East Bay Regional Park District

NOTICE OF PREPARATION
FOR AN ENVIRONMENTAL IMPACT REPORT

2950 PERALTA OAKS COURT PO BOX 5381 OAKLAND, CA 94605-0381

August 1, 2019

The East Bay Regional Park District (Park District) is the Lead Agency and is preparing an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) for the:

SOUTHERN LAS TRAMPAS WILDERNESS REGIONAL PRESERVE LAND USE PLAN AMENDMENT

Located in Contra Costa County, California

The project site is located in the southern portion of Las Trampas Wilderness Regional Preserve (Las Trampas) in south-central Contra Costa County, on the western periphery of the San Ramon Valley within the City of San Ramon, Town of Danville, and unincorporated areas of Contra Costa County. As described below, the project will amend the current Las Trampas Land Use Development Plan (LUDP) to incorporate additional park acreage, add trails and access points, restore habitat, provide long-term resource management strategies, and develop visitor serving facilities such as parking and restrooms.

This notice, accompanied by an Initial Study, is being sent to the State Clearinghouse, identified responsible agencies, trustee agencies, and other interested parties. When the Draft EIR is published, it will be sent to the State Clearinghouse, available for review at local libraries, and an electronic version will be available on the Park District website, http://www.ebparks.org.

A Final EIR with responses to comments on the Draft EIR will be prepared prior to final consideration of the proposed project. Notices of public hearings on the project and the availability of the Final EIR will also be provided to NOP respondents, those requesting such notice, and available on the Park District website at http://www.ebparks.org/about/planning/default.htm.

Project Description

The Park District prepared a Land Use Plan Amendment (LUPA) for the southern region of Las Trampas (Southern Las Trampas or project area) to formally incorporate approximately 756 acres. This addition will expand the amount of parkland in Las Trampas to a total of approximately 6,000 acres.

The LUPA provides a formal planning review for the expansion of Las Trampas, outlines public access connections, and catalogs and plans for important natural and cultural resources for five parcels in the project area. The five parcels include four that the Park District currently owns: Chen, Elworthy, Peter's Ranch, and Podva. The Faria parcel is anticipated to be dedicated to the Park District as mitigation for a proposed development project and will be included in a future land use planning process.

Each parcel represents separate access and natural resource opportunities and constraints. The LUPA describes and outlines recommendations for each parcel. On the Chen parcel, the LUPA recommends a staging area and Emergency Vehicle and Maintenance Access (EVMA) road and recreational trail connection. The LUPA also evaluates public access to Las Trampas and along the Calaveras Ridge Trail via Peter's Ranch, as well as trail connections to the Podva parcel. Furthermore, the LUPA serves as a resource for park operations and maintenance, summarizing long-term management plans for the Podva and Faria conservation easements, detailing the grazing plan for all parcels, and outlining roles and responsibilities for park staff on all five subject parcels.

While the LUPA summarizes the long-term management plans for the Faria parcel, the Faria parcel will remain closed to the public in landbank status, and any potential recreational trails or parking will be part of a future planning process.

Findings

This project may have a significant effect on the environment and an EIR is required. This determination is based upon the criteria of the State CEQA Guidelines, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and for the reasons documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

The EIR will focus on evaluating the topics of Aesthetics and Biological Resources. All other topical issues are evaluated in an attached Initial Study, including: Agriculture and Forestry Resources, Air Quality, Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation/Traffic, Tribal Cultural Resources, and Utilities and Service Systems. The EIR will evaluate project and cumulative impacts, growth inducement, short-term versus long-term impacts, effects on human beings, and alternatives to the project.

Alternatives

Alternatives to be considered for this project will include, but not be limited to, the No Project Alternative and one or more alternatives that would reduce potentially-significant impacts. This determination is based upon the criteria of the State CEQA Guidelines, Section 15126.6 (Consideration and Discussion of Alternatives to the Proposed Project).

Public Scoping Process

The Park District invites you to comment on the Initial Study and proposed scope of the EIR. A public Community Meeting, held on June 7, 2017, served as the public Scoping Meeting for this project. Please send your written comments within 30 days from the date you receive this notice, but no later than **5:00pm on August 30, 2019**, to: Kim Thai, East Bay Regional Park District, 2950 Peralta Oaks Court, Oakland, CA 94605, or via email: kthai@ebparks.org. You may also contact Ms. Thai by telephone at (510) 544-2320.

If you work for a responsible State agency, the Park District needs to know the views of your agency regarding the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. Please include the name of a contact person in your agency.

All written or oral communications, including submitted personal contact information, may be made available to the public for inspection and copying upon request and may appear on the East Bay Regional Park District's website or in other public documents.

Kim Thai

Date

Kim Thai
Senior Planner

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INITIAL STUDY TABLE OF CONTENTS

APPENDICES

FIGURES AND TABLES

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LIST OF ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
µin/sec	micro-inches per second
AB	Assembly Bill
ABAG	Association of Bay Area Governments
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BMP	Best Management Practices
C&D	construction and demolition
CAC	County Agricultural Commissioner
CalEEMod	California Emissions Estimator Model version 2016.3.2
CALFIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Officers Association
CARB	California Air Resources Board
CCCSWA	Central Contra Costa Solid Waste Authority
CCTA	Contra Costa Transportation Authority
CCWD	Contra Costa Water District
CDFW	California Department of Fish and Wildlife
Central San	Central Costa Contra Sanitary District
CEQA	California Environmental Quality Act
CGS	California Geologic Survey
CH_4	methane
CHRIS	California Historical Information Systems
CMP	Congestion Management Plan
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
CRHR	California Register of Historic Resources

CTP	Comprehensive Transportation Plan
CWA	Federal Clean Water Act
dB	decibel
dBA	A-weighted decibels
Park District	East Bay Regional Park District
DPR	Department of Parks and Recreation
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
EDS	Evans & De Shazo
EIR	Environmental Impact Report
EVMA	emergency vehicle and maintenance access
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
GHAD	Geological Hazard Abatement District
GHG	greenhouse gas
GPS	global positioning system
GWP	Global Warming Potential
HCM	Highway Capacity Manual
HDM	Highway Design Manual
HFCs	hydrofluorocarbons
HRE	Historical Resource Evaluation
I-580	Interstate 580
I-680	Interstate 680
ICU	Intersection Capacity Utilization
in/sec	inches per second
IPM	Integrated Pest Management
IS/MND	Initial Study/Mitigated Negative Declaration
ITE	Institute of Transportation Engineers
Las Trampas	Las Trampas Wilderness Regional Preserve
L_{dn}	day-night average level

L_{eq}	equivalent continuous sound level
L_{max}	maximum instantaneous noise level
L_{min}	minimum instantaneous noise level
L_V	velocity in decibels
LOS	level of service
LTMP	Long-Term Management Plan
LUDP	Land Use Development Plan
LUMs	Land Use and Local Impacts Measures
LUPA	Land Use Plan Amendment
MAST	Maintenance and Skilled Trades
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NWIC	Northwest Information Center
NWSP	Northwest Specific Plan (City of San Ramon)
HWSP-LDR	Low Density Single Family Residential zoning district
O_3	ozone
OHP	State Office of Historic Preservation
OPDMD	Other Power-Driven Mobility Devices
OPR	Governor’s Office of Planning and Research
Pb	lead
PFCs	perfluorocarbons
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter
POST	California Commission on Peace Officer Standards and Training
PPV	peak particle velocity
PRC	Public Resources Code
RMS	root-mean-square
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SAP	Sustainability Action Plan

SB 743	California Senate Bill 743
SDNHM	San Diego Natural History Museum
SF_6	sulfur hexafluoride
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SO_x	sulfur oxides
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TACs	toxic air contaminants
TDML	total maximum daily load
TIMS	Transportation Injury Mapping System
UCMP	University of California Museum of Paleontology
UTAP	Universal Trail Assessment Process
VdB	vibration velocity decibels
VMT	Vehicle Miles Traveled
WDRs	Waste Discharge Requirements
WHF	Wildlife Heritage Foundation

1.0 PROJECT INFORMATION

1.1 PROJECT SITE

The following section describes the project's local and regional context and existing site characteristics.

1.1.1 Project Location and Access

1.1.1.1 Regional Context

The East Bay Regional Park District (Park District or EBRPD) is composed of regional parklands located throughout Alameda and Contra Costa counties. The Park District system includes over 121,397 acres of Park District lands comprising 73 regional parks, recreation areas, shorelines, preserves, wilderness, and landbank areas. These landholdings include 61 parks that are open and accessible to the public and 12 new parks in landbank status not currently open to the public. Las Trampas Wilderness Regional Preserve (Las Trampas) is one of the 73 Park District parklands, and the project area is within the southern region of Las Trampas.

The project area is within California's Coast Ranges Geomorphic Province, a geologically young and seismically active region dominated by northwest to southeast trending ridges and valleys that parallel the overall structural trend of the region and consists of incised drainages and steep sloping hillsides. The structural trend is primarily controlled by the active faulting and folding related to movement within the San Andreas fault system.

A combination of interstate highways, local arterial and collector roads, and neighborhood streets serve the project area. The major highways that provide access to the project area are Interstate 680 (I-680) to the east and I-580 to the south. Local exits from I-680 include Bollinger Canyon Road, Crow Canyon Road, and Sycamore Valley Road. The local exit from I-580 is Crow Canyon Road.

The Contra Costa Transportation Authority (CCTA) County Connection bus service serves San Ramon. County Connection Route 36 has bus stops at the corner of Bollinger Canyon Road and Crow Canyon Road. Route 36 runs every hour from 6:00 a.m. to 9:00 p.m., Monday through Friday, and connects the San Ramon Transit Center to the West Dublin/Pleasanton Bay Area Rapid Transit (BART) station.

The closest BART station is the West Dublin/Pleasanton station in Dublin near the intersection of Dublin Boulevard and Golden Gate Drive, approximately seven miles south of the project area via I-680.

The project area lies within lands that are owned by, or would be transferred to, the Park District. Major landowners adjacent to the project area include the Park District and private landowners.

1.1.1.2 General Plan Designation

The portions of the project site within Contra Costa County are designated as Parks and Recreation (PR) and Agricultural Lands (AL).

Portions of the project site within the City of San Ramon's sphere of influence (SOI) are designated as Rural Conservation and Parks. Portions of the project site within the Town of Danville's SOI are designated as General Open Space and Agricultural.

1.1.1.3 Project Location and Access Points

The project site is in the southern portion of Las Trampas in south-central Contra Costa County, on the western periphery of the San Ramon Valley within the City of San Ramon, Town of Danville, and unincorporated areas of Contra Costa County.

The project area incorporates approximately 756 acres that straddle Las Trampas Ridge. The project area appears on the Las Trampas Ridge and Diablo 7.5-minute U.S. Geological Survey quadrangle maps. The boundaries of the project area include existing Las Trampas parkland to the north, private residences and San Ramon Valley Boulevard to the east, private residences to the south, and Bollinger Canyon Road and private residences to the southwest. Figure 1-1 shows the project location and the regional vicinity.

The project area consists of existing open Las Trampas parkland along with five parcels or former properties: Peter's Ranch, Chen, Elworthy, Podva, and Faria. For convenience of discussion, these property names are used to describe the individual characteristics of each of these parcels.

The Peter's Ranch property encompasses an approximately 58.84-acre area within unincorporated Contra Costa County and borders the Town of Danville to the north and east of the property, and City of San Ramon to the south of the property. Park District staff can access the property from Fountain Springs Drive off San Ramon Valley Boulevard.

The Chen property encompasses an approximately 228-acre area within unincorporated Contra Costa County, bordering the Town of Danville to the northeast of the property, and is within the City of San Ramon's SOI. Park District staff access the property from Bollinger Canyon Road, which makes up the southern border of the property, and from Las Trampas Regional Wilderness to the north through the Calaveras Ridge Trail. A staging area along the frontage of Bollinger Canyon Road would provide public access to this property.

The Elworthy property encompasses an approximately 232-acre area within unincorporated Contra Costa County and the Town of Danville. Park District staff and park users can access the property from Elworthy Ranch Road off San Ramon Valley Boulevard. At the terminus of Elworthy Ranch Road, an existing staging area and trail connector to the Calaveras Ridge Trail provide access to the parkland property through an easement across private property.

The Podva property encompasses an approximately 96-acre area within the Town of Danville. To the west of the property is the Las Trampas. The property includes an access point and trail with public on-street parking from Wingfield Court and Midland Way, off San Ramon Valley Boulevard.

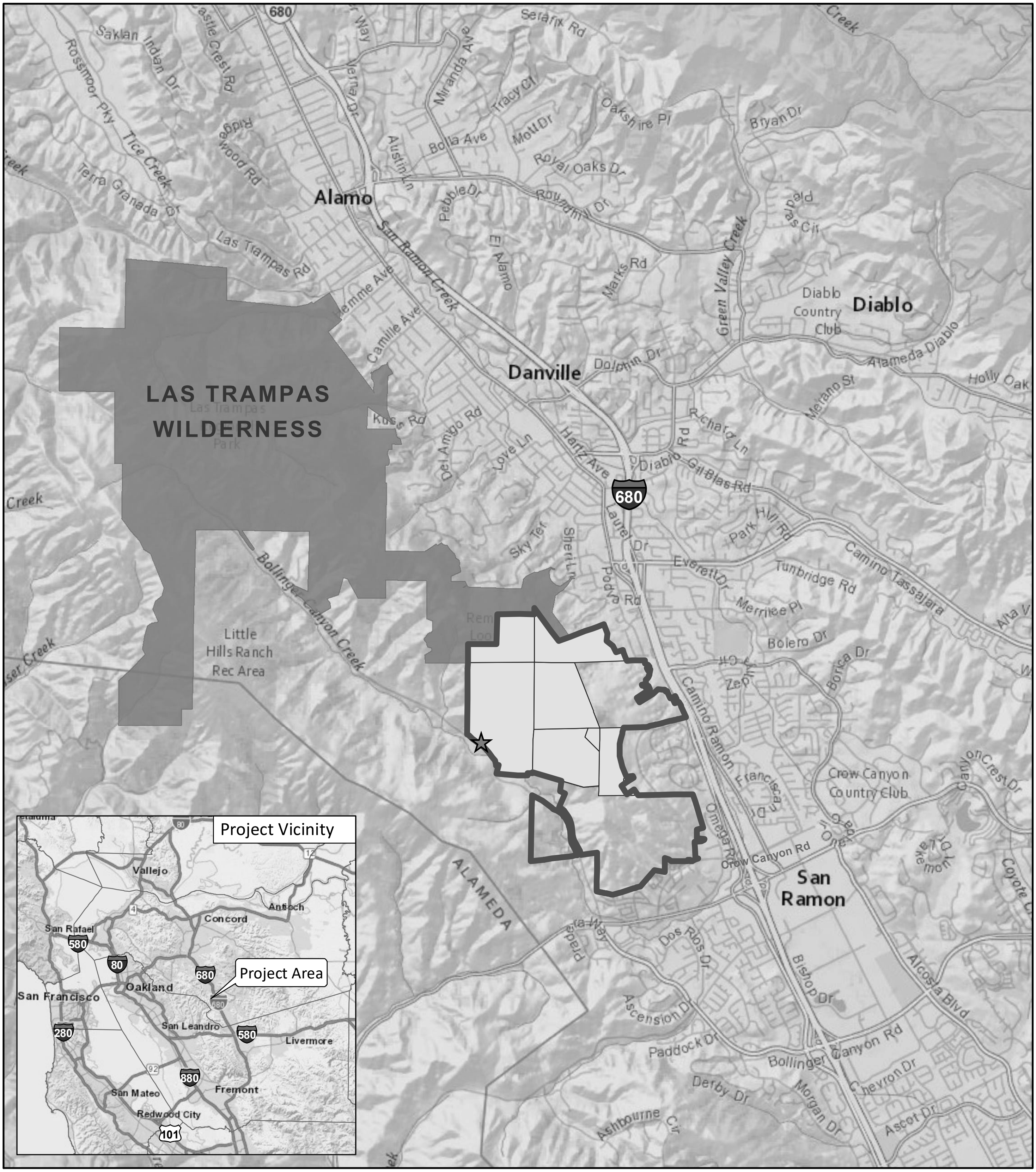

FIGURE 1-1

LEGEND

▭ Project Area

▨ EBRPD Lands

★ Chen Staging Area

N

0 0.5 1
MILES

Southern Las Trampas LUPA NOP/IS

Project Location and Regional Vicinity Map

SOURCE: Esri National Geographic (2018) and World Street Map (2018) Services.

I:\EBR1801\GIS\Maps\Figure 1-1_Project Location and Regional Vicinity Map.mxd (6/13/2019)

The Faria property encompasses an approximately 141-acre area within unincorporated Contra Costa County. The property borders the City of San Ramon to the southeast. Bollinger Canyon Road splits the Faria property and runs from the northwest to southeast. This property will remain in landbank status until future acquisitions and/or regional trail connections to Park District property in San Ramon can be made.

1.1.2 Existing Conditions

1.1.2.1 Parkland Designations

Park District parks are classified by their geographical location and the designated level of resource protection and recreational use (EBRPD 2013). The 1993 LUDP classifies Las Trampas as a Wilderness Regional Preserve because of its size, character, nature and special features. Lands incorporated into Las Trampas Wilderness Regional Preserve would maintain this classification. Consistent with the classification, this LUPA proposes minimal development focused on interpretation and public access, and a commitment to natural and cultural resource protection. Furthermore, the 2013 Master Plan requires that developed areas cannot exceed five percent of a regional preserve's total land area, and one percent of a wilderness preserve's total land area.

Within the project area, the LUPA designates levels of resource protection and recreational intensity and identifies planned recreation/staging units and natural units.

- A *natural unit* is a natural, open space or wildland area with lower intensity recreational facilities (primarily trails) and uses (such as hiking, horseback riding, bicycling, geocaching, plant and wildlife study, and interpretive and educational pursuits).

- A *recreation/staging unit* is generally a flat area suited to the development of parking lots and more intensive public recreational use, such as restrooms, picnic facilities, turf meadows, group camping facilities, visitor centers and service yards. *Recreation/staging units* are generally clustered and located near access roads at the edge of parks. Within the project area, opportunities for active use areas are limited because of steep topography and sensitive habitat. While recreation/staging units provide parking within parkland, in areas previously disturbed and at the park perimeter, less developed access can include off-street parking and simple trailheads or entrances typically connecting a neighborhood with gates and signs.

The project area incorporates approximately 756 acres, of which, less than 1 acre is proposed to be developed for access, staging and facilities. At full build-out, approximately 45 total acres of all Las Trampas parkland (5,911 acres) would be developed, well under one percent of the total land area.

1.1.2.2 Staffing and Programs

Staff from the Park District's Operations Department provide for the management of natural resources and maintenance of park facilities. Interpretive and Recreation Services Department staff offer educational and interpretive programs to the public. Trails Development Group and Roads and Trails staff offer programs directed at trail development and maintenance, respectively.

Park staff serve as the primary presence in the park on a day-to-day basis. One Park Supervisor and four full-time Park Ranger II staff provide on-site staffing for Las Trampas and are responsible for patrolling and maintaining the project area and the larger Las Trampas. Park District staff would also be responsible for Faria when this property is incorporated into Las Trampas. As the primary interface with park visitors, park staff provide information about the park and park regulations and ensure public safety through routine patrol and by acting as first responders for public safety emergencies, and crime, vandalism, and fire incidents.

Basic Park District operational and maintenance services consist of the following:

- Opening and closing staging and trailhead gates at opening and closing (park closure hours vary seasonally);
- Litter pick-up;
- Restroom facility maintenance;
- Trail maintenance;
- Installing and maintaining signs, benches, and other park infrastructure, including fences and gates;
- Managing the parkland's natural features, and biological, and cultural resources; and
- Overseeing day to day activities associated with the parkland vegetation management programs, including integrated pest management programs, grazing, and the implementation of the fuel management treatment areas identified in the Wildland Management Policies and Guidelines adopted in 2001.

Routine staging area and trail maintenance tasks, which would make up the primary functions in the project area, would be directed at keeping the system in a safe and operable condition, including minimizing soil erosion where sedimentation is threatening water quality of stream channels and adversely impacting aquatic habitat from road/trail-related erosion. Activities typically include: trail monitoring to identify substandard road and trail conditions and repair through various means, incorporating, as appropriate, grading and/or mowing the trail surface, replacement of existing culverts, installation of new drainage structures, trenching, backfilling, and minor realignment resulting from erosion and/or slope instability. In addition, ancillary facilities along the trails are repaired or replaced as needed, including benches and picnic tables. The Trails Development Group and Roads and Trails oversees this work performed by the Park District's Operations park staff, supplemented by the Park District's Maintenance and Skilled Trades (MAST) staff and trails crews.

The Park District's Interpretive and Recreation Services Department connects visitors to the natural environment with stimulating experiences that instill an appreciation of the region's resources and motivate participants to conserve and protect these resources. In this effort, the Park District provides a variety of programs and services for school groups, families, and adult visitors. Naturalists offer regional interpretive programs from ten Park District Visitor Centers, while Outdoor Recreation staff operate from the Tidewater Boating Center in Oakland. Interpretive services include natural and cultural historical walks, hikes, and talks, environmental restoration projects, as well as wayside interpretive panels and self-guiding brochures. Recreation staff lead camping, hiking, biking, and summer day camp programs.

The Park District's Southeast Sector at Sunol Visitor Center in Sunol serves the project area. The Park District offers a variety of naturalist hikes centered on topics that include birding, newts, fungi, fossils of the pre-historic animals that used to roam Las Trampas, and the geology and ridges of Las Trampas. Since 2015, the Park District has partnered with the National Park Service to offer a joint program through Las Trampas to the Eugene O'Neill National Historic Site.

In 2018, approximately 127,400 people visited Las Trampas. On average, Las Trampas receives from all the existing park entrances between 5,000 and 14,000 park visitors per month.[1] Visitors to Las Trampas access the park from several park entrances resulting in visitors being spread out throughout the park.

1.2 PROJECT BACKGROUND

The project area consists of land that the Park District has acquired between 1983 and 2018, as well as land that is scheduled to be transferred to the Park District in 2019. Table 1.A shows the acquisition history of the land comprising the project area.

The Park District acquired the 58.84-acre Peter's Ranch property in 1983, as a condition of approval for a residential development in the southern portion of the Town of Danville. Peter's Ranch is referenced in the 1993 Las Trampas Land Use Development Plan (LUDP) and 1991 Resource Analysis as the Southern Parcel; however, as it was non-contiguous with the rest of Las Trampas at the time of preparation of the 1993 LUDP, it has remained in landbank status. Landbank status is land that remains closed to the public, potentially for several years or more, until it is made suitable (safe and accessible) for public access, consistent with Policy ACQ3 of the 2013 Master Plan.

Table 1.A: Acquisition History

Property	Date Acquired	APNs	Acreage	Conservation Easement Acreage
Peter's Ranch	1983	208-580-013	58.8	N/A
Chen	2007	208-220-010	227.8	N/A
Elworthy	2015	208-230-046, 208-230-032, and 208-230-033	232	N/A
Podva	2018	208-016-014	96	30
Faria	2019 (anticipated)	208-240-054	141	136

Source: EBRPD (2018).

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[1] East Bay Regional Park District, 2017. Park Operations. November.

