4
State annual average concentration ($\mu g/m^3$)	*	*	*	9.5
Estimated Number of Days Standard Exceeded				
NAAQS 24-hour (>65 $\mu g/m^3$)	0.0	0.0	0.0	0.0

Notes:
* Data Unavailable or insufficient data to determine the value
[a] State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on *local* conditions; national statistics are based on *standard* conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
[b] This data point was designated as "exceptional event" data due to wildfires.
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter
Source: ARB 2014b

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3.0 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES

3.1 SAN DIEGO SIGNIFICANCE THRESHOLDS

In San Diego County, a project would be considered to have a significant adverse effect on air quality if any of the following would occur as a result of a project-related component:

- Conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP.
- Result in emissions that would violate any federal or state ambient air quality standards or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable increase of emissions of any criteria pollutant for which the project region is in nonattainment under applicable federal or state ambient air quality standards; or
- Expose sensitive receptors, including, but not limited to, schools, hospitals, residential care facilities, or day care centers, to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

3.1.1 Screening Level Mass Emissions

The SDAPCD has not established screening level thresholds of significance for regional pollutant emissions from development projects. To provide guidance for analysis under CEQA, the County has developed screening level thresholds (SLT) of significance as shown in Table 3 (County of San Diego 2007) which are based on the thresholds for requiring an Air Quality Impact Analysis (AQIA) for stationary source permitting. A project with emission rates below these thresholds is considered to have a less-than-significant effect on regional and local air quality throughout the SDAB. The pounds per day standards apply to the proposed project.

Table 3 – Regional Pollutant Emissions Screening Level Thresholds of Significance

Units	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	Pb
Pounds per hour	–	25	100	25	–	–	–
Pounds per day	75 [a]	250	550	250	100	55 [b]	3.2
Tons per year	13.7 [c]	40	100	40	15	10 [b]	0.6

Notes:

[a] Threshold for volatile organic compounds (VOC) based on the threshold of significance for VOC from SCAQMD for the Coachella Valley.

[b] USEPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published September 8, 2005. Also used by the South Coast Air Quality Management District (SCAQMD).

[c] 13.7 Tons Per Year threshold based on 75 pounds per day multiplied by 365 days per year and divided by 2,000 pounds per ton.

VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_X = oxides of sulfur; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter; Pb = lead

Source: County of San Diego 2007

3.1.2 Air Quality Impact Modeling

While emissions that exceed the SLT presented in Table 3 would result in a significant cumulative impact, in some cases, dispersion modeling can be performed for pollutants over the SLT shown in Table 3 to determine ground level concentrations. Those concentrations can be compared to the NAAQS and CAAQS. If the concentrations were projected to be below the standards, then no significant direct impact would occur, although a significant cumulative air quality impact could remain (discussed in Section 4.3).

A project would be considered to result in a significant direct impact if the project's emissions would exceed any of the values presented in Table 3.

3.2 METHODOLOGY

Air quality impacts associated with the proposed Project are related to emissions from short-term construction and long-term operations. Construction may affect air quality as a result of

(1) construction equipment emissions;

(2) fugitive dust from grading and earthmoving; and

(3) emissions from vehicles driven to/from the Project site by construction workers and material delivery trucks.

Operational emissions would result primarily from vehicle exhaust (i.e., mobile sources); with additional emissions from natural gas combustion for water heating and/or other gas appliances, and equipment used for landscape maintenance (i.e., area sources).

Regional pollutant emissions were quantified using the CalEEMod Model, Version 2013.2.2 (ENVIRON 2013). CalEEMod is a calculation tool designed to estimate air emissions from land use development projects. The model contains specific emissions data for California on a statewide level and a basin and/or county level. For motor vehicle trip emissions, CalEEMod uses ARB's Emissions Factor model, EMFAC 2011 (EMFAC), which is the most recent motor vehicle emission factor model released by ARB.

Although the County proposes a significance threshold for lead (Pb), emissions of this pollutant are not calculated by CalEEMod. Emissions of Pb have significantly decreased due to the near elimination of it as an anti-knock gasoline additive and Pb emissions from gasoline engines are no longer a principal pollutant of concern. There are no other known emission sources of Pb associated with the proposed Project.

3.3 ASSUMPTIONS

3.3.1 Construction

The proposed Project would develop 1,938 residences (1,881 SF and 57 MF), up to 40,000 sq. ft. of commercial uses, 17.4 acres of resort uses, 28.6 acres of parks, a 10.0 acre elementary school for up to 800 students, and a 2.1-acre public safety site. Land uses that would require less intensive construction activities include approximately 144 acres of open space and 1,089 acres of preserve land. The open space components would still require grading, but would not involve other construction activities such as building construction or trenching.

Construction activities were modeled using the CalEEMod Model based on the estimated construction schedule. For the purpose of conducting the analysis, the assumptions in Table 4 were used. Table 4

presents the estimated construction schedule for residences, plus development of parks, the school, and public safety uses. The grading and earthmoving activity levels associated with the project were calculated using the anticipated acreage to be developed annually. Earthmoving was assumed to occur within the site only and not off-site; therefore, a trip length of 0.25 mile was assumed. Daily construction vehicles are estimated within the CalEEMod model based on the acreage and square footage to be developed. See Appendix A for detailed assumptions and CalEEMod model outputs.

Blasting operations would also be required for site preparation. It is anticipated that blasting operations would occur during the grading phase; however, actual blasting operations would occur independently from grading activities. The applicants provided information for blasting operations, listed below, regarding the types of explosives used, total pounds of explosives used, number of blasts per day, and total number of blasts for the entire construction period. Emissions associated with blasting operations were estimated using information provided by the applicant and blasting emission factors for the USEPA's AP-42, Fifth Edition, *Compilation of Air Pollutant Emission Factors* (USEPA 1995).

- Blasting material: ammonium nitrate
- Total blasting material: 4,784,960 pounds (lbs)
- Total blasts: 49 blasts

In addition to blasting emissions, emissions associated with rock crushing were quantified in a separate calculation, as the CalEEMod Model does not account for rock crushing. Emissions were calculated based on estimated amounts of rock generated from blasting (4,784,960 lbs), assuming tertiary crushing with water spray for control of fugitive dust. It was also assumed that the rock crusher would be powered by an on-site generator. Emissions associated with the rock crushing operation were included in the analysis.