The Park District purchased the 227.8-acre Chen property in 2007 to preserve its rich natural resources and to provide potential public access and trail connections to the Calaveras Ridge Trail, which runs north and south through Las Trampas. The Chen property is currently in landbank.

In 2015, the 232-acre Elworthy property was dedicated to the Park District as a condition of approval for a residential development, along with an approximately 1-mile segment of the Calaveras Ridge Trail on the parcel and a 0.5-mile trail connector through a 182-acre Elworthy private property scenic easement. The developer constructed a 12-car staging area at the western boundary of the Quail Ridge residential development to provide access to the Elworthy scenic easement prior to Park District acceptance of the Elworthy property and staging area. A pedestrian and EVMA easement through the residential development from Elworthy Ranch Road provides public access to the staging area. A decomposed granite shoulder parallels the access road to the staging area and is maintained by the residential development homeowner's association. The staging area and trail connection are currently open to the public.

The Park District acquired the 96-acre Podva property in 2018, as a City of Danville condition of approval for a residential development. Thirty of the 96 acres have been dedicated as a conservation easement and will be managed according to the requirements of the conservation easement. The property includes an approximately 1-mile trail through the Podva property that would connect to existing trails within Las Trampas, as well as a trailhead with public, on-street parking.

The 141-acre Faria property is scheduled for transfer to the Park District in 2019 as part of the Faria Preserve development project's conditions of approval. Much of the property (136 acres), would be managed under the provisions of a conservation easement. The property will remain in landbank status (closed to the public) and will be included in a future land use planning process, when additional acquisitions and regional trail connections can be made. Prior to the transfer of the Faria property, the developer is required to construct a 25-car staging area on the Park District's Chen property. Design and construction of the staging area would follow the Park District's standard specifications and include park signage, gates, and standard park hours that vary seasonally. Other aesthetic features would be considered at the proposed staging area to maintain the visual character of the area, including planting trees and shrubs that match the plants of the surrounding area, and fencing that resembles the existing corral at the site.

1.2.1 Projects Incorporated by Reference

The properties that have come to the Park District or are scheduled to be transferred as conditions of approval for residential developments have been evaluated under separate environmental review processes. As such, the EIR will incorporate and reference those environmental documents. Long-term management plans associated with the conservation easements within the project area would also be incorporated.

1.2.1.1 Las Trampas Regional Wilderness Land Use-Development Plan and EIR (1993)

The Park District prepared a Resource Analysis for Las Trampas, Little Hills Regional Recreation Area, and the western end of the Las Trampas to Mount Diablo Regional Trail in 1991, to describe and identify resources and land planning issues within Las Trampas (EBRPD 1991). In 1993, the Park

District completed a Land Use-Development Plan and Environmental Impact Report (LUDP/EIR) to provide policies and implementation measures for the resources and land planning recommendations identified within the Resource Analysis, covering approximately 3,600 acres (EBRPD 1993). The Park District certified the EIR and adopted the LUDP on November 2, 1993, Resolution No: 1993-11-291.

The LUDP/EIR identifies Peter's Ranch as the non-contiguous Southern Parcel and indicates that a regional trail alignment to connect the parcel to Las Trampas would be evaluated as part of a future project.

1.2.1.2 City of San Ramon Northwest Specific Plan/Faria Preserve Community EIR (2006)

The City of San Ramon developed the Northwest Specific Plan (NWSP) to establish land use goals and policies for approximately 354 acres located immediately northwest of the City limits in unincorporated Contra Costa. The NWSP area includes the 290-acre Faria Preserve Community development project. The City of San Ramon certified the EIR and adopted the NWSP on November 28, 2006. An addendum to the NWSP EIR was prepared in June 2008 to evaluate minor modifications because of the settlement agreements pertaining to the Faria Preserve Community project. A text amendment was issued in July 2017, addressing updates to the Faria Preserve Community project. The 141-acre Faria property is not covered under this NWSP EIR; however, the open space within the Faria Preserve residential development, and the city-owned public trail connectors to the Calaveras Ridge Trail and portions of the Calaveras Ridge Trail, are covered in this NWSP EIR.

1.2.1.3 Elworthy Ranch EIR (2008)

The Town of Danville certified the EIR and approved the Elworthy Ranch project on July 1, 2008, through Danville's Resolution No. 81-2008. The Elworthy Ranch EIR includes the dedication of the 232-acre Elworthy property to the Park District, a trail through a private property overlain with a scenic easement, and a trailhead parking (staging) area. While the 232-acre Elworthy property is covered under the Elworthy Ranch EIR, it was not included in the development project's wildlife surveys.

1.2.1.4 Faria Preserve Community Project Initial Study/Mitigated Negative Declaration (2013)

The Faria Preserve Community Project Initial Study/Mitigated Negative Declaration (IS/MND) includes the dedication of the 141-acre Faria property to the Park District, as well as the conditions of the settlement agreement for the residential developer to provide the Park District with a staging area. At the time when the IS/MND was prepared, the location for the staging area to be constructed by the developer for the Park District was still being assessed. The acreage for the Faria property was also stated as 144 acres; however, Park District staff surveyed the property following the IS/MND and found it to be approximately 141 acres. The Faria property is included as part of the project area for this project; however, no proposed trails are included in the IS/MND. The City of San Ramon issued revised Conditions of Approval in 2013 to incorporate the Settlement Agreement conditions, including conveyance of the 141-acre Faria property to the Park District with a funding mechanism for on-going maintenance, trail easements for the Calaveras Ridge Trail, and dedication of five parking stalls within the residential development to facilitate access to the Calaveras Ridge Trail.

1.2.1.5 Podva Property Residential Development EIR (2013)

The Town of Danville certified the Podva Property Residential Development EIR on April 1, 2014, through Resolution No. 28-2014. The EIR includes the dedication of the 96-acre Podva property to the Park District, public on-street parking, and a trail to Las Trampas provided by the developer, as mitigation measures from impacts resulting from the residential development. Additional improvements, such as gates and fencing, are also included as conditions of approval of the development.

1.2.1.6 Long-Term Resource Management Plan for the Faria Onsite Preserve 136-Acre EBRPD Parcel (2015)

The Long-Term Resource Management Plan provides management and monitoring objectives and priorities for habitats and species within the Faria property. The resource management plan is a binding and enforceable instrument, implemented under the conservation easement covering the Faria property. While the Park District would be the landowner and land manager, Wildlife Heritage Foundation (WHF) would be the conservation easement holder, responsible for performing the conservation easement annual compliance monitoring inspections and reports.

1.2.1.7 Redhawk Tract (Podva Property) Conservation Lands Long-Term Management Plan (2016)

The Long-Term Management Plan (LTMP) provides for the management of 30 acres of conservation lands suitable for the California red-legged frog, Alameda whipsnake, and other regionally sensitive wildlife species on the southern portion of the Podva property. The Park District would be the landowner and manager, and WHF would be the conservation easement holder, responsible for oversight of and monitoring compliance with this LTMP.

1.3 PROJECT OBJECTIVES

1.3.1 Purpose

The 2019 Land Use Plan Amendment would serve as an amendment to the 1993 Las Trampas Land Use Development Plan. The main purposes of the 2019 LUPA are to:

- Evaluate 756 acres of open space for the purpose of natural resource protection, public use for passive recreation and interpretation.

- Evaluate and incorporate appropriate trail connections, including the alignments, appropriate trail use, access and parking, and routine maintenance requirements.

- Provide recommendations for one new staging area off Bollinger Canyon Road located on the Chen property.

- Preserve the rich heritage of natural and cultural resources and provide open space, and safe and healthful recreation and environmental education.

1.3.2 Goals

The primary goal for this LUPA is to provide a framework for natural resource management for the project area and associated public staging/access and trails in the southern portion of Las Trampas.

1.3.3 Key Plan Recommendations

The following key plan recommendations have been identified to support the proposed project goals:

- Formally append approximately 756 acres of land into Las Trampas, acknowledging that 232 acres of this area is already opened for public use. Recommend 141 acres to remain in landbank until it is safe and suitable for public access.

- Designate and develop a staging area on the Chen property to serve as the southern gateway to Las Trampas, with all-weather parking to accommodate up to 25 vehicles, benches, restroom, trail connections, information signs and landscaping.

- Designate and develop one 1.1-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from existing roads and trails and connect to Bollinger Canyon Road via the Chen property.

- Designate and develop one 0.8-mile loop trail on the Chen property from the proposed staging area.

- Designate and develop one 0.9-mile trail connecting the proposed 1.1-mile access road to the Las Trampas Ridge line, to be evaluated in future planning.

- Designate and develop one 0.8-mile trail connecting the Podva property to the Las Trampas Ridge.

- Provide seeps, ponds, and wetland restoration and enhancements within the Chen property and Las Trampas open parkland.

- Designate a 0.5-mile access road as a natural surface, multi-use trail to allow pedestrian, bicycle, and equestrian access into Las Trampas from the Podva property.

- Develop one 0.8-mile natural surface, multi-use trail segment of the Calaveras Ridge Trail on the Peter’s Ranch property, connecting future City of San Ramon public trails on an adjacent property to existing trails on the Elworthy property.

- Designate over 99 percent of the project area as a natural unit, with less than 1 percent as a recreation/staging unit.

1.4 PROPOSED PROJECT

Proposed project components consist of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. Table 1.B includes a summary of the project components. Figure 1-2 shows the Site Plan, and Figure 1-3 shows the Chen Staging Area.

Table 1.B: Project Components

Proposed Action	**Existing Conditions Within Project Area**	**Potential New Conditions Within Project Area**	**Will be Covered under This EIR**
Total Acreage			
–	232 acres open for public use *(5,674 total acres for all of Las Trampas Wilderness Regional Preserve)*	756 acres (615 acres open for public use) *(5,911 total acres for all of Las Trampas Wilderness Regional Preserve)*	–
Trail System (in miles)			
–	1.8 miles *(42.9 total miles within Las Trampas)*	5.8 miles (4.9 miles to be opened in the near term or Phase I) *(47.8 total miles within Las Trampas)*	–
Calaveras Ridge Trail through Chen and Elworthy properties	● 1.3-mile natural surface, multi-use EVMA road	● 1.3-mile natural surface, multi-use EVMA road *(no change)*	
Trail through scenic easement on private property	● 0.5-mile natural surface, multi-use EVMA road	● 0.5-mile natural surface, multi-use EVMA road *(no change)*	
Chen trail	N/A	● 1.1-mile natural surface, multi-use EVMA road (12-foot width) ● Armored ford crossings at drainage crossings	X
Lower Chen Loop trail	N/A	● 0.8-mile natural surface, multi-use loop trail on Chen Property from proposed staging area	X
Chen ridge connector	N/A	● 0.9-mile natural surface, multi-use trail connecting proposed Chen trail to ridge line (only conceptually included, will be analyzed under CEQA in future planning)	
Peter's Ranch trail	N/A	● 0.8-mile natural surface, multi-use trail	X
Podva trail	N/A	● 0.9-mile natural surface, multi-use trail	
Podva connector trail	● 0.5-mile Park District service road	● 0.5-mile natural surface, multi-use trail with seasonal closure	X
Podva ridge connector trail	N/A	● 0.8- mile natural surface, multi-use trail	X

Table 1.B: Project Components

Proposed Action	Existing Conditions Within Project Area	Potential New Conditions Within Project Area	Will be Covered under This EIR
Public Access			
Phase 1 Access: Staging Areas and Entrances	● Elworthy Staging Area TOTAL: 1 Vehicle Staging Area	● Elworthy Staging Area ● Staging area on Chen property ● Podva trailhead with public on-street parking ● Walk-in entrance from Faria Preserve HOA Open Space TOTAL: 3 Vehicle Staging Areas, 1 Walk-in Entrance	X (Staging Area on Chen)
Parking Spaces	● Elworthy Staging Area (12 vehicles) TOTAL: 12 Vehicles	● Elworthy Staging Area (12 vehicles) ● Staging area on Chen property (25 vehicles) ● Podva trailhead with public on-street parking TOTAL: 37 vehicles + public on-street parking	X (Staging Area on Chen)
Seeps, Ponds, and Wetland Restoration and Enhancement			
Wetland Restoration and Enhancement Activities	N/A	● Seeps and pond restoration and enhancement within the Chen property ● Pond enhancement adjacent to the Podva trail connector ● Pond/wetland area adjacent to the Podva trail connector to be a Special Resource Protection Area with seasonal closure	X

Source: EBRPD (2019).
EVMA = emergency vehicle and maintenance access

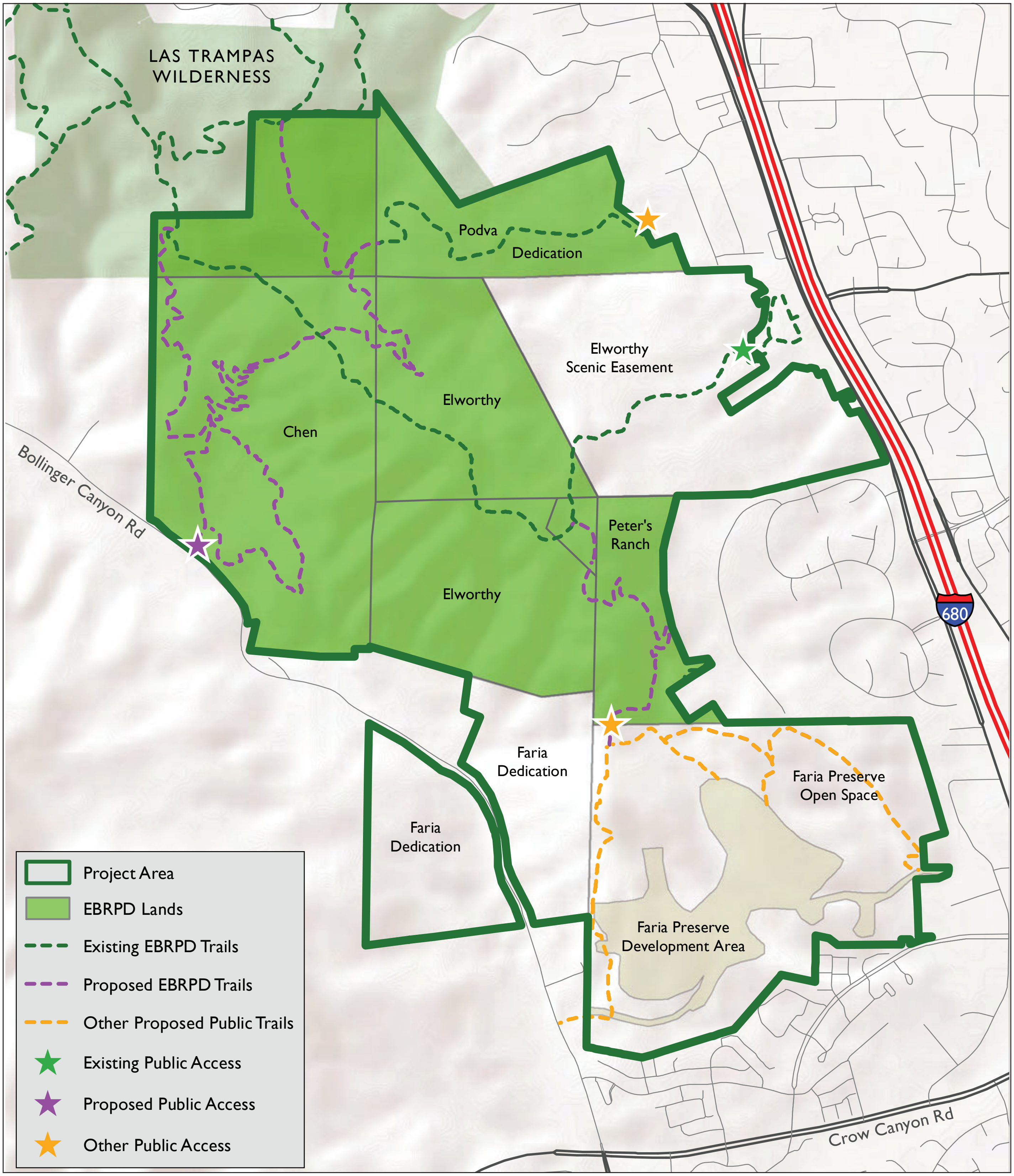


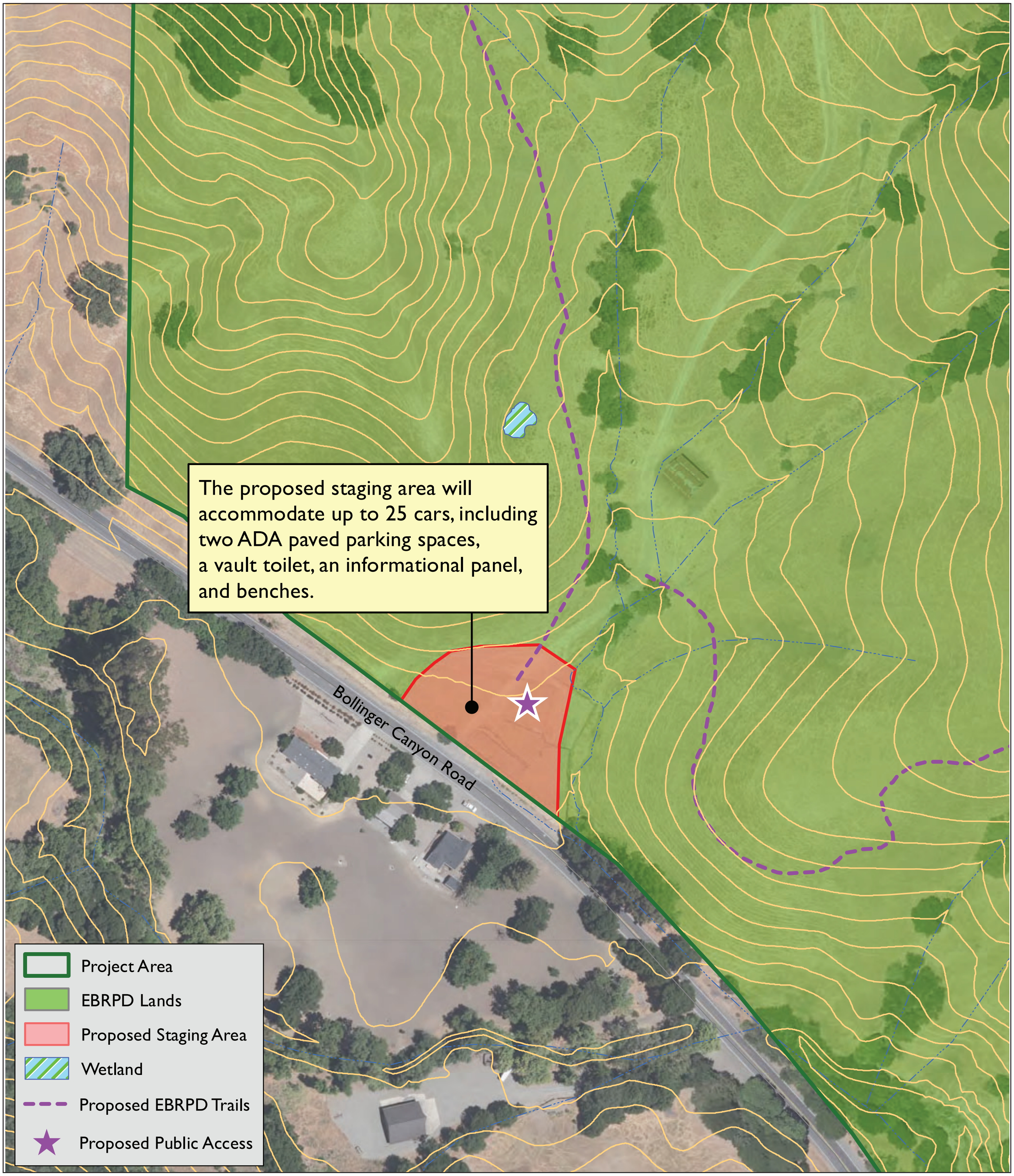
FIGURE 1-2

NOT TO SCALE

Southern Las Trampas LUPA NOP/IS
Project Area, Trail Connections, and Access Points

SOURCE: EBRPD, 2019.

Q:\EBR1801\g\Figures\Fig_1-2 Proj Area_Trails_AccessPts.ai (6/14/19)



LSA

FIGURE 1-3

NOT TO SCALE

Southern Las Trampas LUPA NOP/IS

Chen Staging Area

SOURCE: EBRPD, 2019.

Q:\EBR1801\g\Figures\Fig_1-3 Chen_Staging_Area.ai (6/14/19)

1.4.1 Incorporated Open Space Lands into Las Trampas

The project area consists of: 1) landbanked property that would be open to the public; 2) property that is currently open to the public; and 3) land that would be conveyed to the Park District, to be placed in landbank until it is safe and suitable for public use. The Peter's Ranch, Chen, and Podva properties are currently in landbank and would be opened to the public through this LUPA project. The Elworthy property, which is already opened to the public, would formally be incorporated into Las Trampas. This project component is included in the LUPA, but does not need to be covered in the EIR.

The conveyance of the Faria property, which is covered under the California Environmental Quality Act (CEQA) through a separate environmental document, will be incorporated and referenced in this EIR. Under the provisions of the Faria Long-term Resource Management Plan, the property's conservation easement will be preserved in perpetuity, as part of Las Trampas. The 141-acre Faria property would be placed in landbank and included in future planning efforts.

1.4.2 Trail Connections and Access Points

The project consists of a total of 4.9 miles of new trails that would be open to the public. 1.1 miles of this trail system would incorporate emergency vehicle and maintenance access (EVMA), and 3.8 miles would be multi-use trails for hikers, equestrian, and bicycles. As further discussed below, the 4.9 miles include trail connections that are covered under CEQA through separate environmental documents and would be incorporated and referenced in this EIR. The project also includes an additional 1.8 miles of trails that are currently open to the public. Table 1.C includes a summary of the trails that are included as part of the project.

The trails would be constructed with a combination of mechanized equipment and hand tools. Mechanized equipment may include, but would not be limited to small excavators, small trail dozers, D4 bulldozers, water trucks, backhoe, and graders. Hand tools could include pick mattocks, McLeods, Puilaskis, shovels etc. Cut and fill would likely be balanced on site; there would be no off-site hauling.

1.4.2.1 Chen Trail and Staging Area

Per the conditions of a settlement agreement between the Park District, the Sierra Club, and the developers of the Faria Preserve residential project, and later the amendments to the settlement agreement, the developers would build a staging area on the Park District's Chen property. The approximately 0.62-acre staging area would have a capacity of approximately 25 vehicles and be designed and constructed to Park District standards, which include having standard park curfew hours, gates, and park signage. Park District standard practices for construction of trails and staging areas also include requirements that construction be limited to regular business hours, that signage be posted to inform neighbors of construction, and that the construction area would be closed off during off-hours. The approximately 0.25-acre graded portion of the staging area would be located at an existing cattle corral that is a previously disturbed site. Improvements include a two-stall vault toilet, two ADA parking stalls, gates and fencing, park benches, and an informational bulletin board panel.

The Park District selected the previously disturbed cattle corral area along the frontage of Bollinger Canyon Road as the location of the staging area based on staff site analysis that considered factors such as impacts to habitat and streams, road sightlines, public safety, and amount of required grading.

Table 1.C: Project Trails

Trail [1]	Status	Type	Use	Width (ft)	Length (mi)
Calaveras Ridge Trail through Chen and Elworthy properties	Open	Multi-use road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	1.3
Trail through Elworthy scenic easement on private property	Open	Multi-use road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	0.5
Chen Trail	Proposed	Multi-use road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	1.1
Peter's Ranch Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.8
Podva Trail	Existing (to be opened to the public)	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	12	0.9
Podva Connector Trail	Park District access road only; proposed for seasonal public use	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	4	0.5
Podva Ridge Connector Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	4	0.8
Chen Loop Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.8
Chen Ridge Connector Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.9

Source: EBRPD (2019).

[1] Trail names are currently in development.

A 1.1-mile EVMA road would connect the staging area on the property to the Calaveras Ridge Trail along Las Trampas Ridge. The EVMA road would be multi-use and open to hikers, bicyclists, and equestrians. The multi-use road would be 12 feet in width and have an approximate elevation gain of over 570 feet. While the multi-use road would provide emergency vehicle and maintenance access, it would be constructed and graded as natural surface, with armored ford crossings where applicable, to allow drainage crossings with erosion control and water quality protection.

1.4.2.2 Chen Lower Loop Trail

A 0.8-mile loop trail from the proposed staging area on the Chen property would be a multi-use trail open to hikers, bicyclists, and equestrians. The 4-foot-wide trail would be constructed as a natural surface trail, with armored ford crossings and bridge crossings where applicable, to allow drainage crossings with erosion and water quality protection.

1.4.2.3 Chen Ridge Connector

The project would include a 0.9-mile natural surface trail that would provide a trail connection from the proposed staging area on Chen to the Las Trampas Ridge. The 4-foot-wide trail would be constructed as a multi-use trail for hikers, bicyclists, and equestrians. Armored ford crossings and bridge crossings would be constructed where applicable to allow drainage crossings with erosion and water quality protection.

1.4.2.4 Peter's Ranch Trail

The project includes a 0.8-mile natural surface trail portion of the Calaveras Ridge Trail on the Peter's Ranch property. The trail would be approximately 4 feet wide, with an approximate elevation gain of over 300 feet. The trail would be multi-use and open to hikers, bicyclists, and equestrians. The trail would connect the currently opened trails on the Elworthy property to the north, with the City of San Ramon's public trails to the south, located on the Faria Preserve's Geological Hazard Abatement District (GHAD) open space property. The City of San Ramon's public trails on the Faria Preserve's GHAD property will be owned and maintained by the GHAD, and not by the Park District.

1.4.2.5 Podva Connector

The existing 0.5-mile natural surface trail, which connects the trail on the Podva property to existing trails within Las Trampas, is a 12-foot-wide service road. The road would be opened to hiking, bicycling, and equestrian, and would be maintained as a natural surface multi-use trail. A small portion will be re-routed to avoid wetlands.

1.4.2.6 Podva Trail

The project includes a 0.9-mile natural surface multi-use trail on the Podva property. The trail was constructed and permitted by the Podva residential developer to allow for recreational trail and service road use. Emergency and maintenance vehicles will have access onto the trail from Wingfield Court, but no through access to Las Trampas would be allowed. The trail is 12 feet in width and connects park users from public on-street parking at the terminus of Wingfield Court and Midland Way to Calaveras Ridge Trail within Las Trampas. This trail is covered in the 2013 Podva Property Residential Development EIR.

1.4.2.7 Podva Ridge Connector

A 0.8-mile natural surface multi-use trail would connect the Podva property to the Las Trampas Ridge. The 4-foot-wide trail would allow for hiking, bicycling, and equestrian use.

1.4.3 Seeps, Ponds, & Wetland Restoration and Enhancements

The existing seeps, pond and drainages on the Chen property provide an opportunity for restoration and enhancement. These features are identified in the LUPA as restoration objectives.

The Podva connector trail within Las Trampas is adjacent to nearby existing seeps and ponds that also provide an opportunity for habitat enhancement.

1.5 PROJECT APPROVALS

In compliance with the CEQA, the EIR will describe the environmental consequences of implementation of the Southern Las Trampas LUPA. The EIR is intended to fully inform Park District officials, in addition to other responsible agencies, persons, and the general public, of the potential effects of the proposed project. A list of the permits and approvals that may be required with implementation of the proposed Southern Las Trampas LUPA are provided in Table 1.D.

Table 1.D: Anticipated Permits and Approvals for LUPA Implementation

Lead Agency	Permit/Approval
East Bay Regional Park District	• CEQA – Certify the EIR • LUPA approval; Schematic Plans; and others as necessary
Other Agencies	
U.S. Army Corps of Engineers	• Section 404 permit
California Department of Fish and Wildlife (CDFW)	• Section 1600 Streambed Alteration Agreement • Incidental Take Permits
U.S. Fish and Wildlife Service	• Biological Opinion
San Francisco Bay Regional Water Quality Control Board (RWQCB)	• National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge • Approval of new outfall • Possible Section 401 water quality certification
East Bay Municipal Utility District	• Utility/service connections
Contra Costa County	• Utility/service connections and ROW
City of San Ramon	• Utility/service connections
Town of Danville	• Utility/service connections

Source: LSA (2018).

1.6 SUMMARY OF ENVIRONMENTAL EFFECTS

1.6.1 Effects Found to Be Potentially Significant

This Initial Study evaluates the proposed project to determine whether it would result in significant environmental impacts. The designation of topics as “Potentially Significant” in the Initial Study means that the EIR will consider the topic in greater depth and determine whether the impact would be significant. Based on this Initial Study, the following topics have project specific effects that have been determined to be potentially significant:

- Aesthetics (character and quality of surroundings only); and

- Biological Resources (habitat modifications, sensitive natural communities, protected wetlands, and wildlife movement).

These environmental topics will be evaluated in an EIR prepared for the proposed project.

1.6.2 Effects Found Not to Be Significant

The following potential individual and cumulative environmental effects were determined to be either less than significant or would be reduced to a less-than-significant level through recommended mitigation measures included in this Initial Study:

- Aesthetics (scenic vistas, state scenic highways, light and glare only);
- Agriculture and Forestry Resources (all topics);
- Air Quality (all topics);
- Biological Resources (conflict with local policies and conflicts with Habitat Conservation Plan);
- Cultural Resources (all topics);
- Geology and Soils (all topics);
- Greenhouse Gas Emissions (all topics);
- Hazards and Hazardous Materials (all topics);
- Hydrology and Water Quality (all topics);
- Land Use and Planning (all topics);
- Mineral Resources (all topics);
- Noise (all topics);
- Population and Housing (all topics);
- Public Services (all topics);
- Recreation (all topics);
- Transportation and Traffic (all topics);
- Tribal Cultural Resources (all topics); and
- Utilities and Service Systems (all topics).

The above topics are discussed with mitigation measures, where appropriate, in Section 3.0, CEQA Environmental Checklist, of this Initial Study, and require no environmental analysis in the EIR. All mitigation measures identified will be incorporated into the proposed project. For items designated "Not Applicable" or "No Impact," the conclusions regarding potential significant environmental effects are based upon field observations, staff and consultant experience and expertise on similar projects, and/or standard reference materials available within the Planning Division of the East Bay Regional Park District, such as the California Natural Diversity Database and maps published by the California Department of Fish and Wildlife, the California Division of Mines and Geology Mineral Resource Zone designations, and the California Department of Conservation's Farmland Mapping and Monitoring Program. For each checklist item, the evaluation has considered both individual and cumulative impacts of the proposed project.

2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist in Chapter 3.0.

☒ Aesthetics
☒ Biological Resources
☐ Greenhouse Gas Emissions
☐ Land Use/Planning
☐ Population/Housing
☐ Transportation/Traffic
☐ Mandatory Findings of Significance

☐ Agriculture and Forestry Resources
☐ Cultural Resources
☐ Hazards & Hazardous Materials
☐ Mineral Resources
☐ Public Services
☐ Tribal Cultural Resources

☐ Air Quality
☐ Geology/Soils
☐ Hydrology/Water Quality
☐ Noise
☐ Recreation
☐ Utilities/Service Systems

2.1 DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ I find that the proposed project MAY have a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

____________________ ____________________
Signature Date

____________________ ____________________
Signature Date

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3.0 CEQA ENVIRONMENTAL CHECKLIST

3.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☒	☐
c. Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

The project area is known for its steep topography and diverse natural resources. The steep and rugged hills with their many side ridges and valleys create a complex habitat for native species and provide a challenging experience for park visitors. The geographical center of the project area is Las Trampas Ridge, which rises 700 feet above Bollinger Canyon Road. In addition to the rugged topography, the project area includes numerous rock outcrops. The project area contains a wide range of natural communities that have been substantially altered over time by human activities such as road and trail construction, introduction of non-native species, and the suppression of wildfires. Developed urban areas are located south and east of the project site and include residential developments. A portion of the project site is also adjacent to I-680.

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

A scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. The project location is in the southern portion of Las Trampas in south-central Contra Costa County, on the western periphery of the San Ramon Valley within the City of San Ramon, Town of Danville, and unincorporated areas of Contra Costa County. The Contra Costa County General Plan Open Space Element describes two main scenic resources in the County: 1) scenic ridges, hillsides, and rock outcroppings; and 2) the San Francisco Bay/Delta Estuary system. The Contra Costa County General Plan Open Space Element designates scenic ridgeways within the project area and notes that properties with scenic resources which are already designated for open space use should be protected through strict land regulations and, on occasion, through acquisition. The Contra Costa County General Plan Open Space Element also contains various goals, policies, and implementation measures that work to preserve and protect scenic ridges.

Visible elements of the project would include unpaved, graded dirt trails and a staging area with a two-stall vault toilet, parking stalls, gates and fencing, park benches, and an informational bulletin board panel. Many of the proposed improvements would be at-grade and would not obstruct views of Las Trampas. Trail design would not include tall structures or landscaping that might obscure views of the surrounding open space environment and Las Trampas. The proposed trails would be unpaved and designed to follow the existing topography in order to minimize grading. Due to their relatively small scale and distance from existing public views, these improvements would not be visible to the general public or result in substantial adverse effects to scenic vistas. This impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The California Department of Transportation's (Caltrans) Landscape Architecture Program administers the Scenic Highway Program, contained in the State Streets and Highways Code, Sections 260–263. State highways are classified as either Eligible for Scenic Designation, Officially Designated, or Connecting Federal Highway. Contra Costa County has three Officially Designated State Scenic Highways: I-680 (south of State Route 24 [SR 24]), SR 24 [west of I-680]) and SR 4 (south of SR 160).[2]

The nearest State highway to the project site is Interstate 680 (I-680) which is a Caltrans officially designated state scenic highway from Interstate 580 (I-580) in Dublin to California State Route (SR) 24 in Walnut Creek. The project site is west of I-680 and is visible from segments of these visual corridors.

Implementation of the project would not substantially damage scenic resources within scenic highway corridors. Where necessary, trees would be trimmed rather than removed in order to provide the required horizontal and vertical clearance for the trail corridor, particularly for equestrian trail users. Vegetation would be cleared and removed as needed. The majority of improvements would be at-grade and would not impair scenic views. No substantial damage to scenic resources within a State scenic highway would occur as a result of implementation of the proposed project. This impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

c. *Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point)*

As described above, the project area is known for its steep topography and diverse natural resources. The steep and rugged hills with their many side ridges and valleys create a complex habitat for native species and provide a challenging experience for park visitors. The geographical

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[2] California Department of Transportation, 2018. List of Eligible and Officially Designated State Scenic Highways. Website: www.dot.ca.gov/design/lap/livability/scenic-highways (accessed August 15, 2018).

center of the project area is Las Trampas Ridge, which rises 700 feet above Bollinger Canyon Road. In addition to the rugged topography, the project area includes numerous rock outcrops. The project area contains a wide range of natural communities that have been substantially altered over time by human activities such as road and trail construction, introduction of non-native species, and the suppression of wildfires. Developed urban areas are located south and east of the project site and include residential developments. A portion of the project site is also adjacent to I-680.

Construction activities may be visible from adjacent uses and may result in visual impacts from public viewpoints due to presence of construction equipment during the construction phase. Equipment required for trail construction would only be visible during construction activities and would be removed following the completion of construction; therefore, these impacts would be temporary.

The change to the project area, including the addition of the staging area, is considered a potentially significant impact because the character of the site could be adversely affected by the addition of vehicles accessing the site and parking as well as park visitors within the site. As a result, views of the project area from Bollinger Canyon Road could be adversely affected with the inclusion of the staging area. Potential adverse effects to visual character or quality of the site will be evaluated in the EIR.

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

No permanent sources of lighting or glare would be installed as part of the proposed project. Temporary construction-related sources of light (if any) would be removed upon construction completion. Therefore, the proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. In addition, the staging area would have a capacity of 25 vehicles and be designed and constructed to Park District standards, which includes having standard park curfew hours, gates, and park signage. As a result, new light sources, including light from vehicle headlights, would represent a less-than-significant impact and no mitigation measures would be required because no light sources would be operational after dark. This topic will not be discussed in the EIR.

3.2 AGRICULTURE AND FORESTRY RESOURCES

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

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

The proposed project would append 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The project area consists of: 1) landbanked property that will be open to the public; 2) property that is currently open to the public; and 3) land that will be conveyed to the Park District, and subsequently opened to the public or placed in landbank.

The proposed project is located within unincorporated areas of Contra Costa County and within the City of San Ramon and the Town of Danville. Domestic livestock grazing, primarily using cattle, is a long-term existing condition of the project area. The proposed project would not prevent the land from continued use for grazing. There is no recent history of intensive agriculture use of the land, nor does the land meet the definitions for prime agricultural land as defined by the California State Department of Conservation.

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project site is classified as "Grazing Land" by the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP).[3] Grazing Land has existing vegetation suited to the grazing of livestock, and is not protected farmland. Therefore, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Important to a non-agricultural use. The proposed project would have no impact relating to this topic and no mitigation would be required. This topic will not be discussed in the EIR.

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

The California Land Conservation Act of 1965, also referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or open space use. Based on the California Department of Conservation maps, most of the project site is designated as "Non-Enrolled Land," however, a portion of the project site is designated as "Williamson Act – Mixed Enrollment Agricultural Land". "Non-Enrolled Land" includes land not enrolled in a Williamson Act contract. "Williamson Act – Mixed Enrollment Agricultural Land" includes enrolled lands containing a combination of Prime, Non-Prime, Open-Space Easement, or other contracted or enrolled lands not yet delineated by the County.

As discussed above, domestic livestock grazing, primarily using cattle, is a long-term existing condition of the project area. The proposed project would not prevent the land from continued use for grazing. The land has no recent history of intensive agriculture use, nor does the land meet the definitions for prime agricultural land as defined by the California State Department of Conservation.

In addition, portions of the project site are zoned for agriculture; however, the proposed project would not prevent the land from continuing to be used for agricultural purposes. Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. This impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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[3] California Department of Conservation, Division of Land Resource Protection, 2016. *Contra Costa County Important Farmland 2016.* Available online at: ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2016/con16.pdf (accessed September 19, 2018).

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

The project site is not currently used for timberland production, nor is it zoned for forest land or timberland. No forest lands or timberland are located on the project site. Therefore, the proposed project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland. This impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

Implementation of the proposed project would not result in the loss of any forest land or convert forest land to non-forest use. Refer to Response 3.2.c above. The proposed project would have no impact relating to this topic, and no mitigation would be required. This topic will not be discussed in the EIR.

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

Implementation of the proposed project would not result in any other changes to the existing environment that would convert farmland to a non-agricultural use. Refer to Responses 3.2.a and 3.2.b above. The proposed project would have no impact relating to this topic, and no mitigation would be required. This topic will not be discussed in the EIR.

3.3 AIR QUALITY

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

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

The proposed project is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen substantially. In the San Francisco Bay Area Air Basin, exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Within the BAAQMD, ambient air quality standards for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10}, $PM_{2.5}$), and lead (Pb) have been set by both the State of California and the federal government. The State has also set standards for sulfate and visibility. The BAAQMD is under State non-attainment status for ozone and particulate matter standards. The BAAQMD is classified as non-attainment for the federal ozone 8-hour standard and non-attainment for the federal $PM_{2.5}$ 24-hour standard.

An Air Quality Impact Analysis was prepared for the proposed project by LSA, and is included as Appendix A. Several of the following responses are based on the findings presented in the report.

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

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan, which was adopted on April 19, 2017. The Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health. The Clean Air Plan defines a control strategy to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce greenhouse gas emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project does the following: 1) supports the goals of the Clean Air

Plan; 2) includes applicable control measures from the Clean Air Plan; and 3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

Transportation and Mobile Source Control Measures. The BAAQMD identifies control measures as part of the Clean Air Plan to reduce ozone precursor emissions from stationary, area, mobile, and transportation sources. The Transportation Control Measures are designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled (VMT) in addition to vehicle idling and traffic congestion. The proposed project is not expected to result in significant increase in the generation of vehicle trips or VMT. In addition, portions of the project site are located within walking or cycling distance from the surrounding residential areas, and therefore would support the ability of visitors to use alternative modes of transportation. Therefore, this proposed project would not conflict with the identified Transportation and Mobile Source Control Measures of the Clean Air Plan. This topic will not be discussed in the EIR.

Land Use and Local Impact Measures. The Clean Air Plan includes Land Use and Local Impacts Measures (LUMs) to achieve the following: promote mixed-use, compact development to reduce motor vehicle travel and emissions; and ensure that planned growth is focused in a way that protects people from exposure to air pollution from stationary and mobile sources of emissions. The LUMs identified by the BAAQMD are not specifically applicable to the proposed project, as they relate to actions the BAAQMD will take to reduce impacts from goods movement and health risks in affected communities. The proposed project would include approximately 4.9 miles of new trails to be opened within an existing recreational area. Therefore, the proposed project would not conflict with any of the LUMs of the Clean Air Plan. This topic will not be discussed in the EIR.

Energy Measures. The Clean Air Plan also includes Energy and Climate Control Measures, designed to reduce ambient concentrations of criteria pollutants and reduce emissions of CO_2. Implementation of these measures is intended to promote energy conservation and efficiency in buildings throughout the community, promote renewable forms of energy production, reduce the “urban heat island” effect by increasing reflectivity of roofs and parking lots, and promote the planting of (low-VOC-emitting) trees to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants. The measures include voluntary approaches to reduce the heat island effect by increasing shading in urban and suburban areas through the planting of trees. The project would include a total of 4.9 miles of new trails that would be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). 1.1 miles of this trail system would incorporate EVMA, and 3.8 miles would be natural surface, multi-use trails for hikers, bicyclists, and equestrian. The proposed project would also include a staging area with all-weather parking to accommodate up to 25 vehicles. The proposed project would not increase ambient concentrations of criteria pollutants or emissions of CO_2. Therefore, the project would not conflict with the Energy and Climate Control Measures. As discussed above, implementation of the proposed project would not disrupt or hinder implementation of the applicable measures outlined in the Clean Air Plan, including Transportation and Mobile Source Control Measures, Land Use and Local Impact Measures, and Energy Measures. This topic will not be discussed in the EIR.

Clean Air Plan Implementation. As discussed above, implementation of the proposed project would generally implement the applicable measures outlined in the Clean Air Plan, including

Transportation Control Measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan and this impact would be less than significant.

The following section describes the project's CO impacts and construction- and operation-related air quality impacts. The conclusions are summarized at the end of each subsection. As discussed, impacts would be less than significant for localized CO emission and operational emissions. Impacts associated with construction-period emissions would be less than significant with implementation of recommended mitigation measures. This topic will not be discussed in the EIR.

Construction Emissions. During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, nitrogen oxide (NO_x), reactive organic gas (ROG), directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Site preparation and project construction would involve grading, paving, and some building activities. Construction-related effects on air quality from the proposed project would be greatest during the grading phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

The trails would be constructed with a combination of mechanized equipment and hand tools. Mechanized equipment may include, but is not limited to small excavators, small trail dozers, D4 bulldozers, water trucks, backhoes, and graders. Hand tools could include pick mattocks, McLeods, Puilaskis, and shovels. Cut and fill would likely be balanced on site, and there would be no off-site hauling. As a result, minimal amounts of pollutants would be emitted during construction activities. Construction emissions for the staging area and parking lots were estimated using the California Emissions Estimator Model version 2016.3.2 (CalEEMod), consistent with BAAQMD recommendations. Construction of the staging area and parking lots would include approximately 750 cubic yards of cut and approximately 100 cubic yards of fill, which were included as inputs to the CalEEMod analysis. Other specific construction details are not yet known; therefore, default assumptions (e.g., construction duration and fleet activities) from CalEEMod were used. The construction duration was assumed to occur for approximately 6 months.

Table 3.A: Project Construction Emissions in Pounds Per Day

Project Construction	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Average Daily Emissions	0.7	6.9	0.4	0.4
BAAQMD Thresholds	54.0	54.0	82.0	54.0
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: LSA (2017).

As shown in Table 3.A, construction emissions associated with the project would be less than significant for ROG, NO_x and $PM_{2.5}$ and PM_{10} exhaust emissions. The BAAQMD, City of San Ramon General Plan Implementing Policy 12.6-I-3, and Town of Danville General Plan Policy 34.03 require the implementation of Basic Construction Mitigation Measures to reduce construction dust (fugitive PM_{10} and $PM_{2.5}$) impacts to a less-than-significant level as follows:

Mitigation Measure AIR-1: Consistent with the Basic Construction Mitigation Measures required by the BAAQMD and City of San Ramon General Plan Implementing Policy 12.6-I-3, the following actions shall be incorporated into construction contracts and specifications for the project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

- All vehicle speeds on unpaved roads shall be limited to 15 mph.

- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Park District regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

With implementation of Mitigation Measure AIR-1, project construction would have a less-than-significant impact on air quality, and this topic will not be discussed in the EIR.

Operational Air Quality Impacts. Long-term air emission impacts are those associated with area sources and mobile sources involving any change related to the proposed project. In addition to the short-term construction emissions, the project would also generate long-term air emissions, such as those associated with changes in permanent use of the project site. These long-term emissions are primarily mobile source emissions that would result from vehicle trips associated with the proposed project. Area sources, such as landscape equipment, would also result in pollutant emissions.

PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles. Since much of the project traffic fleet would be made up of light-duty gasoline-powered vehicles, a majority of the PM_{10} emissions would result from entrainment of roadway dust from vehicle travel.

Typically, energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand include building mechanical systems, such as heating and air conditioning, lighting, and plug-in electronics, such as refrigerators or cooking equipment. Greater building or appliance efficiency reduces the amount of energy for a given activity and thus lowers the resultant emissions. The emission factor is determined by the fuel source, with cleaner energy sources, like renewable energy, producing fewer emissions than conventional sources. The proposed project would not include lighting at the staging area and would generate a minimal amount of energy source emissions.

Area source emissions associated with the project would include emissions from the use of landscaping equipment.

The project would result in low levels of off-site emissions due to energy generation associated with lighting. However, these emissions would be minimal and would not exceed the pollutant thresholds established by the BAAQMD.