Table 4 – Assumed Construction Schedule											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cumulative Land Use Program											
Single-Family Residential Units	101	311	521	731	941	1151	1361	1571	1781	1881	1881
Mixed Use (Attached) Units								57	57	57	57
Retail Commercial SF								20,000	20,000	20,000	40,000
Mixed Use Retail SF								20,000	20,000	20,000	20,000
Resort Retail SF											20,000
Hotel Rooms											200
Hotel Acres											17.40
Parks, acres	3.6	5.5	7.9	10.1	12.5	22.8	25.7	28.0	29.6	29.6	29.6
School, acres						10	10	10	10	10	10
Public Safety, acres								2.1	2.1	2.1	2.1
Open Space	7.6	22.1	36.7	51.2	65.8	84.6	99.4	117.8	132.2	138.9	143.0
Other Acres/ROW	2.0	5.7	9.5	13.3	17.1	22.0	25.8	30.6	34.4	36.1	37.2
Subtotal Developed Areas	41.5	120.4	199.9	279.2	358.8	461.6	541.8	642.3	720.9	757.3	779.9
Preserve	57.9	168.1	279.2	390.0	501.1	644.7	756.7	897.1	1006.8	1057.6	1089.2
Total Acres	99.3	288.5	479.1	669.2	859.9	1106.3	1298.6	1539.4	1727.6	1814.9	1869.1

Table 5 presents the construction equipment assumed within the CalEEmod Model.

Table 5 – Assumed Construction Equipment Mix

Construction Phase (Duration)	Equipment [1]	Number of Pieces [2]
Mass Site Grading	**Scraper**	**6**
	Tractor/Loader/Backhoe	**6**
	Excavator	**4**
	Grader	**2**
	Rubber Tired Dozer	**2**
	Water Truck	**2**
Asphalt Paving	**Cement and Mortar Mixer**	**8**
	Paving Equipment	**4**
	Paver	**4**
	Roller	**4**
	Tractor/Loader/Backhoe	**2**
Trenching	**Excavator**	**4**
	Trencher	**2**
	Tractor/Loader/Backhoe	**2**
Building Construction	**Forklift**	**6**
	Tractor/Loader/Backhoe	**6**
	Crane	**2**
	Generator Set	**2**
	Welder	**2**
Architectural Coating	**Air compressor**	**2**

Notes:

[1] Construction equipment types are from CalEEMod.

[2] Numbers of pieces of construction equipment are default assumptions from CalEEMod based on the amount and types of land uses to be developed.

Source: SRA 2014

For purposes of analyzing construction-related TAC emissions and their impact on sensitive receptors, the average diesel particulate matter (diesel PM) emission levels associated with development of the Near-Term Development were used. The emission levels were obtained from the CalEEMod model results. As a conservative analysis, it was assumed that all construction activities would occur on the portion of the project site closest to the nearest sensitive receptor (i.e., the existing single-family residential unit 1,700 feet from the northwest corner of the project site).

3.3.2 Operations

The operation of the proposed Project would result in emissions from the mobile and area sources. The assumptions used to estimate the operational emissions are presented below.

Vehicle and Area Source Analysis

Regional pollutant emissions were quantified using the CalEEMod Model. Daily vehicle trip generation was estimated for the proposed Project's Full Buildout Development in the Traffic Impact Analysis (Chen Ryan 2014). The estimated total daily vehicle trips for the Full Buildout Development are shown below.

- Full Buildout Development: 27,191 daily trips

CalEEMod defaults for the San Diego region were used for vehicle fleet mix and trip lengths. Area sources associated with the proposed Project would include gas for heating, hot water, and other uses in the new buildings; periodic repainting of the new buildings; and gasoline-powered equipment used for landscape maintenance. CalEEMod estimates these emissions based on the types and amounts of land uses entered by the user. Land use types and amounts were obtained from the project description. The Full Buildout land uses and vehicle trip generation rates are presented in Table 6. Detailed CalEEMod outputs for vehicle and area sources are provided in Appendix A.

Table 6 – Otay Ranch Buildout Land Uses and Trip Generation Rates

Full Buildout Development		
Land Use [1]	**Amount and Units**	**Daily Trip Generation Rate** [2]
Single-Family Housing	1,881 dwelling units	10 trips/dwelling unit
Multi-Family Housing	57 dwelling units	8 trips/dwelling unit
Elementary School	800 students	1.13 trips/student
Parks	28.6 acres	5.0 trips/acre
Hotel	200 rooms	8 trips/room
Commercial	40,000 square feet	120 trips/thousand square feet
Public Safety	2.10 acres	229.05 trips/acre

Notes:

[1] Land use categories are from CalEEMod model.

Source: Chen Ryan 2014.

4.0 PROJECT IMPACT ANALYSIS

4.1 CONFORMANCE TO THE REGIONAL AIR QUALITY STRATEGY

4.1.1 Guidelines for the Determination of Significance

Project consistency is based on whether the proposed Project would conflict with or obstruct implementation of the RAQS and/or applicable portions of the SIP, which would lead to increases in the frequency or severity of existing air quality violations.

4.1.2 Significance of Impacts Prior to Mitigation

The RAQS was developed pursuant to California CAA requirements and identifies feasible emission control measures to provide expeditious progress in the County toward attaining the state O_3 standard. The pollutants addressed are VOC and oxides of nitrogen (NO_X), precursors to the photochemical formation of O_3, the primary component of smog. The RAQS does not address CO or particulates (SDAPCD 2009). The RAQS control measures focus on emission sources under SDAPCD authority, specifically stationary sources and some area-wide sources. The RAQS identifies area-wide sources as mostly residential sources, including water heaters, furnaces, architectural coatings, and consumer products. Assumptions for land use development used in the RAQS are taken from local and regional planning documents, including general plan land use designations and zoning.

Consistency with the RAQS is determined by analyzing a project with the assumptions in the RAQS. Thus, the emphasis of this criterion is to evaluate if the proposed Project's land uses would be consistent with or less than the emission forecasts for the Project site contained in the RAQS. Forecasts used in the RAQS are developed by the San Diego Association of Governments (SANDAG). SANDAG forecasts are based on local general plans and other related documents that are used to develop population projections and traffic projections.

On October 28, 1993, the County Board of Supervisors certified the Otay SRP, which is part of the County General Plan (i.e., Part XXIII). The Otay SRP includes the Project site as "Village 13/Resort Village" and permitted the following uses within Village 13:

- hotel uses including up to 800 rooms, shops, restaurants and conference facilities;
- residential uses including a maximum of 1,938 homes,
- two neighborhood parks and
- commercial areas.

The proposed Project would develop 1,938 residences, 200 rooms for a resort, and commercial uses, all of which are permitted uses under the existing County General Plan.

The proposed Project is included as Otay SRP in the County General Plan, which was used for emissions modeling and forecasts in the RAQS. The proposed Project would require a GPA to refine the land uses described in the Otay SRP; however, the refinement in land uses would not exceed or intensify the land uses planned for in the Otay SRP. Therefore, the emissions associated with the proposed Project have been accounted for in the RAQS and the Project is considered consistent with the RAQS. Accordingly, implementation of the proposed Project would not exceed the assumptions used to develop the current

RAQS and would not obstruct or conflict with the SDAPCD's RAQS. Thus, this impact would be ***less than significant***.