The project would include a total of 4.9 miles of new trails that would be open to the public (approximately 3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing trails or service roads). 1.1 miles of this trail system would incorporate EVMA, and 3.8 miles would be natural surface, multi-use trails for hikers, bicyclists, and equestrian. The proposed project would also include a staging area with all-weather parking to accommodate up to 25 vehicles.

Emission estimates for the project were calculated using CalEEMod. Model results are shown in Table 3.B. Trip generation rates for the project were based on the Circulation Assessment,[4] which estimates the proposed project would generate a maximum of 460 net new average daily trips associated with the additional parking spaces provided at the staging areas and trailheads. This analysis is conservative because the maximum daily trips would primarily occur during the peak season on weekend days.

Table 3.B: Project Operation Emissions

Project Construction	ROG	NO_x	PM_{10}	$PM_{2.5}$
Emissions in Pounds Per Day				
Area Source Emissions	0.0	0.0	0.0	0.0
Energy Source Emissions	0.0	0.0	0.0	0.0
Mobile Source Emissions	0.9	4.1	2.4	0.7
Total Emissions	**0.9**	**4.1**	**2.4**	**0.7**
BAAQMD Threshold	**54.0**	**54.0**	**82.0**	**54.0**
Exceed?				
Emissions in Tons Per Year				
Area Source Emissions	0.0	0.0	0.0	0.0
Energy Source Emissions	0.0	0.0	0.0	0.0
Mobile Source Emissions	0.2	0.7	0.4	0.1
Total Emissions	**0.2**	**0.7**	**0.4**	**0.1**
BAAQMD Threshold	**10.0**	**10.0**	**15.0**	**10.0**
Exceed?	**No**	**No**	**No**	**No**

Source: LSA, 2017.

The daily emissions associated with project operational trip generation, energy and area sources are identified in Table 3.B for ROG, NO_x, PM_{10}, and $PM_{2.5}$. The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed when released, or in the case of vehicle emissions associated with the project, emissions are released in other areas of the air basin. Because the resulting emissions are dispersed rapidly and contribute only a small

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[4] LSA, 2018. *Southern Las Trampas Land Use Plan Amendment Circulation Assessment*. May.

fraction of the region's air pollution, air quality in the immediate vicinity of the project site would not substantially change compared to existing conditions, or compared to the air quality monitoring data reported in Table 3.B. Model results are shown in Appendix A.

The results shown in Table 3.B indicate the project would not exceed the significance criteria for daily ROG, NO_2, PM_{10} or $PM_{2.5}$ emissions; therefore, the proposed project would not have a significant effect on regional air quality and mitigation would not be required.

Therefore, the proposed project would not be a significant source of operational criteria pollutant emissions and this impact would be less than significant. This topic will not be discussed in the EIR.

Localized CO Impacts. The BAAQMD has established a screening methodology that provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.

- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the proposed project would not conflict with the Contra Costa County Countywide Transportation Plan for designated roads or highways, a regional transportation plan, or other agency plans. The proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour, or increase traffic volumes at affected intersections to more than 24,000 vehicles per hour. Therefore, the project would not result in localized CO concentrations that exceed State or federal standards and impacts would be less-than-significant. This topic will not be discussed in the EIR.

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

CEQA defines a cumulative impact as two or more individual effects, which when considered together, are considerable or which compound or increase other environmental impacts. According to the BAAQMD, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself; result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Therefore, if daily average or annual emissions of operational-related criteria air pollutants exceed any applicable threshold established by the BAAQMD, the proposed project would result in a cumulatively significant impact.

As discussed above, implementation of the proposed project would generate less than significant operational emissions. As shown in the project-specific air quality impacts discussion above, the proposed project would not result in individually significant impacts and therefore would not make a cumulatively considerable contribution to regional air quality impacts. This topic will not be discussed in the EIR.

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

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks.

According to the BAAQMD, a project would result in a significant impact if it would individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in one million, an increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 micrograms per cubic meter ($\mu g/m^3$). A significant cumulative impact would occur if the project, in combination with other projects located within a 1,000-foot radius of the project site, would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 $\mu g/m^3$ on an annual average basis. Impacts from substantial pollutant concentrations are discussed below.

As described above, construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement Mitigation Measures described above. With implementation of these mitigation measures, project construction emissions would be below the BAAQMD significance thresholds and, once the project is constructed, the project would not be a source of substantial emissions. In addition, individuals using the trails would not be impacted by existing roadway emissions due to the short term use of the trails for recreation and distance of most trails from nearby roadways. Therefore, sensitive receptors are not expected to be exposed to substantial pollutant concentrations during project construction or operation, and potential impacts would be considered less than significant. This topic will not be discussed in the EIR.

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

During project construction, some odors may be present due to diesel exhaust. However, these odors would be temporary and limited to the construction period. The proposed project would not include any activities or operations that would generate objectionable odors and once operational, the project would not be a source of odors. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people. This topic will not be discussed in the EIR.

3.4 BIOLOGICAL RESOURCES

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

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

The project site is located within an open space preserve that supports sensitive habitat and special-status species. California red-legged frog (*Rana draytonii*; federally threatened; California Species of Special Concern) and California tiger salamander (*Ambystoma californiense;* federally threatened; California Species of Special Concern) breeding ponds and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*; California Species of Special Concern) houses occur near trail alignments within the project site and Alameda whipsnake (*Masticophis lateralis euryxanthus*; federally and state threatened) are known to inhabit the project site. This is not an exhaustive list and other special-status species may occur within the project area. Potentially jurisdictional drainages, ponds, and seasonal wetlands and riparian woodland habitat and native grasslands are also located along or adjacent to proposed trail alignments within the project site. Potential adverse effects to these habitats will be evaluated in the EIR. The EIR will evaluate the project's potential to result in substantial adverse effects on special-status species, riparian and sensitive habitat, protected drainages, ponds, and wetlands, and wildlife movement corridors and nursery sites, according to the criteria identified above for the topics identified in sections 3.4.a through 3.4.d. Mitigation measures will be recommended as appropriate.

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

See section 3.4.a above. The EIR will evaluate the project's potential to have substantial adverse effects on special-status species, riparian and sensitive habitat, protected drainages, ponds, and wetlands, and wildlife movement corridors and nursery sites, according to the criteria identified above for topics 3.4.a. through 3.4.d. Mitigation measures will be recommended as appropriate.

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

See section 3.4.a above. The EIR will evaluate the project's potential to have substantial adverse effects on special-status species, riparian and sensitive habitat, protected drainages, ponds, and wetlands, and wildlife movement corridors and nursery sites, according to the criteria identified above for topics 3.4.a. through 3.4.d. Mitigation measures will be recommended as appropriate.

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

See section 3.4.a above. The EIR will evaluate the project's potential to have substantial adverse effects on special-status species, riparian and sensitive habitat, protected drainages, ponds, and wetlands, and wildlife movement corridors and nursery sites, according to the criteria identified above for topics 3.4.a. through 3.4.d. Mitigation measures will be recommended as appropriate.

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

The Park District is a Special District with the authority to "… acquire land...to plan...develop...and operate a system of public parks and to do all other things necessary or convenient to carry out the purposes of the District" and uses to its own policies and ordinances related to tree removal. Conservation Element policies from the Contra Costa County General Plan have also been established to protect wildlife, natural habitats, and biological resources. The Project would be consistent with these policies and therefore, would have no impact on local policies or ordinances. This topic will not be discussed in the EIR.

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

No Habitat Conservation Plans, Natural Community Plans or other approved local or regional, or State habitat conservation plans apply to development at the project site; therefore, no impact would occur. This topic will not be discussed in the EIR.

3.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

A Historical Resource Evaluation (HRE) and Cultural and Paleontological Resource Report were prepared by Evans & De Shazo (EDS). Several of the following responses are based on the findings presented in the reports.

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

A historical resource defined by CEQA includes one or more of the following criteria: 1) the resource is listed, or found eligible for listing in, the California Register of Historical Resources (CRHR); 2) listed in a local register of historical resources as defined by Public Resources Code (PRC) Section 5020.1(k); 3) identified as significant in a historical resources survey meeting the requirements of PRC Section 5024.1(g); or 4) determined to be a historical resource by the project's lead agency (PRC Section 21084.1; CEQA Guidelines Section 15064.(a)). Under CEQA, historical resources include built-environment resources and archaeological sites.

Historical Resource Evaluation. The HRE was prepared in compliance with CEQA regulations and the Park District Master Plan policies. EDS utilized research obtained at the Northwest Information Center (NWIC) of the California Historical Information Systems (CHRIS), San Ramon Valley Historical Society, and Contra Costa County Historical Society, as well as various online sources to obtain details regarding previous property ownership and to develop a historic context in which to evaluate the historic significance of the existing built environment resources within the Chen property. EDS also conducted an intensive level field survey to document the collapsed circa 1950 barn and corrals to formulate assessments within the current setting. In addition, Ms. De Shazo completed Department of Parks and Recreation (DPR) 523 forms for the circa 1950 barn, corrals, and associated features.

> ***Record Search.*** EDS completed a record search at the NWIC on September 6, 2017 (NWIC File #17-0754). According to information on file at the NWIC, the built-environment resources in the Chen property have not been previously identified or evaluated for their historical significance and are not listed in the State Office of Historic Preservation's (OHP) Directory of Properties in the Historic Property Data File for unincorporated areas of Contra Costa County (dated 4/5/2012), or in the Historic Resource Inventory of Contra Costa County (Preliminary Draft 1976, Draft Update in 1989, and Draft Update 2010).

EDS also utilized research obtained at the San Ramon Valley Historical Society, and Contra Costa County Historical Society, as well as various online sources to obtain details regarding previous property ownership and to develop a historic context in which to evaluate the historic significance of the existing built-environment resources within the Chen property.

Historic Architectural Field Survey. On September 11, 2017, EDS Architectural Historian, Stacey De Shazo, M.A., completed a field survey and assessment of the built-environment resources within the Chen property. The Chen property consists of a former ranching complex that includes a circa 1950 collapsed barn, corrals, and associated features that include a ranch road, livestock pond and spring box. The survey and assessment were completed in compliance with CEQA and the East Bay Regional Park District's Master Plan Policies.

Conclusions. Based on the results of the record search and field survey, it was determined that the built-environment resources within the Chen property are not included in a local register of historical resources, and do not qualify for listing on the CRHR. Therefore, the resource does not meet the definition of a Historical Resource under CEQA. Therefore, this impact would be less than significant.

Cultural Resources Record Search and Review.A Cultural and Paleontological Resource Report was prepared by EDS. As part of this evaluation, EDS conducted a record search and review of the project area.

Record Search. The record search included a review of information on file at the NWIC of the CHRIS that included previous cultural resource studies and primary resource records pertaining to properties located within a 0.5-mile radius of the project area, as well as a review of the California Inventory of Historic Resources (California Department of Parks and Recreation 1976) and the Office of Historic Preservation's (OHP) Five Views: An Ethnic Sites Survey for California (1988), California Historical Landmarks (1990), California Points of Historical Interest (1992), California Register of Historical Resources (1998), and the Directory of Properties in the Historic Property Data File for Contra Costa County (dated 4/5/2012). The Historic Property Data file includes updated listing of the CRHR, NRHP, California Historical Landmarks, and the California Points of Historical Interest. The record search also consisted of a review of Park District documents and other data, as well as a review of appropriate ethnographic, prehistoric and historic references, including various maps dating from 1857 to 1959 to provide context for the Southern Las Trampas area. Soils and geologic data was also reviewed to identify the potential for buried archaeological sites to be present within the project area that may require identification measures beyond a pedestrian archaeological reconnaissance.

Cultural Resources Field Survey. A cultural resources field survey was conducted of the proposed 1.1-mile Chen Trail and 0.6-acre Chen Staging Area and the 0.5-acre alternative staging area within the Chen property, the 0.8-mile Peter's Ranch Trail within the Braddock and Logan (Peter's Ranch) property, the 1.3 miles of proposed trails and two 0.4-acre trailhead parking lots within the Faria Dedication property (not proposed as a part of this project), and the 0.4-mile-long Connector Trail within the existing Las Trampas. The field survey was led by EDS Archaeologist Gilbert Browning, M.A., RPA, who is a Secretary of Interior Qualified Archaeologist, with the assistance of EDS Archaeologists Ryan Poska, M.A. (candidate), and Erica

Thompson, M.A. Surveys were conducted on September 28th and October 19th, 2017. A cultural resources field survey was also conducted on April 22, 2019 of the proposed 0.9-mile ridge connector trail and the 0.8-mile lower loop trail within the Chen property, and the 0.7-mile ridge connector trail from the Podva property to the Las Trampas Ridge. This field survey was led by EDS Senior Archaeologist Gilbert Browning, M.A., RPA, who is a Secretary of Interior Qualified Archaeologist, with the assistance of EDS Archaeologist Bee Thao, M.A. (candidate). The field strategy included an on-foot visual inspection of each of the proposed new trails, staging areas and trailhead parking lots to look for the presence of any potentially significant cultural resources and paleontological resources. Proposed trails within the Podva Dedication property and the Faria Development property were previously surveyed, and these areas were not re-surveyed as part of this study.

Conclusions. No cultural resources were observed within the project area, and the built-environment resources within the Chen property were determined to be not eligible for listing on the CRHR; therefore, it is concluded that the proposed activities will not impact any Historical Resources as defined by CEQA. However, it was determined that recent Holocene-age (11,700 years to the present) terraces along Bollinger Creek within the Faria Dedication parcel have the potential for buried prehistoric resources. Due to this potential, project-specific recommendations, included in Mitigation Measures CUL-1 and CUL-2, are warranted for earth-moving activities. Adherence to the requirements in Mitigation Measure CUL-1 and CUL-2 would reduce potential impacts to unknown archaeological historical resources to less-than-significant with mitigation.

Mitigation Measure CUL-1: Due to the potential for buried archaeological resources to be encountered during earth-moving activities within the Faria Dedication property, if any prehistoric or historic material is encountered by equipment operators during earth-moving activities work shall be halted within 50-feet of the discovery area until a qualified professional archaeologist is retained to inspect the material and provide further recommendations for appropriate treatment of the resource. To ensure that project supervisors, contractors, and equipment operators are familiarized with the types of artifacts that could be encountered and the procedures to follow if archaeological resources are unearthed during construction, it is recommended that a professional archaeologist shall conduct a preconstruction meeting prior to commencement of earth-moving activities to familiarize the team with the potential to encounter prehistoric artifacts or historic-era archaeological deposits, the types of archaeological material that could be encountered within the Project Area, and procedures to follow in the event that archaeological deposits and/or artifacts are observed during construction.

Mitigation Measure CUL-2: The measures below are provided in the event of an unanticipated discovery of cultural resources within the Project Area during construction. If any prehistoric or historic-period artifacts are encountered by equipment operators during earth-moving work shall be halted in the immediate vicinity (within 50 feet) of the discovery area and a qualified archaeologist shall be retained to inspect the material and provide further recommendations for appropriate treatment of the resource pursuant to CEQA regulations and guidelines.

- In accordance with current Park District policies, the following recommendation also applies: In the event that prehistoric, archaeological or paleontological artifacts or remains are encountered during project construction, all ground disturbing activities shall be halted within at least 50 feet and artifacts shall be protected in place. In the event that prehistoric, archaeological or paleontological artifacts or remains are encountered during project construction, all ground disturbing activities shall be halted within at least 50 feet and artifacts shall be protected in place (in accordance with EBRPD Board Resolution No. 1989-4-124 and State and federal law) until the find is evaluated by a monitor/archaeological consultant, and appropriate mitigation, such as curation, preservation in place, etc., if necessary, is implemented.

- Historic-era resources potentially include all by-products of human land use greater than 50 years of age, including alignments of stone or brick, foundation elements from previous structures, minor earthworks, brick features, surface scatters of farming or domestic type material, and subsurface deposits of domestic type material (glass, ceramic, etc.).

- Artifacts that are typically found associated with prehistoric sites in the area include humanly modified stone, shell, bone or other materials such as charcoal, ash and burned rock that can be indicative of food procurement or processing activities. Prehistoric domestic features include hearths, fire pits, house floor depressions and mortuary features consisting of human skeletal remains.

With implementation of Mitigation Measure CUL-1 and Mitigation Measure CUL-2, project construction would have a less-than-significant impact on prehistoric or historical archaeological resources, and this topic will not be discussed in the EIR.

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

According to the CEQA Guidelines, "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource" (CEQA Guidelines Section 15064.5(c)(1)). Those archaeological sites that do not qualify as historical resources shall be assessed to determine if these qualify as "unique archaeological resources" (California PRC Section 21083.2). No archaeological resources were identified in the project site. However, there is a potential for unknown archaeological resources to be discovered during construction. Mitigation Measure CUL-1 requires that if unknown archaeological resources are discovered during construction, work in the area would halt and a qualified archaeologist would be contacted. Therefore, adherence to the requirements in Mitigation Measure CUL-1 and CUL-2 would reduce potential impacts to archaeological resources to less-than-significant with mitigation. This topic will not be addressed in the EIR.

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

Disturbance of human remains interred outside of formal cemeteries would result in a significant impact. If human remains are identified during project construction, Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code shall apply, as appropriate. In addition, Mitigation Measure CUL-3 would reduce potential impacts to unknown human remains to less-than-significant with mitigation.

Mitigation Measure CUL-3: If human remains are encountered within the project area during construction, all work shall stop in the immediate vicinity of the discovered remains and the County Coroner shall be notified immediately. If the remains are suspected to be those of a prehistoric Native American, then the Native American Heritage Commission shall be contacted by the Coroner so that a "Most Likely Descendant" can be designated to provide further recommendations regarding treatment of the remains. An archaeologist should also be retained to evaluate the historical significance of the discovery, the potential for additional remains, and to provide further recommendations for treatment of the site.

With implementation of Mitigation Measure CUL-3, project construction would have a less-than-significant impact related to the disturbance of any human remains. This topic will not be discussed in the EIR.

3.6 ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

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

Construction and operation of the proposed project would result in permanent and continual use of energy resources, primarily in the form of fossil fuels, natural gas, and gasoline for automobiles and construction equipment. However, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources because the proposed project includes construction of a staging area and recreational trails.

Project-related construction activities, analyzed in Section 3.3, Air Quality, and Section 3.8, Greenhouse Gas Emissions, would include a combination of mechanized equipment (e.g., small excavators, small trail dozers, D4 bulldozers, water trucks, backhoes, and graders) and hand tools (e.g., pick mattocks, McLeods, Puilaskis, and shovels). Cut and fill would likely be balanced on site, resulting in no off-site hauling. As a result, minimal amounts of pollutants would be emitted during construction activities.

Potential impacts to energy consumption during the operational phase of the project would be in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline for automobiles and maintenance equipment. However, given the small commitment of energy resources required for transportation and maintenance activities, the proposed project would result in less-than-significant impacts to energy consumption. This topic will not be discussed in the EIR.

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

The proposed project includes adding 756 acres to an existing open space and recreation area, and adding facilities to allow for improved access, including a parking area, an access road, and trail connections. Energy consumption during the operational phase would be limited to park users travel to and from the project site, as well as Park District maintenance vehicles. As a result, the proposed project would not conflict with any local plans or policies for renewable energy or energy efficiency. This topic will not be discussed in the EIR.

3.7 GEOLOGY AND SOILS

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

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

- *i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*
- *ii. Strong seismic ground shaking?*
- *iii. Seismic-related ground failure, including liquefaction?*
- *iv. Landslides?*

Fault Rupture. The project site is located within the northern portion of the Coast Ranges geomorphic province, which includes numerous active faults identified by the California Geologic Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act. CGS defines an active fault as one that has ruptured during the Holocene Epoch (i.e., the last 11,000 years). The probability of one or more large earthquakes (magnitude 6.7 or greater) occurring in the Bay Area between 2014 and 2044 is about 72 percent.[5]

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. Surface rupture generally occurs along an existing (usually active) fault trace. Areas susceptible to surface fault rupture are delineated by Alquist-Priolo Earthquake Fault Zones mapping performed by CGS. The Alquist-Priolo Earthquake Fault Zone for the Calaveras Fault passes through the eastern portion of the project area.[6] The proposed project does not include any structures in the eastern portion of the project area; therefore fault rupture would not result in damage to structures that could cause injury or death. It is possible that fault rupture could result in damage to existing and proposed trails in the eastern portion of the project area, however such damage would not be life threatening and could be readily repaired. Therefore, potential impacts of the project related to fault rupture would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Ground Shaking. Seismic ground shaking generally refers to all aspects of motion of the earth's surface resulting from an earthquake, and is normally the major cause of damage in seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. The magnitude of a seismic event is a measure of the energy released by an earthquake; it is assessed by seismographs that measure the amplitude of seismic waves. The intensity of an earthquake is a subjective measure of the perceptible effects of a seismic event at a given point. The Modified Mercalli Intensity scale is the most commonly used scale to measure the subjective effects of earthquake intensity. It uses values ranging from I to XII.[7] The Association of Bay Area Governments (ABAG) has mapped the likely shaking intensities in the Bay Area that would have a 10 percent chance of occurring in any 50-year period. A large earthquake (magnitude 6.7 or greater) on one of the major active faults in the region could generate moderate (MMI VI) to very strong (MMI VIII) ground shaking at the project site, and a magnitude 7 earthquake on the Calaveras Fault could generate violent (MMI IX) ground shaking at the project site.[8]

The proposed restroom structure at the Chen property staging area could be exposed to strong seismic ground shaking. The risk of ground shaking impacts is reduced through adherence to design and materials standards set forth in the 2016 California Building Code. With the project's adherence to these existing regulations, the risks to people and structures due to strong seismic ground shaking would represent a less-than-significant impact, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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[5] United States Geological Survey, 2015. *UCERF3: A New Earthquake Forecast for California's Complex Fault System*, March.

[6] California, State of, 1982. Special Studies Zones, Diablo, Revised Official Map. January 1.

[7] United States Geological Survey, 2018. The Modified Mercalli Intensity Scale. Website: earthquake.usgs.gov/learn/topics/mercalli.php (accessed June 14, 2019).

[8] Association of Bay Area Governments, 2018a. Contra Costa County Earthquake Hazard, Shaking Scenarios. Website: resilience.abag.ca.gov/earthquakes/contracosta (accessed June 14, 2019).

Seismic-Related Ground Failure and Liquefaction. The potential for different types of ground failure to occur during a seismic event is discussed below.

Liquefaction Potential. Soil liquefaction is a phenomenon primarily associated with saturated soil layers located close to the ground surface. These soils lose strength during ground shaking. Due to the loss of strength, the soil may move both horizontally and vertically. In areas where sloping ground or open slope faces are present, this mobility can result in lateral spreading. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sands that are relatively close to the ground surface. However, loose sands that contain a significant amount of fines (silt and clay) may also liquefy.