4.1.3 Mitigation Measures and Design Considerations

The proposed Project would not result in a significant impact and no mitigation measures are required.

4.1.4 Conclusions

The proposed Project development intensity is included in the current General Plan and was accounted for in the current RAQS. Thus, this impact would be ***less than significant***.

4.2 CONFORMANCE TO FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

4.2.1 Construction Impacts

4.2.1.1 Guidelines for the Determination of Significance

A project is determined to have a significant direct air quality impact if the project exceeds any of the following thresholds:

- 250 pounds per day (lbs/day) of NO_X or 75 lbs/day of VOC.
- CO that exceeds a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm, or 550 lbs/day of CO.
- 55 lbs/day of $PM_{2.5}$.
- Increases the ambient PM_{10} concentration by 5 micrograms per cubic meter ($\mu g/m^3$) or 100 lbs/day of PM_{10}.

4.2.1.2 Significance of Impacts Prior to Mitigation

Construction emissions associated with development of the proposed Project were quantified using the CalEEMod Model, Version 2013.2.2. Construction emissions were modeled using project-specific construction information when available. Where project-specific information was not available, default assumptions contained in the CalEEMod Model were used to estimate construction emissions. As discussed earlier, construction activities would be subject to several control measures per the requirements of the County, SDAPCD rules, and ARB air toxic control measures (ATCM). The following required control measures have been incorporated into the modeling for the unmitigated construction emissions.

- Per the County's *Grading, Clearing and Watercourses Ordinance* Section 87.428, the applicants shall implement one or more of the following measures during all grading activities:
  - Water actively disturbed surfaces at least twice daily.
  - Water sprayers shall be installed on the rock crushing equipment to control particulate emissions during crushing operations.
  - Apply non-toxic soil stabilizers to inactive, exposed surfaces when not in use for more than 3 days. Non-toxic soil stabilizers should also be applied to any exposed surfaces immediately

(i.e., less than 24 hours) following completion of grading activities if the areas would not be in use for more than 3 days following completion of grading.

- Remove soil track-out from paved surfaces daily, or more frequently as necessary.
- Minimize the track-out of soil onto paved surfaces by installation of wheel washers.

- Per SDAPCD Rule 67, the applicants shall use regulated low-VOC coatings for all architectural coating activities.
- Per ARB's ACTM 13 (CCR Chapter 10 Section 2485), the applicants shall not allow idling time to exceed 5 minutes unless more time is required per engine manufacturers' specifications or for safety reasons

The required dust control measures cited above would include the control of particulate emissions from the proposed rock crusher, during transport of crushed rock on conveyor belts, and during loading of haul trucks. Unmitigated emissions from construction equipment were quantified; the results are presented in Table 7 below. As shown in Table 7, construction-related emissions of VOC, NO_X, CO, PM_{10} and $PM_{2.5}$ would exceed the County's SLT. Therefore, construction emissions would be considered a ***significant direct impact*** to regional air quality.

Equipment specifications including brake-horsepower and emission factors are provided as default values in CalEEMod. Detailed CalEEMod modeling output data sheets are included in Appendix A.

Table 7 – Maximum Daily Construction Emissions, without dust controls[1]

Construction Year	VOC (lbs/day)	NO_X (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Blasting Emissions[2]	-	660.15	3184.78	-	4715.61	435.44
Rock Crushing Emissions[2]	1.45	19.16	5.78	0.03	2.22	0.66
Year 1	51.25	344.97	341.50	0.33	33.25	23.32
Year 2	65.38	335.42	382.71	0.34	31.83	22.29
Year 3	66.19	320.60	412.06	0.36	32.71	21.49
Year 4	62.77	277.82	387.54	0.36	30.18	19.23
Year 5	61.68	260.89	378.73	0.37	29.14	18.18
Year 6	94.70	250.31	439.89	0.44	32.41	18.19
Year 7	61.51	210.34	353.24	0.36	26.84	15.91
Year 8	67.58	192.43	389.35	0.38	27.03	15.09
Year 9	55.88	172.12	329.11	0.36	24.39	14.04
Year 10	27.40	141.37	221.91	0.30	20.59	12.63
Year 11	33.13	67.87	111.44	0.21	6.89	3.89
Maximum Daily Emissions	96.15	1,024.28	3,630.45	0.47	4,742.94	455.27
Screening Level Thresholds (SLT)	75	250	550	250	100	55
Significant Impact?	Yes	Yes	Yes	No	Yes	Yes

Notes:
[1] Maximum daily emissions calculated using the CalEEMod Model. CalEEMod identifies the maximum for each pollutant. Maximum ROG emissions occur during overlap of architectural coatings application, building construction, and paving for all construction years. Maximum daily emissions of other pollutants occur during overlap of grading, trenching, and building construction.
[2] Blasting and rock crushing would occur for approximately 49 days during construction. It is anticipated that blasting and rock crushing could occur over the first 10 years of construction. Maximum daily emissions for blasting and rock crushing have been included in the table. Construction emissions without blasting are shown for informational purposed because these are the levels of emissions that would occur on a majority of the days.

All emissions have been modeled assuming compliance with the County's Grading, Clearing and Watercourses Ordinance and SDAPCD Rule 67.
VOC =volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter
Source: SRA 2014

4.2.1.3 Mitigation Measures and Design Considerations

Construction-related activities during the proposed Project are anticipated to have a significant air quality impact.

MM AQ-1: The applicants shall implement all of the following measures during construction of the proposed Project:

- Water actively disturbed surfaces at least three times daily.
- On-site dirt piles or other stockpiled particulate matter shall be covered, wind breaks installed, and water and/or soil stabilizers employed to reduce wind-blown dust emissions. The use of approved nontoxic soil stabilizers shall be incorporated according to manufacturers' specifications to all inactive construction areas.
- Water sprayers shall be installed on the rock crushing equipment to control particulate emissions during crushing operations;
- Approved chemical soil stabilizers shall be applied according to the manufacturers' specifications to all inactive construction areas (previously graded areas that remain inactive for 96 hours), including unpaved roads and employee/equipment parking areas.
- Paved streets shall be swept frequently (water sweeper with reclaimed water recommended; wet broom permitted) if soil material has been carried onto adjacent paved, public thoroughfares from the project site.
- Traffic speeds on all unpaved surfaces shall be reduced to 15 miles per hour or less, and unnecessary vehicle traffic shall be reduced by restricting access. Appropriate training to truck and equipment drivers, on-site enforcement, and signage shall be provided.
- The primary contractor shall be responsible for ensuring that all construction equipment is properly tuned and maintained before and for the duration of on-site operation.
- Termination of grading if winds exceed 25 mph.
- Hydroseeding of graded pads if development will not occur within 90 days.
- Minimize simultaneous operation of multiple construction equipment units. During construction vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions.

- All construction equipment shall be outfitted with best available control technology (BACT) devices certified by CARB. A copy of each unit's BACT documentation shall be provided at the time of mobilization of each applicable unit of equipment.
- All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications.
- All diesel-fueled on-road construction vehicles shall meet the emission standards applicable to the most current year to the greatest extent possible. To achieve this standard, new vehicles shall be used, or older vehicles shall use post-combustion controls that reduce pollutant emissions to the greatest extent feasible.
- The use of electrical construction equipment shall be employed where feasible.
- The use of catalytic reduction for gasoline-powered equipment shall be employed where feasible.
- The use of injection timing retard for diesel-powered equipment shall be employed where feasible.
- Construction diesel fuel shall be comprised of at least 25% biodiesel, where feasible.

The mitigation measures identified above were evaluated to determine their effectiveness in reducing construction emissions. The results are presented in Table 8.

Table 8 – Maximum Daily Construction Emissions, with dust controls[1]

Construction Year	VOC (lbs/day)	NO_X (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Blasting Emissions[2]	-	660.15	3184.78	-	4715.61	435.44
Rock Crushing Emissions[2]	1.45	19.16	5.78	0.03	2.22	0.66
Year 1	51.25	344.97	341.50	0.33	25.11	19.17
Year 2	65.38	335.42	382.71	0.34	24.09	18.21
Year 3	66.19	320.60	412.06	0.36	23.86	17.24
Year 4	62.77	277.82	387.54	0.36	21.33	14.98
Year 5	61.68	260.89	378.73	0.37	20.28	13.93
Year 6	94.70	250.31	439.89	0.44	23.12	13.88
Year 7	61.51	210.34	353.24	0.36	17.96	11.65
Year 8	67.58	192.43	389.35	0.38	17.76	10.78
Year 9	55.88	172.12	329.11	0.36	15.56	9.79
Year 10	27.40	141.37	221.91	0.30	12.56	8.49
Year 11	33.13	67.87	111.44	0.21	6.89	3.89
Maximum Daily Emissions	96.15	1,024.28	3,630.45	0.47	4,742.94	455.27
Screening Level Thresholds (SLT)	75	250	550	250	100	55
Significant Impact?	***Yes***	***Yes***	***Yes***	No	***Yes***	***Yes***

Notes:
[1] Maximum daily emissions calculated using the CalEEMod Model. CalEEMod identifies the maximum for each pollutant. Maximum ROG emissions occur during overlap of architectural coatings application, building construction, and paving for all construction years. Maximum daily emissions of other pollutants occur during overlap of grading, trenching, and building construction.
[2] Blasting and rock crushing would occur for approximately 49 days during the first year of construction. Year 1 construction emissions without blasting are shown for informational purposed because these are the levels of emissions that would occur on a majority of the days.

All emissions have been modeled assuming compliance with the County's Grading, Clearing and Watercourses Ordinance and SDAPCD Rule 67.
VOC =volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter
Source: SRA 2014

4.2.1.4 Conclusions

As shown in Table 8, construction-related emissions of VOC, NO_X, CO, PM_{10} and $PM_{2.5}$ would continue to exceed the County's SLT with implementation of the mitigation measures described above. Therefore, construction emissions would remain a ***significant direct impact*** to regional air quality.

4.2.2 Operational Impacts

4.2.2.1 Guidelines for the Determination of Significance

Operational emissions are subject to the same significance thresholds as those described in Section 4.2.1.1. Operational impacts are determined to have a significant direct air quality impact if the project exceeds any of the County's SLT.

4.2.2.2 Significance of Impacts Prior to Mitigation

Area and Mobile Source Emissions

Using the assumptions described in Section 3.2.2, area and mobile-source emissions were estimated using the CalEEMod Model. Daily operational emissions associated with the proposed Project were estimated using trip generation rates provide in the traffic study and land use types and amount provided in the project description. Detailed CalEEMod modeling output data sheets are included in Appendix A. Table 9 presents the maximum daily operational emissions upon full buildout of the development. As shown, the proposed Project would exceed the County's SLT for VOC, CO, and PM_{10}; therefore, operational emissions would be a ***significant direct impact*** to regional air quality.

Table 9 - Area Source/Motor Vehicle Emissions, Unmitigated

Phase/Emissions Source	VOC (lbs/day)	NO_X (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Maximum Daily Emissions, Summer						
Area Sources	157.42	1.84	160.03	0.008	3.49	3.46
Energy Use	2.10	18.24	9.80	0.11	1.45	1.45
Motor Vehicles	64.93	110.04	604.46	2.16	147.39	40.86
Total	**224.45**	**130.12**	**774.28**	**2.29**	**152.32**	**45.77**
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	***Yes***	No	***Yes***	No	***Yes***	No

Maximum Daily Emissions, Winter						
Area Sources	157.42	1.84	160.03	0.008	3.49	3.46
Energy Use	2.10	18.24	9.80	0.11	1.45	1.45
Motor Vehicles	68.65	117.09	637.92	2.06	147.39	40.86
Total	**228.17**	**137.17**	**807.75**	**2.18**	**152.33**	**45.77**
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	***Yes***	No	***Yes***	No	***Yes***	No

Notes:
Emissions shown represent the maximum daily area source, energy use, and motor vehicles emissions that would occur from summertime and wintertime operations calculated by CalEEMod.
VOC =volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter
Source: SRA 2014

4.2.2.3 Mitigation Measures and Design Considerations

The proposed Project operational emissions of VOC, CO, and PM_{10} would exceed the County's SLT. Mitigation measures shall be implemented to reduce the operational emissions associated with the proposed Project. The following mitigation measures and design considerations are recommended to reduce operational air pollutant emissions associated with mobile sources and on-site gas combustion (CAPCOA 2010).

MM AQ-2: The applicants shall implement the following mitigation measures to reduce the air pollutant emissions associated with day-to-day activities:

- Plant native, drought resistant, and low maintenance plant species for landscaping to reduce landscape maintenance equipment usage.
- Equip residential structures with electric outlets in the front and rear of the structure to facilitate use of electrical lawn and garden equipment.
- All single family residences shall be constructed with pre-plumbing for solar water heaters and solar and/or wind renewable energy systems.
- Use regulated low-VOC coatings for all architectural coating activities.
- Incorporate pedestrian trails, paths and sidewalks, and bicycle trails to encourage reduction in vehicle usage and trips.