Mapping of liquefaction susceptibility maintained by ABAG indicates that the proposed Chen property staging area, which is located near a creek bed, has moderate liquefaction potential, and all other areas within the project area have low or very low liquefaction potential.[9] Liquefaction could potentially result in settlement of the proposed restroom structure at the Chen property staging area. Based on the limited size of the structure, liquefaction-induced settlement would not be expected to result in significant damage to the structure, and if damage did occur, the simple structure could be readily repaired or replaced. Therefore, potential impacts related to liquefaction would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Lateral Spreading. Lateral spreading, the horizontal/lateral ground movement of relatively flat-lying soil deposits toward a free face, is typically associated with liquefaction of subsurface layer(s) near the bottom of an exposed slope. No significant free faces or slopes within the area of moderate liquefaction potential are identified in the vicinity of the proposed Chen property staging area. Therefore, the potential for impacts related to lateral spreading would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Seismic Settlement. Seismic settlement (also referred to as cyclic densification) can occur when non-saturated, cohesionless sand or gravel soil is densified by earthquake vibrations. The soil beneath the project site could potentially be susceptible to cyclic densification which could cause settlement of the proposed restroom structure at the Chen property staging area. Similar to the discussion of potential liquefaction induced settlement above, based on the limited size of the structure, seismic settlement would not be expected to result in significant damage to the structure, and if damage did occur, the simple structure could be readily repaired or replaced. Therefore, potential impacts related to seismic settlement would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Landslides. Slope failure can occur as either rapid movement of large masses of soil or imperceptibly slow movement of soils on slopes. The area of the proposed project has not been evaluated by CGS for seismically-induced landslide hazards;[10] however, the Alquist-Priolo fault map that covers the

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[9] Association of Bay Area Governments, 2018b. *Liquefaction Susceptibility.* Website: resilience.abag.ca.gov/earthquakes/#LIQUEFACTION (accessed June 14, 2019).

[10] United States Geological Survey, 2018, op. cit.

southern portion of the project area indicates that an area of massive landslides is present along the eastern portion of the project area. [11] Based on the steeply sloping terrain, there is the potential for landslides to occur throughout much of the project area, and mapping of landslides performed by ABAG indicates that much of the project area has been affected by landslides.[12] The proposed project would include minor grading activities for the construction of proposed trails and the proposed Chen property staging area. The grading activities would not result in significant changes to slope stability, although erosion and localized sloughing of soil could occur in areas where cuts are made into steeper hillsides. Routine trail monitoring/maintenance and minor realignment of trails resulting from erosion and/or slope instability would ensure that the trail system would remain in a safe and operable condition. Additionally, the Park District's 2013 Master Plan[13] includes the following policy related to erosion and slope stability.

Policy NRM13. The Park District will identify existing and potential erosion problems and take corrective measures to repair damage and mitigate its causes. The Park District will manage the parks to assure that an adequate cover of vegetation remains on the ground to provide soil protection. Where vegetative cover has been reduced or eliminated, the Park District will take steps to restore it using native or naturalized plants adapted to the site. The Park District will minimize soil disturbance associated with construction and maintenance operations, and will avoid disruptive activities in areas with unstable soils whenever possible. The Park District will arrest the progress of active gully erosion where practical, and take action to restore these areas to stable conditions. The Park District will notify adjacent property owners of potential landslide situations and risks on District lands, and will conform to applicable law. The Park District will protect important geologic and paleontological features from vandalism and misuse.

Implementation of routine trail monitoring/maintenance and policy NRM13 of the 2013 Master Plan would ensure that potential impacts related to landslides would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The redevelopment of the project site would involve construction activities such as grading and excavation, which could result in temporary soil erosion when the disturbed soils are exposed to wind or rainfall. Because the proposed project would involve over 1 acre of land disturbance, it would be required to comply with the State Water Resources Control Board's Construction General Permit, which requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP would include erosion control best management practices that would minimize erosion during construction. Routine trail monitoring and maintenance would include minimizing soil erosion through various means including grading the trail surface and maintaining/ improving drainage systems. Implementation of routine trail monitoring/maintenance and policy NRM13 of the 2013 Master Plan, as described above, would ensure that potential impacts related to

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[11] California, State of, 1982, op. cit.

[12] Association of Bay Area Governments, 2018c. *Existing Landslide Distribution.* Website: resilience.abag.ca.gov/earthquakes/#LANDSLIDES (accessed June 14, 2019).

[13] East Bay Regional Park District, 2013. *Master Plan*. Adopted July 16.

erosion and loss of top soil would be less than significant. In addition, Section 805 of the Park District's Ordinance 38 addresses protection geological resources and states that, "no person shall damage, injure, collect or remove earth, rocks, sand, gravel, fossils, minerals, features of caves, or any article or artifact of geological interest or value located on District parklands." Furthermore, The Park District's Standard Technical Specifications and Supplementary Conditions contain provisions that are intended to ensure, among other things, the safety of the construction workers, staff and the public, and the protection of wildlife, site resources, and water quality during construction and operation of site amenities. Relevant sections are provided in Table 3.C, below.

Table 3.C: Relevant Technical Specifications – Geology and Soils

Site Set-up - Execution
● Work on site shall only take place between June 15 and October 31. ● Confine work activities to approved construction work areas, staging areas and access routes. ● Excavations shall not be left open overnight. Where not backfilled, excavations shall be tightly covered. Perimeters of plywood panels or other covers shall be edged with dirt to prevent intrusion of small animals. ● Excavations shall include a ramp with a maximum slope of 1:1 to allow animals to escape the excavation when not covered. ● Storage of equipment and vehicles shall be a minimum of 100 feet from the top of the creek bank. ● Fueling of equipment and vehicles shall take place a minimum of 200 feet from the top of the creek bank.
Erosion Control SWPPP Requirements
In addition to the requirements of the CASQA or Caltrans standard, the SWPPP shall contain an Erosion Control Plan that includes the following provisions: ● Fiber rolls and erosion control blankets shall not contain netting that could trap small animals. ● Photodegradable products are not acceptable. ● All erosion control products shall be weed and seed free. ● All temporary erosion control measures shall be immediately removed when no longer needed. ● All temporary erosion control measures shall be removed and legally disposed of prior to project completion.
Clearing and Grubbing
● All cut and fill areas: Strip topsoil to 2 inches minimum below existing grade where vegetation occurs. Additional depth may be required to remove organic materials. ● Stripped material shall be disposed of off-site and in a legal manner or stockpiled for reuse as directed by the District. ● Upon completion of clearing and grubbing, areas shall be left in a neat, clean condition ready to receive subsequent work.
Excavated Material
● All excavated material shall be piled in a manner which will not endanger the work and which will avoid completely obstructing access. Culverts, swales, and natural drainage patterns shall be kept clear. ● The excavations and support system shall comply in all respects with the requirements of Article 6, of the Construction Safety Orders of the Division of Industrial Safety. ● At no time shall trenches be left open during the Contractor's non-working hours. Trenches shall be backfilled to grade and/or covered with plywood or traffic-rated metal plates and pipe ends securely closed with a tight-fitting plug or cover at the end of each work day. ● All open excavations 5 feet or greater in depth shall be constructed with bracing, sheeting, shoring, or other equivalent method designed for the protection of life and limb in accordance to Section 6705 of the State Labor Code. ● The trench excavations and support system shall comply in all respects with the requirements of Article 6, of the Construction Safety Orders of the Division of Industrial Safety.

Table 3.C: Relevant Technical Specifications – Geology and Soils

Fill Material
● Material shall be generated from below the stripped layer. ● Provide certification that the material complies with the geotechnical requirements noted above. ● Material shall be inspected by the District Inspector. ● Soils obtained from on-site excavations, except for materials derived from the stripping operations, are suitable for reuse as fill material, provided that it meets the fill gradation criteria. ● Relative compaction shall be determined by ASTM Test Method D1557. Field density test shall be performed with ASTM Test Designation D2922 and D3017 (Nuclear Probe Method). ● Proper moisture content of fill shall be maintained by adding water or dried by appropriate methods as required. ● Scarify top 6 inches of all areas to receive fill and re-compact to specified relative compaction. ● Contractor shall place fill in lifts not greater than 8-inches in uncompacted thickness, brought to proper moisture content, and compacted to the specified relative compaction.
Protection of Existing Trees and Shrubs
● When it is necessary to excavate adjacent to existing trees and shrubs, Contractor shall use all possible care to avoid injury to these plants and their roots. No roots three (3) inches or larger in diameter shall be cut without the prior approval of the District. ● In no case shall any limbs be cut or trees and shrubs removed without first obtaining approval from the District.
Supplementary Conditions
● The California State Water Resources Control Board, San Francisco Bay Region, Oakland, California has jurisdiction over the project stormwater discharges within the Project area. Accordingly, the following actions will be required prior to initiating implementation of the Project: 1) the District will submit a Notice of Intent (NOI) and obtain a waste discharger identification number (WDID) from the above agency; 2) a Receipt of NOI will be obtained by the District from SWRCB prior to the start of construction; and 3) the Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) in conformance with California State Water Resources Control Board No. 92-08 DWQ for discharges of stormwater runoff associated with construction activity.

Source: East Bay Regional Park District, Technical Specifications (September 10, 2014; Updated 2017).

With implementation of a SWPPP, policy NRM13 of the 2013 Master Plan, Section 805 of the Park District's Ordinance 38, and the Park District's Standard Technical Specifications and Supplementary Conditions the project would result in less-than-significant impacts to soil erosion and the loss of topsoil, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

As previously discussed above, the proposed project would not result in significant impacts related to unstable soil conditions including liquefaction, settlement, lateral spread, or landslides.

Subsidence or soil collapses can result from the removal of subsurface water resulting in either gradual depression or catastrophic collapse of the ground surface. The proposed project would not utilize groundwater. Dewatering may be required in isolated areas of the project site during construction (e.g., during excavation for installation of the vault toilet). Construction-related dewatering would be temporary and localized and would not result in subsidence or soil collapse. Therefore, potential impacts related to subsidence/soil collapse would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. The changes in soil volume can result in substantial cosmetic and structural damage to buildings and hardscape developed over expansive soils. Expansive soils are typically fine grained with high clay content.

The only proposed structure and hardscape that would be constructed as part of the proposed project would be located in the proposed Chen property staging area. Soil at the proposed Chen property staging area is classified as Botella clay loam.[14] Due to the clayey nature of the soil, the soil could have expansive properties. Because of the limited size of the proposed restroom structure and the limited extent of hardscaping, it is unlikely that expansive soil would result in significant damage to the structure or hardscaping. Additionally modern construction practices account for the potential for shrinking and swelling of soil. Therefore, potential impacts related to expansive soils would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The proposed project would not include the use of septic tanks or alternative waste water disposal systems. The proposed restroom at the Chen staging area would have sealed vault type toilets that would contain waste until it is removed for transportation to an appropriate treatment/disposal facility on a routine basis by trained Park District staff, similar to many other Park District facilities. Therefore, no impacts related to the use of septic tanks or alternative waste water disposal systems would occur. This topic will not be discussed in the EIR.

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

EDS conducted a paleontological records search for the proposed project area. The paleontological record search was required to determine whether previously recorded fossil localities, or fossiliferous geologic units known to contain fossils, are present in the project area. To develop a baseline paleontological resource inventory of the project area and to establish the paleontological sensitivity (potential) of each geologic unit present within and adjacent to the project area, the following tasks were completed:

- Geologic maps and available published and unpublished geological and paleontological literature covering the bedrock and surficial geology and paleontology of the Project Area and surrounding area were reviewed to determine what exposed and/or subsurface rock units are

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[14] United States Department of Agriculture, 2018. Natural Resources Conservation Service, Web Soil Survey. Website: websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx (accessed June 14, 2019).

present, and to assess the potential paleontological productivity of each rock unit in respect to the Project Area. This research identified the geologic units, previous paleontological studies, fossil localities (i.e., locations at which paleontological resources have been documented), and types of fossils in geologic units that may be within or adjacent to the Project Area.

- EDS conducted an online fossil locality record search utilizing the University of California Museum of Paleontology (UCMP) online fossil database.

- EDS supplemented the UCMP records search with one from the San Diego Natural History Museum (SDNHM) online fossil database, as well as personal communication with the staff paleontologist at SDNHM.

Based on the results of the paleontological record search, the Monterey, Briones and Orinda Formations, which cover a high percentage of the project area, possess a high potential paleontological resource sensitivity (potential) for fossil remains that are significant and unique because the fossils and sediments can provide important paleoclimatic, paleoecological, and paleontological data and information. The Quaternary Holocene and Pleistocene sedimentary deposits are surrounded by high potential rock units. Given this, the fine grained, middle to early Holocene portions of the Qa unit, and the fine-grained facies of the Qoa unit have a High Potential for the presence of paleontological resources. Due to this potential, Mitigation Measure GEO-1 would be required to reduce impacts to a less-than-significant level.

Mitigation Measure GEO-1: A qualified paleontological monitor, or archaeologist with paleontological cross-training, as overseen by a qualified paleontologist, shall be present during earth-moving activities below the soil zone. If any potentially unique or scientifically important paleontological resources are identified during paleontological monitoring of earth-moving activities below the soil zone, the paleontologist shall evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include, but shall not be limited to, sampling and data recovery, coordination of museum storage at a qualified curation facility, such as the SDNHM or UCMP for any specimens recovered, and a report of findings. All feasible recommendations contained in the recovery plan shall be implemented before construction activities resume at the site where the paleontological resources were discovered.

If paleontological resources are discovered during earth-moving activities and a paleontological monitor is not present, the construction crew shall immediately cease work within 50 feet of the find and notify the appropriate Park District staff who shall notify a qualified paleontologist. A paleontologist shall be retained to inspect the resource, conduct an evaluation and prepare a recovery plan in accordance with Society of Vertebrate Paleontology guidelines (1996). The recovery plan may include, but shall not be limited to, an

> intensive field survey in the vicinity of the find, sampling and data recovery, coordination of museum storage at a qualified curation facility, such as the SDNHM or UCMP for any specimens recovered, and a report of findings. All feasible recommendations contained in the recovery plan shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

With implementation of Mitigation Measure GEO-1, project construction would have a less-than-significant impact on paleontological resources, and this topic will not be discussed in the EIR.

3.8 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Greenhouse gases (GHGs) are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur Hexafluoride (SF_6).

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

An Air Quality Impact Analysis was prepared for the proposed project by LSA, and is included as Appendix A. Several of the following responses are based on the findings presented in the report.

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

The following section describes the proposed project's construction and operational related GHG emissions and contribution to global climate change. The BAAQMD has not addressed emission thresholds for construction in their CEQA Air Quality Guidelines;[15] however, the BAAQMD encourages quantification and disclosure. Thus, construction emissions are discussed in this section. As discussed below, the proposed project would not generate substantial GHG emissions that would have a significant effect on the environment and this impact would be less than significant. This topic will not be discussed in the EIR.

Construction Emissions. Construction activities, such as site preparation, site grading, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew would produce combustion emissions from various sources. During construction of the proposed project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that the project would generate approximately 66 metric tons of CO_2e during the construction period. The BAAQMD does not have a threshold for construction emissions. Implementation of Mitigation Measure AIR-1 would further reduce construction GHG emissions by limiting construction idling emissions. Construction emissions would be considered less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Operational Emissions. The project would include a total of 4.9 miles of new trails that will be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). 1.1 miles of the new trails would incorporate EVMA, 3.8 miles would be natural surface, multi-use trails for hikers, bicyclists, and equestrian. The proposed project would also include a staging area with all-weather parking to accommodate up to 25 vehicles.

When calculating project GHG emissions to compare to the thresholds of significance, the BAAQMD recommends that the lead agency consider project design features, attributes, and local develop-

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[15] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

ment requirements as part of the project as proposed and not as mitigation measures. Consistent with BAAQMD guidance, GHG emissions were estimated using CalEEMod. Model results are shown in Table 3.D. Trip generation rates for the project were based on the Circulation Assessment,[16] which estimates the proposed project would generate a maximum of 460 net new average daily trips associated with the additional parking spaces provided at the staging areas and trailheads. This analysis is conservative because the maximum daily trips would primarily occur during the peak season on weekend days.

Table 3.D shows the calculated GHG emissions for the proposed project. Mobile source emissions associated with park visitors are the primary emissions comprising 99 percent of total CO_2e emissions. Water source emissions are approximately 1 percent of the total. Additional calculation details are provided in Appendix A.

Table 3.D: GHG Emissions (Metric Tons Per Year)

	Operational Emissions				
Emissions Source	**CO_2**	**CH_4**	**N_2O**	**CO_2e**	**Percent of Total**
Area Source Emissions	0.0	0.0	0.0	0.0	0
Energy Source Emissions	0.0	0.0	0.0	0.0	0
Mobile Source Emissions	483.4	0.0	0.0	483.9	99
Waste Source Emissions	0.0	0.0	0.0	0.0	0
Water Source Emissions	0.2	0.0	0.0	0.2	1
Total Emissions				**484.1**	**100**

Source: LSA (2017).

As discussed above, according to the BAAQMD, a project would have less-than-significant GHG emissions if it would meet one or more of the following criteria: result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2e a year, or result in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2e per service population (residents plus employees). Based on the analysis results, the proposed project would generate approximately 484.1 metric tons of CO_2e which is well below the BAAQMD's numeric threshold of 1,100 metric tons CO_2e. Therefore, GHG emissions generated by the proposed project would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The Climate Action Plan (CAP) on December 15, 2015,[17] addresses local climate change and includes GHG reduction targets to comply with Assembly Bill 32, the California Global Warming Solutions Act of 2006. The CAP strategy is primarily based upon the land use, transportation, and conservation

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[16] LSA, 2018, op. cit.

[17] Contra Costa, County of, 2015. *Contra Costa County Climate Action Plan*. December 15.

policies that are included in the General Plan. The CAP demonstrates that through land use planning/density choices, reduction in vehicle miles traveled, and energy conservation measures, the county contributes to the State greenhouse gas reduction targets.

In addition, the City of San Ramon CAP,[18] adopted in 2011, addresses local climate change and includes GHG reduction targets to comply with Assembly Bill 32, the California Global Warming Solutions Act of 2006. The CAP strategy is primarily based upon the land use, transportation, and conservation policies that are included in the General Plan 2030. The CAP demonstrates that through land use planning/density choices, reduction in vehicle miles traveled, and energy conservation measures, the City contributes to the State greenhouse gas reduction targets.

The Town of Danville Sustainability Action Plan (SAP)[19], adopted in 2013, identifies more environmentally sustainable practices in Danville, to help reach emission reduction targets that were adopted through Assembly Bill 32 in 2006. Assembly Bill (AB) 32 requires California to reduce statewide greenhouse gas emissions to 1990 levels by the year 2020. The SAP is designed to reduce community-related and County operations related greenhouse gas emissions to a degree that would not hinder or delay implementation of AB 32.

As discussed above, the project would include a total of 4.9 miles of new trails that will be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). 1.1 miles of the new trails would incorporate EVMA, and 3.8 miles would be natural surface, multi-use trails for hikers, bicyclists, and equestrian. The proposed project would also include a staging area with all-weather parking to accommodate up to 25 vehicles. Strategy Measure LUT 1.5 of the County's CAP states the County will work with the Contra Costa Transportation Authority to improve access to community-wide bicycle and pedestrian networks by closing gaps in the network, removing barriers, and providing additional bike- and pedestrian-oriented infrastructure. In addition, the San Ramon CAP includes Policy 5.7.I-11, which states that the City will work with Caltrans to improve bicycle and pedestrian safety and freeway crossings. Additionally, Strategy T-3 of the CAP states the City will provide a safe and well-connected system of bicycle paths, lanes, and trails to increase bicycle use. Lastly, the Danville SAP Policy LT-9 requires implementation of General Plan policies to create a safer, more connected, and enhanced bicycle network in Danville. The project is consistent with these policies by extending the existing trail network, enhancing safety, and improving efficiency of trail use for pedestrians and bicyclists and distributing access points throughout the project area to encourage walk-in and bike-in access from adjacent neighborhoods, further reducing the need to access the project area by motor vehicles.

The proposed project would not result in a substantial increase in GHG emissions; and therefore, is consistent with the Contra Costa County CAP, San Ramon CAP, and Danville SAP and would not generate emissions that would exceed the project-level significance criteria established by the BAAQMD. Therefore, the proposed project would not conflict with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This impact would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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[18] San Ramon, City of, 2011. *City of San Ramon Climate Action Plan*. August 23.

[19] Danville, Town of, 2013. *Town of Danville Sustainability Action Plan*. March 19.

3.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

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

During project construction, hazardous materials such as fuel, lubricants, paint, sealants, and adhesives would be transported and used at the project site. The proposed project would be required to comply with federal, state, and local regulations regarding the transportation, use, and disposal of hazardous materials, including preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) which requires implementation of control measures for hazardous material storage and soil stockpiles, inspections, maintenance, and training, and containment of releases to prevent runoff into existing storm collection systems or waterways. Compliance with existing regulations and implementation of the SWPPP would ensure that potential impacts associated with hazardous material use, transport, and disposal during construction of the proposed project would be less than significant.

During project operation, small quantities of hazardous materials such as paints, cleaning products, fuels, and pesticides (which includes herbicides) would be used for routine maintenance in accordance with federal, state, and local regulations regarding the transportation, use, and disposal of hazardous materials.

The California Department of Pesticides Regulation (DPR) is the lead agency for regulating the registration, sale, and use of pesticides in California. The DPR registers pesticides for use in California and licenses pesticide applicators, pilots, advisors, dealers, brokers, and businesses. In turn, the County Agricultural Commissioner (CAC) acts as the local enforcement for DPR. The CAC registers licensed pest control businesses and agricultural pest control advisors in the County in which they operate; requires permits and advanced notification for buying or using California restricted-use pesticides; and requires the completion of pesticide use reports for pesticides applied in the County.

The use of pesticides would be performed in accordance with the Park District's Integrated Pest Management (IPM) Program, which strives to eliminate the use of chemicals as much as feasible whenever alternative methods are effective, as described in the 1987 Pest Management Policies and Practices.[20] Potential impacts from the use of chemicals in pest control include risk of exposure for the applicator and public, biological accumulation in the environment, and effects on non-target species. The 1987 Pest Management Policies and Practices includes guidelines for chemical selection, applicator training, authorization for chemical use, notification and posting, and record keeping, to ensure that the use of pesticides, when necessary, is performed in a manner that would be protective of workers, the public, and the environment.

During routine maintenance and vegetation management activities, fuels and lubricants may be used for equipment and fuel may also be used for prescribed burns. The 2001 Wildland Management Policies and Guidelines[21] provide general guidance pertaining to the administration and stewardship of Park District parklands to ensure the proper use and enhancement of wildland resources. The policies and guidelines apply modern management practices to biological resources based on scientific principles supported by available research. These practices include best management practices (BMPs) for the handling of hazardous materials during various types of vegetation management activities to ensure that hazardous materials are not released into the environment.

Compliance with existing regulations and policies described above would ensure that potential impacts related to the routine transport, use, or disposal of hazardous materials during operation of the proposed project would be less than significant. This topic will not be discussed in the EIR.

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

Compliance with existing regulations and policies, as described above, would minimize the likelihood that an accidental release of hazardous materials would occur during construction and operation of the proposed project.

The historic use of portions of the project area as cattle ranches may have included the storage and use of hazardous materials such as pesticides (e.g., toxaphene) for parasite control on cattle. The

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[20] East Bay Regional Park District, 1987. *Pest Management Policies and Practices, Resolution Number 1987-11-325*. October.

[21] East Bay Regional Park District, 2001. *Wildland Management Policies and Guidelines*. June.

proposed Chen property staging area is located in an area previously used as a cattle corral, which is an area where the application of pesticides to cattle may have occurred and may occur in the future. In addition, an old barn on the Chen property was in an area where removal of soil for creek restoration is proposed. Pesticides may have been stored or used in the area of the former barn, and the former barn may have contained lead paint. Therefore, elevated concentrations of hazardous materials may have the potential to be present in shallow soil in the proposed Chen property staging area and former barn, and elevated lead levels may be present in shallow soil in the area of the former barn.