Measures were incorporated into the CalEEMod Model to account for reductions in emissions associated with the project design and with the mitigation measures listed above. Project design features include increasing density in the region, incorporation of pedestrian-friendly features, meeting the Title 24 standards as of 2013, use of energy-efficient appliances, low-flow fixtures, use of low-VOC consumer products, and meeting the state's 75% solid waste diversion goal as established in AB 341. Table 10 presents emissions with emission reduction measures included in the analysis.

Table 10 - Area Source/Motor Vehicle Emissions, Mitigated

Phase/Emissions Source	VOC (lbs/day)	NO_X (lbs/day)	CO (lbs/day)	SO_2 (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Maximum Daily Emissions, Summer						
Area Sources	128.11	1.83	158.88	0.008	3.48	3.45
Energy Use	1.85	16.06	8.62	0.10	1.28	1.28
Motor Vehicles	62.64	100.54	555.86	1.93	131.35	36.43
Total	**192.60**	**118.43**	**723.36**	**2.04**	**136.11**	**41.16**
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	***Yes***	No	***Yes***	No	***Yes***	No
Maximum Daily Emissions, Winter						
Area Sources	128.11	1.83	158.88	0.008	3.48	3.45
Energy Use	1.85	16.06	8.62	0.10	1.28	1.28
Motor Vehicles	66.42	106.91	593.42	1.84	131.36	36.44
Total	**196.37**	**124.80**	**760.92**	**1.95**	**136.11**	**41.16**
Screening Level Thresholds	75	250	550	250	100	55
Significant Impact?	***Yes***	No	***Yes***	No	***Yes***	No

Notes:
Emissions shown represent the maximum daily area source, energy use, and motor vehicles emissions that would occur from summertime and wintertime operations calculated by CalEEMod.
VOC =volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = suspended particulate matter; $PM_{2.5}$ = fine particulate matter
Source: SRA 2014

4.2.2.4 Conclusions

As shown in Table 10, implementation of the mitigation measures and project design features described above would be expected to reduce air pollutant emissions associated with the proposed Project. Emissions of VOC, CO, and PM_{10} would remain above the County's SLT. Therefore, the proposed Project's operational emissions would continue to exceed the County's SLT after implementation of mitigation and would remain a ***significant direct impact*** to regional air quality.

4.3 CUMULATIVELY CONSIDERABLE NET INCREASE OF CRITERIA POLLUTANTS

4.3.1 Construction Impacts

4.3.1.1 Guidelines for the Determination of Significance

The County's Air Quality Guidelines state that even if direct air quality impacts from a proposed project are less than significant, the project may still have a cumulatively considerable impact on air quality if the emissions are in combination with other reasonably foreseeable future projects within proximity of the proposed action. Projects that would individually cause a significant direct air quality impact with respect to construction or operational PM_{10}, $PM_{2.5}$, NO_X, or VOC emissions would also be considered to have a cumulatively considerable net increase in emissions.

4.3.1.2 Significance of Impacts Prior to Mitigation

As shown in Table 7, construction-related emissions of NO_X, CO, PM_{10} and $PM_{2.5}$ would exceed the County's SLT for construction and would cause a significant direct impact. Therefore, according to the County's Air Quality Guidelines, the proposed Project's construction emissions would be considered a ***significant cumulatively considerable*** net increase in emissions.

4.3.1.3 Mitigation Measures and Design Considerations

The applicants shall implement all mitigation measures described in Section 4.2.1.3 to reduce construction emissions.

4.3.1.4 Conclusions

Due to the intensity and duration of construction activities, implementation of the proposed mitigation measures (MM AQ-1) would not reduce the maximum daily construction emissions to a level below the County's SLT. These mitigation measures are considered the maximum reduction feasibly achievable. Therefore, the proposed Project's construction-related emissions would remain a ***significant cumulatively considerable*** net increase with implementation of the proposed mitigation.

4.3.2 Operational Impacts

4.3.2.1 Guidelines for the Determination of Significance

A project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_X and/or VOC would also have a significant cumulatively considerable net increase in emissions.

4.3.2.2 Significance of Impacts prior to Mitigation

Cumulative Area and Motor Vehicles Emissions

Although the proposed Project is considered consistent with the current RAQS, area- and mobile-source emissions associated with the full buildout of the proposed Project would exceed the County's SLT for CO, PM_{10}, and VOC as shown in Tables 9 and 10. Therefore, the proposed Project would cause a significant direct impact on air quality with respect to operational emissions. Because the proposed Project would cause a significant direct impact on air quality with respect to emissions of CO, PM_{10}, and VOC, it would be considered to have a ***significant cumulatively considerable*** net increase in emissions.

4.3.2.3 Mitigation Measures and Design Considerations

The applicants shall implement all mitigation measures listed in Section 4.2.2.3 to reduce operational emissions to the maximum extent feasible.

4.3.2.4 Conclusions

As discussed in Section 4.2.2.4, even with implementation of the mitigation, operational emissions associated with full buildout of the proposed Project would continue to exceed the County's SLT for PM_{10}, CO, and VOC. Therefore, the proposed Project's operational emissions would result in a ***significant cumulatively considerable*** net increase in emissions.

4.4 IMPACTS TO SENSITIVE RECEPTORS

4.4.1 Guidelines for the Determination of Significance

Projects that would site sensitive receptors near potential CO hotspots (i.e., exceedance of CO CAAQS or NAAQS) or would contribute vehicle traffic to local intersections where a CO hotspot could occur would be considered as having a potentially significant impact.

Projects that would result in exposure to toxic air contaminants (TAC) resulting in a maximum incremental cancer risk greater than 10 in 1 million with application of Toxics-Best Available Control Technology (Toxics-BACT) or a health hazard index greater than 1 would be considered as having a potentially significant impact. For construction equipment and trucks, Toxics-BACT is assumed to mean that the construction fleet would meet a requirement to use a minimum of 10% Tier 2 or Tier 3 equipment, and trucks would meet current ARB emission standards. Construction fleets that would be used for the project would be comprised mainly of Tier 2 and Tier 3 equipment, and therefore, the project would meet the requirement for implementation of Toxics-BACT.

4.4.2 Significance of Impacts prior to Mitigation

4.4.2.1 Construction Impacts

Carbon Monoxide

Roadway segments and intersections are rated by a level of service (LOS) standard developed as a professional industry standard to determine area traffic impacts. The LOS standards range from A to F depending on the amount of typical traffic flow measured in average daily trips (ADT). Currently, intersections and roadway segments that would be affected by the proposed Project operate at LOS D or better. The generally accepted region-wide goal is LOS D (or better). Construction-related traffic is not anticipated to significantly impact the LOS rating due to intermittent and temporary nature of construction traffic. The construction trips for the project correspond to approximately 135 daily vehicle trips at peak hour. When compared to maximum peak hour traffic volumes (i.e. 2,000 to 5,000 peak hour trips at various intersections on Otay Lakes Road and Heritage Road/Olympic Parkway), these volumes do not contribute to an intersection LOS level which would result in a CO hotspot.

Because the proposed Project would be developed in phases, the number of daily construction worker trips traveling to and from the Project site would be proportionate to the activities occurring on one portion of the Project and not the entire Project site. Therefore, the phased approach to development would limit the daily volume of construction workers on local roads associated with the proposed Project. Thus, construction-

related traffic is not expected to impact local intersections and cause an exceedance of the CO CAAQS. This impact would be ***less than significant***.

Toxic Air Contaminants - Diesel Particulate Matter

Construction of the proposed Project would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by ARB in 1998. Project construction would result in the generation of diesel PM emissions from the use of off-road diesel construction equipment required for mass site grading and earthmoving, trenching, asphalt paving, and other construction activities. Other construction-related sources of diesel PM include material delivery trucks and construction worker vehicles; however, these sources are minimal relative to construction equipment. Not all construction worker vehicles would be diesel fueled and most diesel PM emissions associated with material delivery trucks and construction worker vehicles would occur off-site.

Generation of diesel PM from construction projects typically occur in a single area for a short period. The dose (of TACs) to which receptors are exposed to is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure a person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period to a fixed amount of emissions would result in a higher exposure level for the Maximally Exposed Individual (MEI) and higher health risks. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments (HRA), which are the tool used to determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period, however, such assessments should be limited to the period/duration of activities associated with the project. The OEHHA Guidance Manual for Preparation of Health Risk Assessments (HRA Guidance) allows a 9-year exposure period to represent the first 9 years of a child's life, which physiologically and behaviorally result in higher exposure levels. However, the HRA Guidance does not support a HRA for exposures less than 9 years. For cases where exposure would last for less than 9 years, OEHHA suggests assuming a minimum exposure of 9 years.

As described above, construction activities would occur for approximately 11 years (assumed to commence in 2015 and end in 2025). Mass site grading, trenching, and asphalt paving operations typically generate the most diesel PM emissions because these activities require the most heavy-duty construction equipment. It is anticipated that the mass site grading, trenching, and asphalt paving operations for the project would require the greatest number of diesel-fueled construction equipment for the entire construction schedule and therefore would generate the maximum daily levels of diesel PM. Therefore, a health risk assessment was performed assuming the diesel PM levels associated with the construction emissions for mass site grading, trenching, and asphalt paving operations would occur for the full 11 years.

The MEI was assumed to be nearest sensitive receptor to the existing project site, which is located 1,700 feet (i.e., 518 meters) northwest of the project site. As a conservative analysis, the maximum diesel PM levels were assumed to occur for the full 11 years of the construction activities at the same distance to the MEI. In reality, the exposure of all sensitive receptors to construction-related emissions of diesel PM would gradually decrease with time as construction activities move further away.

This potential exposure assumes a worst-case scenario where the first phase of construction occurs in the portion of the proposed project site closest to existing sensitive receptors. It should be noted that the construction phasing for the proposed project is proposed to be non-sequential. In other words, the portion of the proposed project site closest to existing residential receptors could be constructed first, last, or

anytime during the 11-year construction period. Construction activities would not necessarily occur from a west-to-east or east-to-west linear pattern. The purpose of this conservative assumption is to disclose the health risk impacts on existing residential receptors using the highest level of construction emission rates (i.e., the earlier the construction year, the higher rates of TACs would occur due to less turnover in fleet and emissions technology).

Although some proposed residents are expected to begin living in the housing developments within two years of construction commencement, the remaining construction activities associated with the proposed Project would occur at farther distances from these residents. Therefore, even though construction activities may occur for a longer period (i.e., eleven years) while these residents are located on site, exposure levels would decrease as construction activities move further away. In addition, these distances would reach a point where construction emissions would not be reasonably expected to affect the MEI due to the dispersive properties of diesel PM (Zhu et al. 2002). Therefore, the MEI could be exposed to one year of emissions from adjacent construction emissions, but a majority of the remaining 10 years would involve construction activities far enough away to minimize any TAC exposure. Taking this into consideration, an 11-year HRA using the one year of adjacent construction emissions would grossly overestimate health risks.

Source Description

Construction activities associated with the proposed Project would generate diesel PM emissions from on- and off-road vehicles and equipment. For the purposes of this analysis, PM_{10} exhaust emissions from CalEEMod were used as a surrogate for diesel PM emissions. The following diesel PM sources have been quantified to determine the proposed Project's impacts on sensitive receptors:

- Diesel-fueled construction equipment (e.g., scrapers, tractors, backhoes, rollers); and
- Heavy-duty diesel trucks (e.g., haul trucks and on-site water trucks); and
- Construction worker vehicles.

It should be noted that not all construction worker vehicles would be diesel-fueled. However, for the purposes of a conservative analysis, it was assumed that all construction worker vehicles would be diesel-fueled.

Calculation of Emissions

The diesel PM emissions were estimated using the same methods described above to calculate the construction-related mass emissions. CalEEMod provides outputs that differentiate PM_{10} exhaust, PM_{10} fugitive dust, and total PM_{10}. The PM_{10} exhaust emissions associated with the emission sources described above were summed together to calculate the total diesel PM emissions generated by the construction activities. The emissions associated with construction of the project over the 11-year construction duration were obtained from the CalEEMod Model outputs and were based on the annual totals.

A daily average emission rate (i.e., pounds per day) was calculated assuming 260 working days per year for 11 years, based on the average annual emissions over the construction duration. The daily emission rate was then converted to a gram per second emissions rate for entry into SCREEN3. SCREEN3 is an emissions modeling program used to estimate pollutant concentrations at specific distances from emission sources. SCREEN3 incorporates conservative assumptions such as a single wind direction blowing toward the receptor, limited mixing (of air and pollutants), and simple terrain.

Emission Sources

A volume source in SCREEN3 was used to represent construction activities that would occur on the project site. The area of the volume source was assumed to be 50 acres to account for the fact that construction emissions could occur on a given day over that entire area. The volume source representing emissions from the trucks and equipment were given an initial exhaust release height of 5 meters to account for the height of the exhaust stack and initial plume rise of the heated exhaust. This value is used by the SCAQMD to characterize the construction equipment emissions under its Localized Significance Threshold methodology (SCAQMD 2008). An initial vertical dimension of one meter was also applied to the volume sources. The edge of the volume source was assumed to be located at the boundary of the project site closest to the nearest sensitive receptor.