The proposed project may also involve the restoration of ponds including removal of accumulated sediments in the ponds. Sediments in the ponds may have the potential to be impacted with hazardous materials (e.g., pesticides) from the use of ponds by cattle and collection of runoff in ponds that can create a sink for the accumulation of contaminants.

Mitigation Measure HAZ-1: Sampling and analysis of soil in the area of the proposed Chen property staging area and former barn on the Chen property shall be performed prior to the disturbance of soil in those areas. Sampling and analysis of sediment in ponds shall be performed prior to removal of sediments from ponds. The sampling and analysis shall be performed by a qualified environmental professional who shall provide recommendations for soil/sediment handling based on the analytical results. Park District shall implement any soil cleanup recommendations of qualified environmental professionals prior to initiating construction.

With implementation of Mitigation Measure HAZ-1, project construction would have a less-than-significant impact related to soil contamination, and this topic will not be discussed in the EIR.

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

The closest school is San Ramon Valley High School, located approximately 1 mile to the east of the project site. As discussed above, the potential for hazardous materials releases during construction and operation of the proposed project would be less than significant with required compliance with existing regulations and implementation of Mitigation Measure HAZ-1.

Operation and maintenance within the project site could result in the use of pesticides within the project site. The California Department of Pesticide Regulation (CaDPR) has enacted rules for the use of pesticides in agricultural production near school sites, generally requiring notification within 0.25 miles, and includes restrictions in these areas. As stated above, the project site is located approximately 1 mile from the nearest school. Any use of herbicide in the Project area will be non-agricultural and the Park District would utilize spot treatments and follow Best Management Practices to avoid any product from entering any waterway. Considering the Park District's compliance with California Department of Pesticide Regulations, the relatively small quantities of products that the Operations staff uses, the Best Management practices employed and the retention of these materials in labeled, locked containers that are not subject to flooding in accordance with the Park District's Best Management Practices for the safe storage and handling of these materials, the threat of exposure to the public or contamination to soil and/or groundwater from use of products is considered a less than significant impact. Therefore, the proposed project would result in a less-than-significant impact to existing or proposed school facilities from the emission of hazardous materials. This topic will not be discussed in the EIR.

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

Based on the review of environmental records available on the State Water Resources Control Board's GeoTracker database[22] and the Department of Toxic Substances Control Envirostor database,[23] the project site is not included on a list of hazardous materials release sites compiled pursuant to Government Code Section 65962.5. Therefore, no impact would result from the proposed project, and no mitigation measures would be required. This topic will not be discussed in the EIR.

e. Would the project be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The nearest airport is the Hayward Executive Airport, located approximately 10 miles southwest of the project site. In addition, the Oakland International Airport is located approximately 12 miles west of the project site, and the Livermore Municipal Airport is located approximately 12 miles to the southeast of the project site. The San Francisco International Airport is located approximately 22 miles southwest of the project. Operations at these airports are not expected to pose a safety hazard for people working at or visiting the project site. Therefore, implementation of the proposed project would not expose persons to airport-related hazards, and no impact would occur. This topic will not be discussed in the EIR.

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

The proposed project would not alter existing public roadways that intersect or surround the project area, therefore the proposed project would not interfere with emergency response or evacuation plans. The proposed project would improve accessibility of the existing Las Trampas and the project area for emergency response and evacuation by improving existing trails/access roads and constructing new trails that would also serve as emergency vehicle access roads. Potential impacts to emergency evacuation routes or emergency response plans from the proposed project are

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[22] State Water Resources Control Board, 2018. GeoTracker Database. Website: geotracker.waterboards.ca.gov (accessed June 14, 2019).

[23] Department of Toxic Substances Control, 2018. Envirostor database. Website: www.envirostor.dtsc.ca.gov (accessed June 14, 2019).

therefore considered less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The majority of the project site is mapped by the California Department of Forestry and Fire Protection (CalFire) as being within a high fire severity zone, and very high fire severity zones are located northwest of the project site.[24] Portions of the Park District's Ordinance 38 pertain to fires and are summarized below in Table 3.E.

Table 3.E: Relevant Ordinance 38 Sections – Fire

Section 404. Fires: This section states that, "No person shall build, light or maintain any open outdoor fire on park property except in those facilities or areas provided and so designated for that purpose. Exceptions to this requirement must be obtained in writing from the District Fire Chief. No person shall leave a fire unattended on District parklands."
Section 404.2 Restriction. Fires: This section states that, "No person shall smoke or build fires of any kind in areas where prohibited and posted during declared fire season. Extreme conditions may cause the elimination of all open flames for any purpose, or the evacuation or closure of a park."
Section 404.3 Smoke-Free Parks. This section states that, "Smoking is prohibited in the East Bay Regional Park District except in overnight campsites. "Smoking" means inhaling, exhaling, burning or carrying any lighted pipe, cigar, cigarette, weed, plant or other combustible organic or chemical substance, the smoke from which is specifically designed or intended to be inhaled or drawn into the nose or mouth. In addition, "smoking" for the purpose of this Ordinance includes the use of any vapor device, of any product name or descriptor, which releases gases, particles or vapors into the air as a result of combustion, electrical ignition or vaporization intended to be drawn into the nose or mouth (excluding any United States Food and Drug Administration approved nebulized medication) (added 4/16)."

Source: East Bay Regional Park District, Ordinance 38 Rules and Regulations (Revised April 2016).

In addition, the 2001 Wildland Management Policies and Guidelines were developed to provide general guidance pertaining to the administration and stewardship of Park District parklands to ensure the proper use and enhancement of wildland resources. Included in the 2001 document are several fire hazard reduction guidelines that require the Park District to use environmentally acceptable and economically feasible methods to maintain fuels at acceptable levels. The Park District considers a full range of options for managing wildland vegetation including grazing, prescribed fire, mechanical (mowing), chemical (application of herbicides), and biological methods that may include the use of native herbivores.

Implementation of Ordinance 38 and the Wildland Management Policies and Guidelines would ensure that potential impacts related to wildfires would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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[24] CalFire, 2007. Contra Costa County, Fire Hazard Severity Zones in SRA. November 7.

3.10 HYDROLOGY AND WATER QUALITY

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

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

Construction activities related to the proposed project would involve disturbance, grading, and excavation of soil, which could result in temporary erosion and movement of sediments into the storm drain system, particularly during precipitation events. The potential for chemical releases is present at most construction sites due to the use of paints, solvents, fuels, lubricants, and other hazardous materials associated with construction activities. Once released, these hazardous materials could be transported to nearby surface waterways in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. The release of sediments and other pollutants during construction and demolition could adversely affect water quality in receiving waters.

The proposed project would disturb greater than 1 acre of land, and would be required to obtain coverage under the Construction General Permit (State Water Board Order 2009-0009-DW).[25] On-site construction activities subject to the Construction General Permit include clearing, grading, excavation, and soil stockpiling. The Construction General Permit also requires the development of a SWPPP by a certified Qualified SWPPP Developer. A SWPPP is required to identify all potential pollutants and their sources, including erosion and exposure of construction materials to runoff, and must include a list of BMPs to reduce the discharge of construction-related stormwater pollutants. A SWPPP must include a detailed description of controls to reduce pollutants and outline maintenance and inspection procedures. Typical sediment and erosion BMPs include protecting storm drain inlets, and establishing and maintaining construction exits and perimeter controls to avoid tracking sediment off-site onto adjacent roadways. A SWPPP also defines proper building material staging and storage areas, paint and concrete washout areas, describes proper equipment/vehicle fueling and maintenance practices, measures to control equipment/vehicle washing and allowable non-stormwater discharges, and includes a spill prevention and response plan. In addition, the Park District's Standard Technical Specifications and Supplementary Conditions contain provisions that are intended to ensure, among other things, the safety of the construction workers, staff and the public, and the protection of wildlife, site resources, and water quality during construction and operation of site amenities. Relevant sections are provided below in Table 3.F.

Temporary dewatering may be required during construction activities involving excavation, for periodic drainage of ponds to disrupt the bullfrog breeding cycle, and for creek bed restoration activities. Dewatering effluent may have high turbidity and could contain contaminants. Turbid and/or contaminated dewatering effluent could cause degradation of the receiving water quality if discharged directly to storm drains or surface water without treatment. The discharge of dewatering effluent would be subject to permits from the San Francisco Bay Regional Water Quality Control Board (Regional Water Board). The Construction General Permit allows the discharge of construction dewatering effluent if the water is not contaminated and is properly filtered or treated, using appropriate technology. If the dewatering activity is deemed by the Regional Water Board not to be covered by the Construction General Permit (e.g., pond or creek dewatering), then a Report of Waste Discharge would need to be prepared by the Park District or their contractor and approved by the Regional Water Board, and site-specific Waste Discharge Requirements (WDRs) would be issued under National Pollutant Discharge Elimination System (NPDES) regulations to ensure that the dewatering activities would not impact receiving water quality. If it is infeasible to meet the requirements of the Construction General Permit or acquire site-specific WDRs, the dewatering effluent would need to be transported off-site for treatment and disposal.

As described in Section 3.3, Hazards and Hazardous Materials, hazardous materials including pesticides and fuels may be used for vegetation management during operation of the proposed project, and the use of hazardous materials would be performed in accordance with existing regulations and Park District policies that protect the environment, including surface waters, from potential releases of hazardous materials.

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[25] State Water Resources Control Board Division of Water Quality, 2009. *Construction General Permit Fact Sheet*. 2009-0009-DWQ amended by 2010-0014-DWQ & 2012-0006-DWQ.

Table 3.F: Relevant Technical Specifications – Hydrology and Water Quality

Site Set-up
● Work on site shall only take place between June 15 and October 31. ● Confine work activities to approved construction work areas, staging areas and access routes. ● Excavations shall not be left open overnight. Where not backfilled, excavations shall be tightly covered. Perimeters of plywood panels or other covers shall be edged with dirt to prevent intrusion of small animals. ● Excavations shall include a ramp with a maximum slope of 1:1 to allow animals to escape the excavation when not covered. ● Storage of equipment and vehicles shall be a minimum of 100 feet from the top of the creek bank. ● Fueling of equipment and vehicles shall take place a minimum of 200 feet from the top of the creek bank.
Erosion Control SWPPP Requirements
In addition to the requirements of the CASQA or Caltrans standard, the SWPPP shall contain an Erosion Control Plan that includes the following provisions: ● Fiber rolls and erosion control blankets shall not contain netting that could trap small animals. ● Photodegradable products are not acceptable. ● All erosion control products shall be weed and seed free. ● All temporary erosion control measures shall be immediately removed when no longer needed. ● All temporary erosion control measures shall be removed and legally disposed of prior to project completion.
Clearing and Grubbing
● All cut and fill areas: Strip topsoil to 2-inches minimum below existing grade where vegetation occurs. Additional depth may be required to remove organic materials. ● Stripped material shall be disposed of off-site and in a legal manner or stockpiled for reuse as directed by the District. ● Upon completion of clearing and grubbing, areas shall be left in a neat, clean condition ready to receive subsequent work.
Excavated Material
● All excavated material shall be piled in a manner which will not endanger the work and which will avoid completely obstructing access. Culverts, swales, and natural drainage patterns shall be kept clear.
Supplementary Conditions
● The California State Water Resources Control Board, San Francisco Bay Region, Oakland, California has jurisdiction over the project storm water discharges within the Project area. Accordingly, the following actions will be required prior to initiating implementation of the Project: 1) the District will submit a Notice of Intent (NOI) and obtain a waste discharger identification number (WDID) from the above agency; 2) a Receipt of NOI will be obtained by the District from SWRCB prior to the start of construction; and 3) the Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) in conformance with California State Water Resources Control Board No. 92-08 DWQ for discharges of storm water runoff associated with construction activity.

Source: East Bay Regional Park District, Technical Specifications (September 10, 2014; Updated 2017).

Required compliance with existing regulations and policies regarding stormwater, dewatering, and hazardous materials use would ensure that the proposed project would result in less-than-significant impacts to water quality and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The proposed project would not utilize groundwater resources. Temporary dewatering may be required during construction activities involving excavation and for periodic drainage of ponds to disrupt the bullfrog breeding cycle. Such dewatering would be localized and short term and would not deplete groundwater resources. The proposed project would create a small amount of new impervious surface with construction of a restroom structure, two concrete paved disabled parking spaces, and small segment of concrete sidewalk in the proposed staging area on the Chen property. Because the amount of new impervious surfaces is very limited and the runoff from the new impervious surfaces would be directed to surrounding pervious surfaces, the proposed project's impacts on groundwater recharge would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

i) Result in a substantial erosion or siltation on- or off-site;

The proposed project would include minor grading activities, creek restoration, and construction of a new staging area that would slightly alter drainage patterns. Compliance with the Construction General Permit and regular trail maintenance to prevent erosion would ensure that changes to drainage patterns would result in less-than-significant impacts related to erosion and siltation. In addition, Table 3.F includes requirements to limit soil erosion. As discussed above, the proposed project would create a very limited amount of new impervious surfaces, and the runoff from the new impervious surfaces would be directed to surrounding pervious surfaces, therefore the proposed project would result in a less-than-significant impact related to increasing runoff which could cause flooding or exceed the capacity of stormwater drainage systems. This topic will not be discussed in the EIR.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

As discussed above, the proposed project would create a very limited amount of new impervious surfaces, and the runoff from the new impervious surfaces would be directed to surrounding pervious surfaces, therefore the proposed project would result in a less-than-significant impact related to increasing runoff which could cause flooding or exceed the capacity of stormwater drainage systems. This topic will not be discussed in the EIR.

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

The proposed project would add vehicle parking at the proposed Chen Staging area. Although there are no existing or planned stormwater drainage systems in the vicinity of the Chen Staging area, pollutants associated with vehicles (e.g., fuel, oil/lubricants, brake dust, and fallout from exhaust) can be deposited on the surface of parking lots which can contribute to the pollutant load in runoff. Because the proposed parking area would be primarily gravel and surrounded by vegetated areas and drainage swales, pollutants would not be readily carried by runoff into receiving waters. Pollutants would be largely retained within the gravel surface and underlying soil (i.e., a self-treating area), and runoff from the parking lot would infiltrate and be filtered by surrounding vegetated areas and drainage swales prior to entering the nearby creek. No additional potential impacts on water quality are expected to result from the proposed project, beyond those discussed above. Therefore, the proposed project would result in a less-than-significant impact related to creating a substantial additional source of polluted runoff or otherwise degrading water quality. This topic will not be discussed in the EIR.

iv) Impede or redirect flood flows?

The Federal Emergency Management Agency (FEMA) has mapped a 100-year flood hazard zone surrounding the creek that parallels Bollinger Canyon Road. The 100-year flood hazard zone extends into the southwest corner of the Chen property (southeast of the proposed staging area) and covers a large area in the western portion of the Faria property (west of Bollinger Canyon Road). The proposed project does not include the placement structures within the 100-year flood hazard zone; therefore, the proposed project would not result in impacts related to impeding or redirecting flood flows, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

As discussed above, a 100-year flood hazard zone extends into the southwest corner of the Chen property (southeast of the proposed staging area) and covers a large area in the western portion of the Faria property (west of Bollinger Canyon Road). As discussed in Section 3.9, Hazards and Hazardous Materials, operation and maintenance within the project site could result in the use of pesticides within the project site. In addition, the historic use of portions of the project area as cattle ranches may have included the storage and use of hazardous materials such as pesticides (e.g., toxaphene) for parasite control on cattle, and elevated concentrations of hazardous materials may have the potential to be present in shallow soil in the proposed Chen property staging area and former barn, and elevated lead levels may be present in shallow soil in the area of the former barn. The proposed project may also involve the restoration of ponds including removal of accumulated sediments in the ponds. Sediments in the ponds may have the potential to be impacted with hazardous materials (e.g., pesticides) from the use of ponds by cattle and collection of runoff in ponds that can create a sink for the accumulation of contaminants.

With implementation of Mitigation Measure HAZ-1, project construction would have a less-than-significant impact related to soil contamination, and this topic will not be discussed in the EIR.

Mitigation Measure HYDRO-1: Implement Mitigation Measure HAZ-1.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As discussed above, the proposed project would not utilize groundwater resources, and the proposed project would create a small amount of new impervious surface with construction of a restroom structure, two concrete paved disabled parking spaces, and small segment of concrete sidewalk in the proposed staging area on the Chen property. Because the amount of new impervious surfaces is very limited and the runoff from the new impervious surfaces would be directed to surrounding pervious surfaces, the proposed project's impacts on groundwater recharge would minor. As a result, the project would not conflict or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☒	☐
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect??	☐	☐	☒	☐

a. Would the project physically divide an established community?

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying area. For instance, the construction of an interstate highway through an existing community may constrain travel from one area of the community to another; similarly, such construction may also impair travel to areas outside the community.

The proposed project consists of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The project area consists of: 1) landbanked property that will be open to the public, 2) property that is currently open to the public, and 3) land that will be conveyed to the Park District and subsequently opened to the public or placed in landbank. The project would include a total of 4.9 miles of new trails that would be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). The proposed project would not alter the existing streets within or adjacent to the project site. Therefore, the proposed project would not result in a physical division of an established community or adversely affect the continuity of land uses in the vicinity, and, this impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The proposed project consists of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The project area consists of: 1) landbanked property that will be open to the public; 2) property that is currently open to the public; and 3) land that will be conveyed to the Park District and subsequently opened to the public or placed in landbank. The project would include a total of 4.9 miles of new trails that would be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing trails or service roads). Under the California Public Resources Code (Article 3, 5500 series), the Park District is an independent special district with the power to *"...acquire land...to plan...develop...and operate a system of public parks, playgrounds, golf courses, beaches, trails, natural areas, ecological and open space preserves, parkways, scenic drives, boulevards and other* *facilities for public recreation, for the use and enjoyment of all the inhabitants of the District...to conduct programs and classes in outdoor science education and conservation education...to employ a police force...prevent and suppress fires...and to do all other things necessary or convenient to carry out the purposes of the District."* (2013 EBRPD Master Plan). As such, the project would not be subject to local land use regulations such as zoning or General Plan Land Use designations, therefore the project would not result in land use incompatibilities and conflicts with existing plans or policies. Moreover, the project is consistent with the Park District's 2013 Master Plan policies. Therefore, the proposed project would not conflict with any applicable land use plan, policy or regulation, and this impact would be less than significant. This topic will not be discussed in the EIR.

3.12 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
c. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
d. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

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

The Surface Mining and Reclamation Act (SMARA) regulates surface mining in California. SMARA was adopted in 1975 to protect the State's need for a continuing supply of mineral resources and to protect the public and environmental health. SMARA requires that all cities incorporate mapped mineral resource designations approved by the State Mining and Geology Board into their General Plans.

According to Contra Costa County's General Plan Conservation Element, the most important mineral resources that are currently mined in the County include crushed rock near Mt. Zion, on the north side of Mt. Diablo, in the Concord area; shale in the Port Costa area; and sand and sandstone deposits, mined from several locations, but focused in the Byron area of southeast County. Based on the Mineral Resource Areas Map in the Conservation Element, no mineral resource areas are located within the project area. As a result, the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State. Therefore, the proposed project would have no impact, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

Please refer to Section 3.11.a. The proposed project would not result in the loss of availability of any known locally-important mineral resource recovery sites. Therefore, the proposed project would have no impact, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.13 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project result in:				
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements that better represent human sensitivity to sound at night.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

There are many methods used ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Regulatory Framework. A project would have a significant noise effect if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, the County of Contra Costa, City of San Ramon, and Town of Danville.

Contra Costa County. Contra Costa County addresses Noise in the Noise Element.[26] The Noise Element sets noise and land use compatibility guidelines. The Noise Element also contains goals and policies that seek to maintain appropriate noise conditions throughout the County. Policy 11-2 states that the standard for outdoor noise levels in residential areas is a DNL of 60 dB. Policy 11-7 states that public projects shall be designed and constructed to minimize long-term noise impacts on existing residents. Policy 11-8 states that construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods. Policy 11-11 states that noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

City of San Ramon. The City of San Ramon addresses Noise in the Noise Element.[27] The Noise Element sets noise and land use compatibility guidelines. The Noise Element also contains implementing policies that are designed to help the City achieve an acceptable noise environment for the present and future residents of San Ramon. Implementing Policy 10.1-I-1 requires the minimization of vehicular and stationary noise sources and noise emanating from intermittent activities. Implementing Policy 10.1-I-14 states that construction activities are exempt from the noise and land use compatibility standards, but must implement all practical noise attenuation measures and practices to limit adverse impacts on nearby land uses. In addition, implementing Policy 10.1-I-7 identifies that a significant increase in ambient noise levels is assumed if the project causes ambient noise levels to exceed the following: the ambient noise level is less than 60 dB L_{dn} and the project increases noise levels by 5 dB or more; the ambient noise level is 60-65 dB L_{dn} and the project increases noise levels by 3 dB or more; or the ambient noise level is greater than 65 dB L_{dn} and the project increases noise levels by 1.5 dB or more.

The City of San Ramon also addresses noise in the City's Municipal Code.[28] Chapter V – Noise Control permits construction noise when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. No construction is allowed on federal holidays.

Town of Danville. The Town of Danville addresses Noise in the Resources and Hazards Element.[29] The Resources and Hazards Element sets noise and land use compatibility guidelines. The Resource and Hazards Element also contains policies that are designed to protect existing

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[26] Contra Costa, County of, 2010. *Contra Costa County General Plan 2005 – 2020.* July.

[27] San Ramon, City of, 2015. *City of San Ramon General Plan 2035.* April 28.

[28] San Ramon, City of, 2017. *San Ramon, CA Code of Ordinances.* May 26.

[29] Danville, Town of, 2013. *The Town of Danville 2030 General Plan.* March 19.

and future residents of Danville from hazards and nuisance associated with excessive levels of noise by maintaining or reducing noise intrusion levels in all areas of the Town to acceptable levels. Policy 27.03 requires the protection of the noise environment in existing residential areas. Where acceptable noise levels in residential areas would be exceeded or further impacted as a result of new development or transportation improvements, require the use of noise mitigation measures, such as wall barriers, berms, mufflers, sound traps, and baffles to reduce noise intrusion. Policy 27.05 recommends that open space should be used, wherever practical, to provide an adequate spatial separator between noise sources and sensitive land uses. In addition, Policy 27.13 requires utilizing noise reduction measures during all phases of construction activity to minimize the exposure of neighboring properties to excessive noise levels.

The Town of Danville also addresses noise in the Town's Municipal Code.[30] Chapter IV – Police Regulations permits construction noise when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays, and holidays.

EBRPD Master Plan. The Park District's 2013 Master Plan contains policies for achieving the highest standards of service in resource conservation, management, interpretation, public access, and recreation. The goal of the Master Plan is to maintain a careful balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of the parklands. There are no specific Master Plan policies addressing noise.

Park Rules and Regulations: Ordinance 38. Portions of EBRPD Ordinance 38 address noise and are summarized in Table 3.G.