Estimation of Exposure Through Inhalation

This assessment considers exposure via inhalation only. The potential exposure through other pathways (e.g., ingestion) requires substance and site-specific data, and the specific parameters for diesel PM are not known for these pathways (ARB 1998). This assessment also assumes that a person is exposed continuously for 70 years with an adjustment based on the 11-year construction period, as described below. The Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA Guidance) provides direction with respect to the evaluation of cancer risk calculations for short-term exposures (i.e., less than a maximum theoretical project life of 70 years) (OEHHA 2003). The OEHHA Guidance states:

> *"[A]s the exposure duration decreases the uncertainties introduced by applying cancer potency factors derived from very long term studies increases. Short-term high exposures are not necessarily equivalent to longer-term lower exposures even when the total dose is the same. OEHHA therefore does not support the use of current cancer potency factor to evaluate cancer risk for exposures of less than 9 years. If such risk must be evaluated, we recommend assuming that average daily dose for short-term exposure is assumed to last for a minimum of 9 years."* (OEHHA 2003)

Exposure through inhalation is a function of the respiration rate and the concentration of a substance in the air and is calculated by using the following formulas (OEHHA 2003):

$$\text{Risk} = \text{Dose-inhalation} * \text{Inhalation cancer potency factor} \quad \text{(Equation 1)}$$

where:

Inhalation cancer potency factor (CPF) = 1.1 (milligram per kilogram per day)$^{-1}$ (for Diesel Particulate Matter [DPM])

$$\text{Dose Inhalation} = C_{air} * DBR * A * EF * ED * 10^{-6} / AT \quad \text{(Equation 2)}$$

where:

C_{air} = concentration in microgram per cubic meter

DBR = breathing rate in liter per kilogram of body weight per day

A = inhalation absorption factor (1 for DPM)

EF = exposure frequency in days per year

ED = exposure duration in years

AT = averaging time period over which exposure is averaged in days (25,550 days for 70 years)

For modeling purposes, the default values suggested by the OEHHA Guidance were used for the dose inhalation calculation except for daily breathing rate. The default values used in the model are as follows:

EF = 350 days/year

ED = 70 years

AT = 25,550 days

A = 1

In accordance with ARB policy, a breathing rate equal to the 80th percentile should be used in single-point risk management decisions, such as those subject to a threshold or standard, for which the cancer risk is entirely associated with inhalation and residential cancer risk is being evaluated (ARB 2003). These two criteria are met for this assessment. Thus, a breathing rate of 302 liter per kilogram of body weight per day was used for the residential cancer risk calculations.

The risk is calculated by multiplying the dose by the inhalation potency factor. The inhalation potency factor for DPM is 1.1 (OEHHA 2003). To calculate the cancer risk, a multiplying factor was derived based on the information discussed above. This multiplying factor, when multiplied by the concentration that the dispersion model calculates, results in risk in 1 million at a particular receptor. The multiplying factor was calculated as follows:

$$\text{Multiplying factor} = CPF * (DBR * A * EF * ED * 10^{-6}/AT) * 10^{6}$$

$$= 1.1 * (302 \text{ L/kg body weight-day} * 1 * 350 \text{ day/yr} * 70 \text{ yr} * 10^{-6}/25{,}550 \text{ days}) * 10^{6} = 318.55 (\mu g/m^3)^{-1}$$

Emissions associated with construction were assumed to occur over an 11-year period. Therefore, the cancer risk was adjusted by a factor of 11/70. This adjustment is consistent with the OEHHA Guidance cited above because this adjustment is greater than 9 years.

The results of the SCREEN3 dispersion modeling determined that the nearest sensitive receptor would be exposed to a one-hour diesel PM concentrations of 1.242 µg/m^3. The US EPA recommends adjusting one-hour concentrations to annual concentrations using a scaling factor of 0.08, which would indicate that the annual ground-level concentration at the nearest sensitive receptors would be 0.09936 µg/m^3. Adjusting the excess cancer risk calculation to account for the construction duration of 11 years, the excess cancer risk at the nearest sensitive receptor would be 4.97 in one million. Therefore, the modeled cancer risks would not exceed the County's significance threshold of 10 in 1 million with implementation of Toxics-BACT, and the proposed Project's construction-related TAC impacts to sensitive receptors would be ***less than significant***.

In addition to the potential cancer risk, diesel PM has chronic (i.e., long-term) non-cancer health impacts. The chronic non-cancer inhalation hazard indices for the proposed project were calculated by dividing the

modeled annual average concentrations of the diesel PM by the Reference Exposure Level (REL). The OEHHA has recommended an ambient concentration of 5 micrograms per cubic meter (µg/m^3) as the chronic inhalation REL for DPM. The REL is the concentration at or below which no adverse health effects are anticipated. No inhalation REL for acute (i.e., short-term) effects has been determined by OEHHA. The chronic hazard index for the nearest sensitive receptor would be 0.020, which is less than the County's significance threshold of 1 for non-cancer health impacts. Therefore, the non-cancer health impacts associated with the proposed Project's construction-related TAC impacts to sensitive receptors would be ***less than significant***.

4.4.2.2 Operations

Carbon Monoxide

Following construction of the proposed Project, project-related traffic would contribute vehicle trips on existing and future intersections. The addition of these trips could degrade the LOS of intersections to a level where a CO hotspot could occur. The County's Air Quality Guidelines state that intersections that are likely to result in a CO hotspot would operate at a LOS E or worse *and* would include peak-hour trips exceeding 3,000 vehicle trips. All intersections would operate at LOS D or above during future conditions (2030) plus the proposed Project.

Following construction of the proposed Project, project-related traffic would contribute vehicle trips on existing and future intersections. The addition of these trips could degrade the LOS of intersections to a level where a CO hotspot could occur. The County's Air Quality Guidelines state that intersections that are likely to result in a CO hotspot would operate at a LOS E or worse *and* would include peak-hour trips exceeding 3,000 vehicle trips. All intersections operate at LOS D or above during the Cumulative (Year 2025) plus Project scenario, except for the intersection of Wueste Road and Otay Lakes Road. Implementation of the proposed Project would cause the intersection of Wueste Road and Otay Lakes Road to decline from LOS B to LOS F during the PM peak hour under the Cumulative (Year 2025) scenario. However, the intersection would experience 2,533 vehicle trips during the PM peak hour, which are fewer than the County's screening level of 3,000 vehicle trips. The Project also includes a mitigation measure to signalize the intersection resulting in LOS B during the PM peak hour under the Cumulative (Year 2015) plus Project scenario. <u>All intersections would operate at LOS D or above during future conditions (2030) plus the proposed Project (Buildout).</u>

The SDAPCD has ceased monitoring CO at most of the monitoring stations within San Diego County as it does not consider the region to have a substantial problem with CO concentrations. Furthermore, vehicle CO emissions are anticipated to decrease in future years due to vehicle fleets continuing to turnover and more stringent vehicle emissions control standards coming into effect. Therefore, the operation of the proposed Project would not expose sensitive receptors to substantially high concentrations of CO or contribute traffic volumes to intersections that would exceed the CO CAAQS; therefore, this impact would be ***less than significant***.

Toxic Air Contaminants - Diesel Particulate Matter

Implementation of the proposed Project would not generate any major operational sources of TAC or diesel PM. The impact would be ***less than significant***.

4.4.3 Project Design Features and Design Considerations

Exposure of sensitive receptors to diesel PM emissions during construction of the proposed Project would be a less than significant impact.The following project design features shall be implemented to reduce exposure of sensitive receptors to diesel PM emissions and provide full-disclosure for nearby residents.

- All Project construction equipment, diesel trucks, and generators shall be equipped with Best Available Control Technology for emission reductions of diesel PM.
- All Project construction equipment shall meet ARB's most recent certification for off-road heavy-duty diesel engines.

Implementation of the project design features listed above would ensure that the proposed Project has implemented Toxics Best Available Control Technology (Toxics-BACT), which is the most current technology feasible to mitigate toxic air contaminants. Accordingly, the proposed Project's construction-related TAC emissions would be evaluated using a 10 in 1 million cancer risk threshold. It is anticipated that implementation of the project design features would reduce the diesel PM emission levels used to model the initial cancer risk (i.e., 4.97 in 1 million) described above. Therefore, with implementation of Toxics-BACT, the cancer risk to sensitive receptors associated with proposed Project's construction-related TAC emissions would be less than 10 in 1 million. Thus, the project's construction-related TAC impacts on sensitive receptors would be less than significant.

Localized operational emissions of diesel PM and CO would not expose sensitive receptors to substantial concentrations and therefore the impact would be less than significant. Thus, no mitigation measures are required.

4.4.4 Conclusions

Construction-related traffic on local roads would not be anticipated to contribute traffic volumes to intersections that would cause a CO hotspot. Thus, construction-related impacts on localized CO concentrations would be considered ***less than significant***.

Although construction-related diesel PM emissions would be anticipated to affect sensitive receptors, the proposed Project would implement T-BACT as part of MM-AQ-1. Following implementation of T-BACT, the project's construction-related TAC emissions would be considered ***less than significant***.

Operation of the proposed Project would not expose sensitive receptors to CO hotspots or contribute traffic volumes to intersections that would cause a CO hotspot. In addition, the proposed Project would not generate substantial sources of TAC that would affect sensitive receptors. Therefore, the proposed Project's impact with respect to localized CO and TAC would be ***less than significant***

4.5 ODOR IMPACTS

4.5.1 Guidelines for the Determination of Significance

The project will either generate objectionable odors or place sensitive receptors next to existing objectionable odors, which will affect a considerable number of persons or the public.

4.5.2 Significance of Impacts prior to Mitigation

The proposed Project does not include elements that would generate objectionable odors, nor would they attract persons to an area where there would be a potential for exposure to objectionable odors. The project

would operate three on-site sewer lift stations that could potentially generate odors; however, these lift stations would be permitted by SDAPCD and operated and maintained by the County Department of Public Works (DPW) and would be subject to odor control during operation and maintenance. Because odor control requirements would be incorporated into the project design, operation and maintenance of the sewer lift stations would not subject nearby sensitive receptors to substantial odor emissions. The impact would be ***less than significant***.

4.5.3 Mitigation Measures and Design Considerations

No mitigation measures would be required.

4.5.4 Conclusions

Neither construction nor operation of the proposed Project would result in a significant odor impact.

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5.0 SUMMARY OF RECOMMENDED PROJECT DESIGN FEATURES, IMPACTS, AND MITIGATION

The proposed Project would develop single-family and multi-family residences, resort uses, commercial uses, manufactured open space, and reserve an elementary school site and public safety site. The proposed Project's consistency with the RAQS was evaluated to determine if the Project would conflict with or obstruct implementation of the applicable air quality plan. In addition, emissions from construction and operation of the proposed Project were analyzed to determine the potential direct and cumulative air quality impacts.

The proposed Project is included as part of the Otay SRP in the County General Plan, which was used for emissions modeling and forecasts in the RAQS and SIP. The proposed Project would require a GPA to refine the land uses described in the Otay SRP; however, the refinement in land uses would not exceed or intensify the land uses planned for in the Otay SRP. Therefore, the emissions associated with the proposed Project would have been accounted for in the RAQS and SIP and the Project is considered consistent with the RAQS and SIP.

Construction impacts would have a significant direct and cumulative impact. Although the exact schedule is unknown at the time of this analysis, construction emissions were estimated using the information currently available and would exceed the County's SLT for VOC, NO_X, CO, PM_{10} and $PM_{2.5}$. According to the County's Air Quality Guidelines, construction emissions that exceed the County's SLT and cause a significant direct impact would also be considered a significant cumulatively considerable net increase in emissions.

County regulations require dust (particulate matter) control measures and SDAPCD rules require specific limitation on architectural coating VOC content. Dust control measures such as watering actively disturbed sites twice a day and the VOC-control measure of utilizing low-VOC coating during architectural coating activities are required during project implementation. Additional mitigation measures (MM AQ-1) have been suggested to reduce construction impacts; however, even with implementation of all mitigation, construction emissions of VOC, NO_X, CO, PM_{10} and $PM_{2.5}$ would continue to exceed the County's SLT and remain a significant direct and cumulatively considerable impact.

Construction-related vehicle trips would contribute traffic to local roadways; however, the magnitude of construction-related traffic would not be expected to cause or contribute to a CO hotspot at local intersections. However, construction activities would expose sensitive receptors to diesel PM emissions. Although construction-related TAC emissions could cause a significant impact to nearby sensitive receptors, the proposed Project would implement T-BACT as required under MM AQ-1, which would reduce construction-related TAC emissions and reduce impacts to a less-than-significant level. Mitigation suggested for reducing criteria air pollutant and O_3 precursor emissions would also help reduce diesel exhaust emissions.

The proposed Project's operational impacts on air quality in the County would be significant for VOC, CO, and PM_{10}. The County's Air Quality Guidelines consider projects with operational emissions that exceed the County's SLT, which is a significant direct impact, to cause a significant cumulatively considerable net increase in emissions. Additional mitigation measures (MM AQ-2) have also been suggested to reduce operational impacts; however, even with implementation of all mitigation, operational emissions for VOC, CO, and PM_{10} would continue to exceed the County's SLT and remain a significant direct and cumulatively considerable impact.

For localized CO impacts, screening methods provided by the County's Air Quality Guidelines and the SMAQMD were used to determine that a CO hotspot would not occur at the project intersection operating at LOS D or better during future (2030) plus project conditions. Operation of the proposed Project would not be anticipated to expose sensitive receptors to substantial concentrations of CO or TAC.

The proposed Project's construction and operational activities would not be anticipated to expose a substantial number of people to objectionable odors. This impact would be considered less than significant.

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