Table 3.G: Relevant Ordinance 38 Sections – Noise

Section 908.2 This section states that, "it is the policy of the District to prohibit unnecessary, excessive, annoying noises from all sources subject to its police power, including within the sleeping quarters of campgrounds of the District between the hours of 10:00 p.m. and 7:00 a.m. daily."
Section 908.3 This section states that, "it unlawful to install use or operate within the District a loudspeaker or sound-amplifying equipment… for the purpose of transmitting music to any persons or assemblages of persons without filing a registration statement with and obtaining approval from the General Manager. Furthermore, such approval may be granted to operate such devices or equipment only within designated amphitheater areas maintained by the District for such purposes, or other such similar areas as the Board may from time to time so designate."
Section 908.7 This section states that, "The use of sound-amplifying equipment shall be subject to the following regulations: a) The operation of sound-amplifying equipment shall only occur between the hours of 10:00 a.m. and 8:00 p.m. each day, and b) the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing or a nuisance to reasonable persons of normal sensitiveness within the area of audibility."
Section 908.8 This section states that, "it is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace or quiet within any area within the District or which causes discomfort or annoyance to any reasonable person of normal sensitiveness utilizing any facility of the District."

Source: East Bay Regional Park District. 2016. Ordinance 38 Rules and Regulations. Revised April 2016.

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[30] Danville, Town of, 2017. *Danville, California Municipal Code.* April 4.

Overview of the Existing Noise Environment. The primary noise source impacting the project area results from traffic on Bollinger Canyon Road. Other noise sources not related to vehicles include birds and airplanes. Noise from motor vehicles is generated by engine vibrations, the interaction between the tires and the road, and the exhaust systems. Airport related noise levels are primarily associated with aircraft engine noise made while aircraft are taking off, landing, or running their engines while still on the ground. The Hayward Executive Airport is the closet airport and is located approximately 10 miles southwest of the project site. In addition, the Oakland International Airport is located approximately 12 miles west of the project site and the Livermore Municipal Airport is located approximately 12 miles to the southeast of the project site. The San Francisco International Airport is located approximately 22 miles southwest of the project site. Aircraft noise is occasionally audible at the project site; however, no portion of the project site lies within the 65 dBA CNEL noise contours of these airports.

To assess existing noise levels, LSA conducted two short-term noise measurements on the project site on October 6, 2017. The short-term 15-minute noise measurements were recorded at different locations on the project site between 10:02 a.m. and 10:45 a.m. LSA also conducted one long-term noise measurements at the proposed staging area between October 6, 2017, and October 9, 2017. The long-term noise measurement captured hourly L_{eq} data as well as CNEL data, which incorporates the nighttime hours. Short-term noise measurements indicate that ambient noise in the project site vicinity ranges from approximately 56.6 dBA to 58.5 dBA L_{eq}. The long-term noise measurement was 62.8 dBA L_{eq} and 65.9 dBA CNEL. Traffic on Bollinger Canyon Road was reported as the primary noise source.

A Noise Impact Analysis was prepared for the proposed project by LSA, and is included as Appendix B. Several of the following responses are based on the findings presented in the report.

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

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The project would result in short-term noise impacts due to construction and long-term impacts related to project operations, as described below.

Land Use Compatibility. The dominant source of noise in the project vicinity is traffic on Bollinger Canyon Road. The long-term noise monitoring at the staging area measured 65.9 dBA CNEL. Contra Costa County, City of San Ramon, and Town of Danville set forth normally acceptable noise level standards for land use compatibility and outdoor exposure of new projects. The normally acceptable exterior noise level for recreational uses is up to 70 dBA CNEL under Contra Costa County, City of San Ramon, and Town of Danville noise standards. As identified above, the long-term noise monitoring identified noise levels of 65.9 dBA CNEL which indicates noise levels on the site would be below 70 dBA CNEL. In addition, noise levels would attenuate based on distance from Bollinger Canyon Road. Therefore, noise levels of 65.9 CNEL would only occur at the staging area and noise levels along the proposed trails would be expected to be much lower. Therefore, the project's noise environment is consistent with Contra Costa County, City of San Ramon, and Town of Danville noise and land use compatibility standards. This topic will not be discussed in the EIR.

Permanent Increase in Ambient Noise. The proposed project is located in a relatively quiet area with noise levels falling within the normally acceptable exterior noise level for park land uses and the conditionally acceptable exterior noise level for the adjacent residential uses according to Contra Costa County, City of San Ramon, and Town of Danville noise compatibility guidelines, as there are no substantial noise generators in the area and existing pass-through traffic levels produce moderate levels of noise. Implementation of the proposed project could expose existing nearby residences to noise generated from mobile source noise and stationary source noise. Mobile source noise would be attributable to the additional trips that would be a result of the proposed project. Stationary source noise would noise be generated by parking lot activities and recreationalists using the trails.

Mobile Source Noise. To assess traffic noise impacts, the traffic noise levels along major roadway segments within the project vicinity were projected using the federal highway administration (FHWA) modeling to predict traffic noise level conditions with and without the proposed project. FWHA modeling was based on existing traffic conditions, FWHA modeling results are summarized in Table 3.H. The table includes projected traffic noise levels as measured at 50 feet from the centerline of the outermost traveled lane along the modeled roadway segments. The model does not account for existing sound walls or terrain features that could reduce traffic noise levels at adjacent land uses, but rather assumes a reasonable worst-case direct line-of-sight over hard surface to the modeled traffic noise sources.

Table 3.H shows a minor change in the traffic noise levels associated with the implementation of the proposed project. The largest increases in traffic-related noise as a result of the project would be along Bollinger Canyon Road, with a 1.5 dBA increase between Deerwood Drive and Crow Canyon Drive. This noise level increase would be less than the 3 dBA increase considered to be perceptible by the human ear in an outdoor environment and the resulting noise level would be 59.1, which would be in the normally acceptable and conditionally acceptable range at the nearby residential land uses. Therefore, no significant traffic noise impacts would occur for off-site land uses. As a result, no mitigation is required to address traffic-related noise.

Stationary Source Noise. Implementation of the proposed project could expose existing nearby sensitive receptors to noise generated from parking lot activities at the staging area and small parking areas. Parking lot noise, including engine sounds, car doors slamming, car alarms, and people conversing, could occur as a result of the proposed project at the project site. Typical parking lot activities, such as people conversing or doors slamming, generates noise levels of approximately 60 dBA to 70 dBA L_{max} at 50 feet.

The staging area would include parking for up to 25 vehicles and would include benches, a restroom, trail connections, information signs, and landscaping.

As discussed above, the closest sensitive receptor includes the single-family residence located approximately 40 feet west of the proposed staging area. At 40 feet, there would be an increase of approximately 2 dBA from the reduced distance compared to the noise reference level measured at 50 feet. Therefore, based on distance attenuation, the closest receptor may be subject to parking lot noise levels of approximately 62 dBA to 72 dBA L_{max}.

The staging area is located within the jurisdiction of Contra Costa County; therefore, County of Contra Costa noise standards were used to evaluate potential noise impacts associated with the proposed staging area. The County of Contra Costa addresses noise in terms of community noise equivalent levels; therefore, to analyze the 24-hour noise impact of the proposed project, park open-hours were used. Between January 1 and May 20 and September 4 through December 31, noise levels with the project would be approximately 66.0 dBA CNEL at the nearest residential property line. Between May 21 and September 3, noise levels with the project would be approximately 66.1 dBA CNEL at the nearest residential property line. Table 3.I identifies noise levels with and without implementation of the proposed project.

Table 3.H: Existing Traffic Noise Levels Without and With Project

Roadway Segment	Existing Volumes					Existing Plus Future Projects Volumes				
	Without Project		With Project			Without Project		With Project		
	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	Increase from Baseline Conditions	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	Increase from Baseline Conditions
Bollinger Canyon Road - North of Chen Staging Area	1,650	59.1	1,650	59.1	0.0	1,650	59.1	1,650	59.1	0.0
Bollinger Canyon Road - Chen Staging Area to Faria Trailhead	1,650	59.1	2,080	60.1	1.0	1,650	59.1	1,865	59.6	0.5
Bollinger Canyon Road - Faria Trailhead to Deerwood Drive	1,650	59.1	2,300	60.5	1.4	2,065	60.0	2,715	61.2	1.2
Bollinger Canyon Road - Deerwood Drive to Crow Canyon Drive	1,590	57.6	2,235	59.1	1.5	2,875	60.2	3,520	61.1	0.9
Bollinger Canyon Road - South of Crow Canyon Drive	2,190	54.5	2,340	54.8	0.3	3,310	56.3	3,460	56.5	0.2
Deerwood Drive - East of Bollinger Canyon Road	390	50.1	390	50.1	0.0	390	50.1	390	50.1	0.0
Crow Canyon Drive - West of Bollinger Canyon Road	8,210	66.0	8,330	66.1	0.1	8,520	66.2	8,640	66.2	0.0
Crow Canyon Drive - East of Bollinger Canyon Road	9,700	64.5	10,070	64.7	0.2	10,130	64.7	10,500	64.9	0.2

Source: LSA (December 2017).

Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.

ADT = average daily traffic

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

Table 3.I: Operational Noise Levels With and Without Project at Nearest Receptor

	Existing Noise Levels	Parking Lot Noise Levels	Existing Plus Project Noise Levels	Noise Level Increase
January 1 – February 13 (8:00 a.m. – 5:30 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
February 14 – March 8 (8:00 a.m. – 6:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
March 8 – May 20 (8:00 a.m. – 7:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
May 21 – September 3 (8:00 a.m. – 8:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.1 dBA CNEL	0.2 dBA
September 4 – November 1 (8:00 a.m. – 7:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
November 2 – December 31 (8:00 a.m. – 5:30 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA

Source: LSA (December 2017).

Note: CNEL is the Community Noise Equivalent Level (CNEL) which is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as evening hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).

As shown in Table 3.I above, due to the intermittent nature of parking lot activity, when averaged over a 24-hour period, noise levels associated with parking lot activity would result in a minimal increase of 0.1 to 0.2 dBA. This noise level is well below the 3 dBA increase considered to be perceptible by the human ear in an outdoor environment and less than the established significance criteria of a 3 dBA permanent increase in ambient noise levels. Noise levels would remain within the conditionally acceptable exterior noise level for residential land uses under Contra Costa County, City of San Ramon, and Town of Danville's land use compatibility standards. Maximum noise levels from cars passing were recorded at approximately 72 dBA to 75 dBA L_{max}, therefore, door slamming noise levels ranging from 65 dBA to 72 dBA would be consistent with existing noise levels and would not result in a substantial increase in noise. Therefore, this impact would be considered less than significant.

In addition, Las Trampas is an existing open space use and park visitors would generate noise intermittently while visiting the proposed project, but would not generate noise levels that would exceed the applicable standards. In addition, the proposed trails are located approximately 75 feet from the nearest sensitive receptors. Voices from trail users may be audible at the nearest residences on occasion, but due to the distance and the minimal noise generated by park users, the noise impact would be expected to be minimal. Therefore, the proposed project would not expose persons to noise in excess of local standards. This topic will not be discussed in the EIR.

Temporary Increase in Ambient Noise. The proposed project is located approximately 40 feet from single-family residences. Construction activities associated with the LUPA could result in substantial temporary or periodic increases in ambient noise levels at staging, parking, access, and trail sites throughout the Las Trampas Preserve. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from one day to several days depending on the phase of construction. The level and types of noise impacts that would occur during construction are described below.

Short-term noise impacts would occur during grading and site preparation activities. Table 3.J lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor, obtained from the FHWA Roadway Construction Noise Model. Construction-related short-term noise levels would be higher than existing ambient noise levels currently in the project area but would no longer occur once construction of the project is completed.

Two types of short-term noise impacts could occur during construction of the proposed project. The first type involves construction crew commutes and the transport of construction equipment and materials to the site for the proposed project, which would incrementally increase noise levels on Bollinger Canyon Road leading to the site. As shown in Table 3.J, there would be a relatively high single-event noise exposure potential at a maximum level of 79 dBA L_{max} with trucks passing at 50 feet.

The second type of short-term noise impact is related to noise generated during excavation, grading, and construction on the project site. Construction is performed in discrete steps, or phases, each with its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Table 3.J lists maximum noise levels recommended for noise impact assessments for typical construction equipment, based on a distance of 50 feet between the equipment and a noise receptor. Typical maximum noise levels can range up to 87 dBA L_{max} at 50 feet during the noisiest construction phases, when pile driving and rock drills are not used. It is not anticipated that construction of the project would require the use of rock drills or pile drivers. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because earthmoving machinery is the noisiest construction equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Table 3.J: Noise Emission Reference Levels and Usage Factors

Equipment Description	Acoustical Usage Factor [a]	Predicted L_{max} at 50 feet (dBA, slow) [b]	Actual Measured L_{max} at 50 feet (dBA, slow) [c]
All Other Equipment > 5 HP	50	85	N/A [d]
Backhoe	40	80	78
Compactor (ground)	20	80	83
Compressor (air)	40	80	78
Concrete Mixer Truck	40	85	79
Concrete Pump Truck	20	82	81
Crane	16	85	81
Dozer	40	85	82
Dump Truck	40	84	76
Excavator	40	85	81
Flat Bed Truck	40	84	74
Front-End Loader	40	80	79
Generator	50	82	81
Gradall	40	85	83
Grader	40	85	N/A
Grapple (on backhoe)	40	85	87
Man Lift	20	85	75
Paver	50	85	77
Pickup Truck	40	55	75
Pneumatic Tools	50	85	85
Pumps	50	77	81
Roller	20	85	80
Scraper	40	85	84
Sheers (on backhoe)	40	85	96
Tractor	40	84	N/A
Vacuum Excavator (Vac-Truck)	40	85	85
Vacuum Street Sweeper	10	80	82
Ventilation Fan	100	85	79
Welder/Torch	40	73	74

Source: *Highway Construction Noise Handbook*, Table 9.1 (Federal Highway Administration 2006).

Note: Noise levels reported in this table are rounded to the nearest whole number.

[a] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

[b] Maximum noise levels were developed based on Specification (Spec.) 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.

[c] The maximum noise level was developed based on the average noise level measured for each piece of equipment during the CA/T program in Boston, Massachusetts.

[d] Since the maximum noise level based on the average noise level measured for this piece of equipment was not available, the maximum noise level developed based on Spec 721.560 would be used.

dBA = A-weighted decibels
HP = horsepower
L_{max} = maximum instantaneous noise level
kVA = kilovolt-amperes
N/A = not applicable
RCNM = Roadway Construction Noise Model
VMS = variable message sign

The nearest sensitive receptor is the single-family residence located approximately 40 feet west of the proposed staging area. Project construction would result in short-term noise impacts on this adjacent receptor. At a distance of 40 feet, there would be an increase of approximately 2 dBA compared to the noise reference level calculated as 50 feet from the active construction area. Therefore, the closest sensitive receptor may be subject to short-term construction noise reaching 89 dBA L_{max} when construction is occurring at the staging area boundary. Based on this maximum noise level and assuming a crane, forklift, tractor, welder, and air compressor would be operating simultaneously, construction of the proposed project would result in noise levels of approximately 84 dBA L_{eq} at the nearest sensitive receptor. This noise level would be higher than the existing measured ambient noise levels of approximately 56.6 dBA to 58.5 dBA L_{eq}. However, the total construction period would be approximately 6 months and construction equipment would operate at various locations within the approximately 0.62-acre staging area project site and would only generate this maximum noise level when operations occur at the boundary of the staging area closest to the receptor.

The trails would be constructed with a combination of mechanized equipment and hand tools. Mechanized equipment may include, but is not limited to small excavators, small trail dozers, D4 bulldozers, water trucks, backhoe, and graders. Hand tools could include pick mattocks, McLeods, Puilaskis, and shovels. The proposed trails are located approximately 75 feet from the nearest sensitive receptors. Therefore, based on the distance between receptors from the trails and the type of construction activities, construction of the trails would not be expected to result in the exposure of sensitive receptors to noise levels in excess of standards.

Construction noise is permitted by Contra Costa County when activities occur during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods. Construction noise is also permitted by the City of San Ramon when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. No construction is allowed on federal holidays. In addition, construction noise is permitted by the Town of Danville when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays, and holidays. In addition, Section 908.2 of the EBRPD’s Park Rules and Regulations: Ordinance 38 prohibits unnecessary, excessive, annoying noises from all sources between the hours of 10:00 p.m. and 7:00 a.m. daily.

As discussed above, construction noise would result in a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Implementation of best management practices for project construction, as identified as Mitigation Measure NOI-1 below, would reduce potential construction period noise impacts for the indicated sensitive receptors to a less-than-significant level.

Mitigation Measure NOI-1: The project contractor shall implement the following best management practice measures during construction of the project:

- Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.
- Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the active project site.
- Locate equipment staging in areas that would create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the active project site during all project construction.
- Prohibit extended idling time of internal combustion engines.
- All noise producing construction activities shall be limited to the hours of 7:00 a.m. and 10:00 p.m. daily.
- Designate a "disturbance coordinator" at the Park District who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

With implementation of Mitigation Measure NOI-1, project construction would have a less-than-significant impact related to noise, and this topic will not be discussed in the EIR.

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

Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors. Vibration energy propagates from a source, through intervening soil and rock layers, to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by the occupants as the motion of building surfaces, rattling of items on shelves or hanging on walls, or as a low-frequency rumbling noise. The rumbling noise is caused by the vibrating walls, floors, and ceilings radiating sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of groundborne vibration are construction activities (e.g., pavement breaking and operating heavy-duty earthmoving equipment), and occasional traffic on rough roads. In general, groundborne vibration from standard construction practices is only a potential issue when within 25 feet of sensitive uses. Groundborne vibration levels from construction activities very rarely reach levels that can damage structures; however, these levels are perceptible near the active construction site. With the exception of old buildings built prior to the 1950s or buildings of historic significance, potential structural damage from heavy construction activities rarely occurs. When roadways are smooth, vibration from traffic (even heavy trucks) is rarely perceptible.

The streets surrounding the project area are paved, smooth, and unlikely to cause significant groundborne vibration. In addition, the rubber tires and suspension systems of buses and other on-road vehicles make it unusual for on-road vehicles to cause groundborne noise or vibration problems. Therefore, no such vehicular vibration impacts would be assumed to occur and no vibration impact analysis of on-road vehicles would be necessary. Additionally, once constructed, the proposed project would not contain uses that would generate groundborne vibration.

Construction Vibration. The nearest sensitive receptor is the single-family residence located approximately 40 feet west of the proposed staging area on the Chen property. This construction vibration impact analysis discusses the level of human annoyance using vibration levels in VdB and will assess the potential for building damages using vibration levels in PPV (in/sec) because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration level in PPV is best used to characterize potential for damage. The Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment*[31] guidelines indicate that a vibration level up to 102 VdB (an equivalent to 0.5 in/sec in PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

Table 3.K shows the PPV and VdB values at 25 feet from a construction vibration source. As shown in Table 3.K, bulldozers and other heavy-tracked construction equipment (except for pile drivers and vibratory rollers) generate approximately 87 VdB of groundborne vibration when measured at 25 feet, based on the Transit Noise and Vibration Impact Assessment. At this level, groundborne vibration would result in potential annoyance to residences and workers, but would not cause any damage to the buildings. Construction vibration, similar to vibration from other sources, would not have any significant effects on outdoor activities (e.g., those outside of residences and commercial/office buildings in the project vicinity). Outdoor site preparation for the project is expected to use a bulldozer and loaded truck. The greatest levels of vibration are anticipated to occur during the site preparation phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts occur normally within the buildings. The formula for vibration transmission is provided below.

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[31] Federal Transit Administration, 2006. Office of Planning and Environment. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. May.

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref}\ x\ (25/D)^{1.5}$$

Table 3.K: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 feet	
	PPV (in/sec)	L_V (VdB) [a]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer [b]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment* (Federal Transit Administration, 2006).

[a] RMS vibration velocity in decibels (VdB) is 1 µin/sec.

[b] Equipment shown in **bold** is expected to be used on site.

µin/sec = micro-inches per second
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

For typical construction activity, the equipment with the highest vibration generation potential is the large bulldozer, which would generate 87 VdB at 25 feet. The closest residential structure is located 40 feet from the project construction boundary. Based on distance attenuation, the closest residence would experience vibration levels of up to 81 VdB (0.044 PPV [in/sec]). This vibration level at the closest residential structure from construction equipment would not exceed the FTA threshold of 94 VdB (0.2 in/sec PPV) for building damage when bulldozers and loaded trucks operate within 50 feet of the project construction boundary. This level is also below the FTA's "barely perceptible" human response criteria of 0.04 PPV for transient sources of vibration events. In addition, trails would be constructed with a combination of mechanized equipment and hand tools. The proposed trails are located approximately 75 feet from the nearest sensitive receptors; therefore construction of the trails would also not be a significant source of vibration. As a result, groundborne vibration impacts from project-related construction activities would be considered less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The proposed project is not located within 2 miles of a public or public use airport. The nearest airport is the Hayward Executive Airport, which is located approximately 10 miles southwest of the project site. In addition, the Oakland International Airport is located approximately 12 miles west of the project site and San Francisco International Airport is located approximately 22 miles southwest of the project. Aircraft flyover noise is occasionally audible at the project site, due to the flightpath of the regional airports in the vicinity; however, no portion of the project site lies within the 65 dBA CNEL noise contours of any public airport nor does any portion of the project site fall within 2 miles of any private airfield or heliport. Therefore, the proposed project would not result in the exposure of sensitive receptors to the excessive noise levels from aircraft noise sources. No impact would occur, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.14 POPULATION AND HOUSING

	Potentially Significant Impact	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

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

Implementation of the proposed project would consist of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The proposed project would not include housing and would not affect population in Contra Costa County, City of San Ramon, or Town of Danville. Therefore, the proposed project would have no impact on population increase or population projections, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

No permanent housing is located within the project area. Implementation of the proposed project would not displace any people or remove existing housing, and would not require the construction of replacement housing. Therefore, no impact would occur, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.15 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

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

Fire Protection. The EBRPD Fire Department provides fire protection services to EBRPD Parks. The fire department provides all typical emergency services including fire suppression, search and rescue, fuels management, and pre-hospital emergency medical care. In addition, because the project site is located within unincorporated areas of Contra Costa County and within the City of San Ramon and Town of Danville, the Contra Costa County Fire Protection District and San Ramon Valley Fire Protection District would share much of the same fire protection issues. A memorandum of understanding regarding mutual aid in emergency situations is in place between the Park District and surrounding communities.

Dispatchers and fire responders are based out of the Park District Headquarters at Lake Chabot Regional Park in Castro Valley. The closest EBRPD fire substation to the project site is located at 7867 Redwood Road in Oakland. The EBRPD Fire Department is comprised of 46 firefighters. The EBRPD fire department has 4 type III engines, 6 type VI engines, 2 water tenders, and 1 California Governor’s Office of Emergency Services (OES) type I engine.

The project area would continue to be covered by the EBRPD Fire Department as well as Contra Costa County Fire Protection District and San Ramon Valley Fire Protection District. The project could result in an incremental increase in the demand for fire protection services as a result of additional visitors to the project site; however the proposed project would be required to comply with all applicable codes for fire safety and emergency access.

Implementation of the proposed project would also include additional EVMA trails, which would provide access for Park District service vehicles. In addition, emergency access would still be possible along all roadways during and after construction of the proposed project.

The proposed project would not require additional firefighters to serve the proposed project. The construction of a new or expanded fire station would not be required. The proposed project would not result in a significant impact on the physical environment due to the incremental increase in demand for fire protection and life safety services. The incremental increase in demand for services is not expected to adversely affect existing response times to the site or within the EBRPD, Contra Costa County, City of San Ramon, or Town of Danville. Therefore, construction and operation of the proposed project would have a less-than-significant impact on fire protection and safety services and facilities, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Police Protection. The Park District Police Department provides police protection services to District Parks. The EBRPD Police Department maintains a full-time staff of police officers, dispatchers, and fire responders based out of its Headquarters at Lake Chabot Regional Park in Castro Valley. In addition, because the project site is located within unincorporated areas of Contra Costa County and within the City of San Ramon and Town of Danville, the Contra Costa County Sheriff, San Ramon Police Department, and Danville Police Department would share much of the same policing issues.

The EBRPD Police Department serves over 25 million annual visitors and patrols 73 different parks over a 1,750-square-mile area covering all of Alameda and Contra Costa Counties. The EBRPD also patrols over 1,250 miles of trails.

At peak summer season, the EBRPD Public Safety Division is staffed by approximately 500 personnel, which includes 161 full-time equivalent employees (71 of whom are sworn police officers who derive their authority under CA Penal code section 830.1). In addition, the EBRPD Public Safety Division employs 200 Volunteer Trail Safety Patrol members, and 40 industrial firefighters. The Division's annual budget is approximately $29 million and is a full service California Commission on Peace Officer Standards and Training (POST)-recognized law enforcement agency.

The project area would continue to be covered by the EBRPD Police Department as well as Contra Costa County Sherriff, San Ramon Police Department, and Danville Police Department. The project could result in an incremental increase in the demand for police protection services as a result of additional visitors to the project site; however, the proposed project would not require additional officers to serve the project site. The construction of new or expanded police facilities would not be required.

Implementation of the proposed project would also include additional EVMA trails, to provide access for Park District service vehicles. In addition, emergency access would still be possible along all roadways during and after construction of the proposed project. Therefore, the proposed project would not result in a substantial adverse impact associated with the provision of additional police facilities or services, and impacts to police services represent a less-than-significant impact that would not require mitigation measures. This topic will not be discussed in the EIR.

Schools. The proposed project will not generate student demand or otherwise impact school services given that there is no housing or a residential component. As such, no impact would occur and no mitigation measures would be required. This topic will not be discussed in the EIR.

Parks. The proposed project consists of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The project area consists of: 1) landbanked property that will be open to the public, 2) property that is currently open to the public, and 3) land that will be conveyed to the Park District and subsequently opened to the public or placed in landbank. The project would include a total of 4.9 miles of new trails that would be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). The project does not include any residential uses and would not generate a need for additional park space. As such, no impact would occur, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Other Public Facilities. Development of the proposed project would not increase demand for other public services including libraries, community centers, and public health care facilities. As previously discussed, the project does not include development of residential uses and would therefore not result in increased demand for other public facilities. As such, there would be no impact, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

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

The project area incorporates an approximately 756-acre area that straddles Las Trampas Ridge. The proposed project consists of appending 756 acres of land into Las Trampas; trail connections and access points; and seeps, ponds, and wetlands restoration and enhancement. The project area consists of: 1) landbanked property that will be open to the public, 2) property that is currently open to the public, and 3) land that will be conveyed to the Park District and subsequently opened to the public or placed in landbank. The project would include a total of 4.9 miles of new trails that would be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). The 4.9 miles of trails would also incorporate portions of existing trail alignments, where these alignments would reduce the need for new trail construction to complete gaps. The project would also include an additional 1.8 miles of trails that are currently open to the public.

In addition, the proposed project would include a staging area on the Park District's Chen property. The approximately 0.62-acre staging area would have a capacity of 25 vehicles and would be designed and constructed to Park District standards. The approximately 0.25-acre graded portion of the staging area would be located at the site of an existing cattle corral, a previously-disturbed site. Improvements would include a two-stall vault toilet, two ADA parking stalls, gates and fencing, park benches, and an informational bulletin board panel.

Implementation of the proposed project would provide additional trails and enhance public accessibility to Las Trampas. The proposed project would result in an increase in visitors at Las Trampas, but would not result in an increase in the use of other existing facilities within unincorporated Contra Costa County, the City of San Ramon, or the Town of Danville. Increased use of Las Trampas is not anticipated to result in a physical deterioration of park facilities. Therefore, the proposed project would have a less than significant impact on existing neighborhood and regional parks and other recreational facilities, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The proposed project would provide additional trail connections and access points with additional parking and restrooms to better accommodate park visitor demand. Visitors at the project site would be served by an appropriate level of trails and parking facilities. Existing recreational use of Las Trampas would be supported and enhanced by the proposed project and other existing recreational facilities would not be physically impacted by development of the proposed project. The project itself would not require the construction of new recreational facilities to serve demand for recreational and open space opportunities in the same way that a residential or mixed-use project would because the project is intended to serve an existing regional and local population and to enhance access to existing facilities. District operations and maintenance staff would continue to patrol and maintain this area. Therefore, this impact would be less than significant, as the proposed project would add to existing parkland area and would add access point and trails to increase recreational opportunities for the surrounding communities. This topic will not be discussed in the EIR.

3.17 TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

LSA prepared a Circulation Assessment for the proposed project, included as Appendix C. Several of the following responses are based on the findings presented in the report. The report analyzed traffic impacts of the proposed project at 4 intersections during Saturday peak hour conditions. The Saturday peak hour is defined as the one hour of highest traffic volumes occurring between 11:30 a.m. and 12:30 p.m. The Circulation Assessment also evaluated potential impacts related to bicyclist, and pedestrian access and safety.

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

Evaluation of the signalized intersection of Bollinger Canyon Road and Crow Canyon Road within San Ramon uses the City of San Ramon's prescribed Intersection Capacity Utilization (ICU) peak-hour intersection capacity methodology. This methodology is a capacity based methodology that derives a capacity utilization ratio from demand inputs in the form of vehicular peak-hour volumes and capacity inputs from intersection controls and geometrics. The Traffix software package has been used to analyze ICU based vehicular peak-hour level of service (LOS) at the intersection of Bollinger Canyon Road and Crow Canyon Road.

LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations where LOS A represents free-flow activity and LOS F represents overcapacity operation.

Evaluation of vehicular operations at unsignalized intersections along Bollinger Canyon Road will use the CCTA-prescribed 2010 Highway Capacity Manual (HCM) peak-hour intersection operations methodology. This methodology is a delay-based analysis methodology that relies on inputs such as intersection controls and geometrics and vehicular peak-hour volumes and ultimately produces an LOS grade. Table 3.L presents the relationship between delay and LOS.

Table 3.L: Level of Service for Signalized and Unsignalized Intersections

Level of Service	Signalized Intersection Delay per Vehicle (seconds)	Unsignalized Intersection Delay per Vehicle (seconds)
A	≤ 10.0	≤ 10.0
B	10.0–20.0	10.0–15.0
C	20.0–35.0	15.0–25.0
D	35.0–55.0	25.0–35.0
E	55.0–80.0	35.0–50.0
F	> 80.0	> 50.0

Source: *Southern Las Trampas Land Use Plan Amendment Circulation Assessment* (LSA, May 2018).
LOS = Level of Service

Vehicular peak-hour analysis criteria for each study area facility depend on the jurisdiction where they are located. All study locations are located in the City of San Ramon and Town of Danville's General Plans; both consider LOS "D" to be the limit of acceptability. The CCTA Congestion Management Program (CMP) considers LOS "E" to be the limit of acceptability for CMP facilities.

Although some of the study area locations are located in unincorporated Contra Costa County, this study uses LOS "D" as the limit of acceptability at these locations in keeping with the standards of the City of San Ramon and Town of Danville.

Trip Generation. The daily and peak-hour trips for the project were generated using the data collected along Bollinger Canyon Road, north of Deerwood Drive. While nationally used trip generation rates such as those published by the Institute of Transportation Engineers (ITE) may be applicable for nationally comparable uses such as a typical single-family household, church, or small community park, nationally surveyed rates were not used to forecast project traffic. These rates were not used to forecast project traffic because large recreational parks often wildly differ from each other in popularity, level of usage, and general interest due to characteristics that are specific to each individual large park environment and level of amenity.

To forecast new project trips from existing data, quantifiable changes such as trail mileage, acreage, and parking spaces resulting from the project were considered against existing preserve trip generation. Existing weekend peak hour preserve traffic was counted as 165 (93 inbound and 72 outbound) trips during the peak hour from 11:30 a.m. to 12:30 p.m. on Saturday, October 7, 2017. This existing trip number includes congregate care, residential, and commercial uses along Bollinger Canyon Road north of Deerwood Drive that may have been active during this peak hour and therefore provides a conservative estimate of the preserve's existing Saturday peak-hour traffic generation. The use of this traffic count as an estimate of preserve traffic is considered applicable because information provided by District staff regarding Saturday activity at the non-preserve uses along Bollinger Canyon Road such as The Ranch at Little Hills event center, the Corrie Companies, the Las Trampas Stables, the Child Day School preschool, and Brookdale senior living facility would have generated nominal vehicular traffic during the data collection period.

Based on existing preserve trail mileage, acreage, and parking spaces, trip generation rates were developed for each park unit type, as shown in Table 3.M.

Table 3.M: Southern Las Trampas Preserve Saturday Trip Generation Rates

Unit Type	Units	ADT	Saturday Peak Hour		
			In	Out	Total
Existing Trail Mileage	29.92	39.44	3.11	2.41	5.52
Existing Total Acreage	4,116	0.29	0.02	0.02	0.04
Existing Parking Spaces[1]	95	0.98	0.98	0.76	1.74
Existing Las Trampas Preserve Trips		1,180	93	72	165

Source: *Southern Las Trampas Land Use Plan Amendment Circulation Assessment* (LSA, May 2018).

Note: Existing trail mileage, total acreage, and number of parking spaces were based on the existing Las Trampas Regional Wilderness Trail Map, the Las Trampas LUPA project description, and an LSA staff field visit, respectively.

[1] Parking supply total includes the stalls of the Bollinger Canyon Staging Area, the Elderberry Trailhead, Chamise Trailhead, and the 500-foot long roadside parking area on Bollinger Canyon Road adjacent to the Bollinger Canyon Staging Area.

ADT = average daily traffic
LUPA = Land Use Plan Amendment

The project's trip generation potential, based on its associated increases to mileage, acreage, and parking spaces, were developed and shown below in Table 3.N.

Table 3.N: Las Trampas LUPA Trip Generation Potential

Unit Type	Units	ADT	Saturday Peak Hour		
			In	Out	Total
Additional Las Trampas LUPA and Other Public Trail Mileage	8.5	335	26	21	47
Additional Las Trampas LUPA Acreage	760	218	17	13	30
Additional Parking Spaces (Chen Staging Area and Faria Trailheads)	37	460	37	27	64

Source: *Southern Las Trampas Land Use Plan Amendment Circulation Assessment* (LSA, May 2018).

ADT = average daily traffic
LUPA = Land Use Plan Amendment

In an effort to provide a worst-case, most-conservative analysis, the vehicular operations analysis uses the trip generation potential of the project based on additional parking spaces.

Intersection Impacts. Project trips were distributed based on existing travel patterns and the location of the proposed parking facilities. New project trips were then added to existing and existing plus future projects baseline conditions to determine the project's potential impact on vehicular operations, as shown in Table 3.O.

As shown in Table 3.O, the addition of project traffic to both existing and existing plus future projects conditions would not result in any unacceptable vehicular operational levels for any of the study intersections. Therefore, the project would result in a less-than-significant impact on the study intersections, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Table 3.O: Plus Project Saturday Peak Hour Intersection Level of Service Summary

Intersection	Existing		Existing + Project		Existing + Future Projects		Existing + Future Projects + Project	
	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS
1. Bollinger Canyon Road/Chen Staging Area[1]	–	–	9.6	A	–	–	9.6	A
2. Bollinger Canyon Road/Faria Trailhead West-East[1]	–	–	10.2	B	–	–	10.2	B
3. Bollinger Canyon Road/ Deerwood Drive[1]	9.4	A	9.8	A	10.0	B	10.5	B
4. Bollinger Canyon Road/Crow Canyon Road	0.233	A	0.243	A	0.245	A	0.252	A

Source: *Southern Las Trampas Land Use Plan Amendment Circulation Assessment* (LSA, May 2018).

[1] Unsignalized intersection. Delay values are presented in seconds per vehicle.

ICU = intersection capacity utilization
sec = seconds
LOS = level of service
– = location does not exist under this scenario

Transit, Bicycle and Pedestrian Facilities. According to the Park District Master Plan, expanding unpaved multi-use trail system is a key Regional Facilities and Trails objective. The proposed project would not include any activities or construction of structures that would decrease the performance or safety of public transit, bicycle, or pedestrian facilities. Bicycle and pedestrian facilities, such as class II bike lanes, class III bike route designations, and sidewalks do not exist along Bollinger Canyon Road in the vicinity of the preserve. According to publicly available global positioning system (GPS) based qualitative data from Strava.com and the 24-hour traffic counts collected, recreational cyclists use Bollinger Canyon Road to reach the Bollinger Canyon Staging Area. The shoulders of Bollinger Canyon Road are unpaved and do not provide continuous pedestrian connectivity. Pedestrian users of the preserve, such as hikers and dog walkers, arrive at the preserve primarily via passenger car.

San Ramon is served by bus via the CCTA’s County Connection bus service. County Connection Route 36 has bus stops at the corner of Bollinger Canyon Road and Crow Canyon Road. Route 36 runs every hour from 6:00 a.m. to 9:00 p.m., Monday through Friday, and connects the San Ramon Transit Center to the West Dublin/Pleasanton Bay Area Rapid Transit (BART) station. The closest BART station is the West Dublin/ Pleasanton station in Dublin near the intersection of Dublin Boulevard and Golden Gate Drive, approximately 7 miles south of the preserve via I-680. The Route 36 bus and BART have sufficient capacity to accommodate additional transit trips anticipated as a result of this project.

Public transit, bicycle, and pedestrian facilities in the project area are not expected to be affected by the operation or construction of the proposed project. Once the project opens, pedestrians, bicyclists, equestrians, and dog-owners would have increased access to regional recreation destinations. Therefore, implementation of the proposed project would not conflict with any adopted policies, plans, or programs regarding bicycle or pedestrian facilities. This impact would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

California Senate Bill 743 (SB 743) was signed in 2013 and required a move away from vehicle delay and LOS within CEQA transportation analysis. This bill required the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts. OPR identified VMT per capita and VMT per employee as the new metrics for transportation analysis. The goal of this bill is to bring State transportation analysis in line with promoting State goals of reducing greenhouse gas emissions through the reduction of VMT.

The draft SB 743 guidelines provide direction for VMT thresholds for select land use types: residential, office and retail. The current recommendations do not identify other uses, such as parks and passive open space.

However, in an effort to provide information on the project's potential effect on regional VMT, the project's existing and potential VMT has been calculated based on the county average daily VMT and the Countywide average trip length for uses similar to the project. The project's VMT is achieved by calculating the park's total VMT and dividing by the number of users. The total VMT is estimated by multiplying the number of daily vehicle trips, previously described in the Trip Generation section of this analysis, by the average trip length. According to the CalEEMod, the average trip length of non-residential service uses in rural Contra Costa County is 6.6 miles. CalEEMod is a statewide land use emissions computer model that was developed for the California Air Pollution Officers Association (CAPCOA) that quantifies emissions from land use projects based on input such as trip lengths from local air districts. The project area is considered rural as it is outside of the boundaries for what is considered urban in Contra Costa County in the CalEEMod model.

Based on this information from CalEEMod and project trip generation data from this report, a total project VMT can be calculated. The potential daily trips associated with the project, shown previously in Tables D and E, is 1,640 trips (1,180 existing and 460 proposed). Estimating 1,640 daily trips at an average trip length of 6.6 miles per trip results in a total daily project VMT of 10,824.

According to the CCTA Regional Transportation Plan, the county average daily VMT per capita is 20 miles.

The current schedule would indicate Administrative Law rulemaking completed in 2018. The OPR currently states that agencies may opt in after this time, and that all agencies must adopt the SB 743 VMT CEQA approach by July 1, 2020. Therefore, the EBRPD is not required to conduct a VMT CEQA analysis for this project at this time.

Because the project is a park and passive open space use that is unlike SB 743 land uses such as residential, office, and retail, an SB743 compliant VMT analysis has not been conducted at this time. This topic will not be discussed in the EIR.

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

The following discussion evaluates the safety of the study area and proposed trailheads for vehicles, bicyclists, and pedestrians. The analysis included input from District staff familiar with the Las Trampas Preserve area. District staff has made the observation that the accidents that occur on Bollinger Canyon Road tend to be speed related and result in vehicles running off the road. In addition to this local input, LSA conducted a review of reported accidents in the study area, as described below.

Accident History. As described in the Circulation Assessment, LSA collected accident data for Bollinger Canyon Road from Crow Canyon Road to its northern terminus at the Bollinger Canyon Staging Area from the Safe Transportation Research and Education Center's online Transportation Injury Mapping System (TIMS). A total of nine accidents were reported for the 5-year period from January 1, 2012, to December 31, 2016. This period represents the most recent 5-year period for which TIMS can provide a complete accident history.

Only three of the nine reported accidents occurred along Bollinger Canyon Road, with the six remaining accidents a result of unsafe behavior along Crow Canyon Road. The three accidents on Bollinger Canyon Road were caused by unsafe speeds or improper turning and are consistent with Park District staff observations. The six remaining accidents at the intersection of Bollinger Canyon Road and Crow Canyon Road were also attributed to unsafe behavior, with all of the passenger car involved accidents caused by either unsafe speeds or drug and alcohol influence.

Therefore, LSA determined no consistent cause other than unsafe behavior for either the three accidents on Bollinger Canyon or the six accidents at the intersection. This conclusion indicates that the causes of these accidents are not a result of pronounced hazard in the roadway's geometry or structure. Additionally, the number of reported accidents along Bollinger Canyon Road, three over the course of five years, is considered low. Detailed collision reports are included as an appendix to the Circulation Assessment. This topic will not be discussed in the EIR.

Chen Staging Area Safety Review. The Caltrans Highway Design Manual (HDM), Sixth Edition[32] recommends an unobstructed corner sight distance on a 60 mph road of 660 feet. Even though Bollinger Canyon Road has a posted speed limit of 45 mph, a 60 mph sight line distance was taken into consideration in preliminary engineering plans for the staging area from the engineering firm of Carlson, Barbee & Gibson. The latest speed counts along Bollinger Canyon Road conducted by the Contra Costa County Public Works Department reveals 85th percentile speeds of 46 to 50 mph, which are in line with the posted speed limit of 45 mph. Specifically, this count was collected along Bollinger Canyon Road 4,500 feet north of Deerwood Drive from March 25, 2014, to March 26, 2014. Given the flat and straight roadway geometric of Bollinger Canyon Road adjacent to this staging area, a sight distance design speed of 60 mph is not unreasonable. Based on a review of the sight distance lines from the Chen staging area driveway, LSA determined that the Chen Staging

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[32] California Department of Transportation, 2017. *Highway Design Manual,* Sixth ed. November 20.

Area driveway location provides unobstructed sight lines to detect vehicles 660 feet to both the north and south.

The Chen staging area is set back behind the County right-of-way for Bollinger Canyon Road, approximately 35 feet from the traveled roadway. This setback between the edge of the roadway and the County right-of-way is currently unpaved, level, all-weather gravel and can provide adequate space for wider-turning vehicles. Additionally, this setback provides the opportunity to pave a deceleration lane for inbound vehicles if determined necessary by the County.

The parking lot meets County requirements for off-street parking lots of 18-foot-long parking stalls accessed from a 25-foot-wide drive aisle.

Advance signage may be provided approximately where the sight distance lines end to inform passing drivers of the upcoming staging area. This topic will not be discussed in the EIR.

Trail Assessment. Mobility safety of different types of trail users does not end in the vehicular parking areas. This section addresses mobility-related safety concerns between different types of trail users on the trails in the proposed project. Table 3.P summarizes all trails, both existing and proposed, that could be affected by users at the Chen staging area.

Mobility issues that can affect the safety of various users include the potential speed differential and user conflict points between bicyclists, equestrians, and pedestrians (e.g., runners, hikers, dog walkers) at staging areas, access points, and other locations where motorized vehicles may be present. Existing trail usage observations reveal that pedestrians exclusively use the majority of trails in the preserve. Mountain biking and equestrian users make up a nominal percentage of preserve users. The proposed trails shown in Table 3.P would not be anticipated to result in a deviation from the existing mode of preserve usage. As such, potential conflicts between different types of trail users are anticipated to be minimal on these trails, as they are largely restricted to pedestrians.

Future trails would be multi-use and open to equestrian and mountain bike use. Trail design should account for features conducive to the International Mountain Biking Association's (IMBA) guidance on trail etiquette and safety for equestrians, hikers, and mountain bikers.[33] If desired, the Park District can investigate the possible implementation of IMBA multi-use trail signs to better promote safe trail usage.

Based on the analysis of transportation operations, accident history, and compliance with applicable safety guidance at access points, the development of the proposed project is not anticipated to result in any significant safety impacts. Therefore, the proposed project would not substantially increase hazards due to a design feature or incompatible use and this impact would be considered less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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[33] International Mountain Biking Association. "Rules of the Trail". Website: www.imba.com/ride/imba-rules-of-the-trail (accessed June 14, 2019).

Table 3.P: Las Trampas LUPA Trails

Trail [1]	Status	Type	Use	Width (ft)	Length (mi)
Calaveras Ridge Trail through Chen and Elworthy properties	Open	Multi-use Road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	1.3
Trail through Elworthy scenic easement on private property	Open	Multi-use Road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	0.5
Chen Trail	Proposed	Multi-use Road	● Multi-use (hike, bike, equestrian, dogs off-leash) ● EVMA	12	1.1
Peter’s Ranch Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.8
Podva Trail	Existing (to be opened to the public)	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	12	0.9
Podva Connector Trail	Existing Park District access road only; proposed for seasonal public use	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	4	0.5
Podva Ridge Connector Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs on-leash)	4	0.8
Chen Loop Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.8
Chen Ridge Connector Trail	Proposed	Multi-use Trail	● Multi-use (hike, bike, equestrian, dogs off-leash)	4	0.9

Source: *Southern Las Trampas Land Use Plan Amendment Circulation Assessment* (LSA, May 2018) and District staff.

[1] Faria_1proposed and Faria_2proposed are approximate alignments— not yet finalized.

[2] Other Public Trails will be managed and maintained by the City of San Ramon and not part of this project; however, they have been referenced as part of the trails that can be impacted by the project.

EBRPD = East Bay Regional Park District
EVMA = emergency vehicle and medical access
GHAD = Geologic Hazard Abatement District
LUPA = Land Use Plan Amendment
Rec = recreational

d. Would the project result in inadequate emergency access?

The project would include a total of 4.9 miles of new trails that will be open to the public (3.5 miles of this would be newly constructed trails while 1.4 miles would be from existing roadbed). 1.1 miles of this would incorporate EVMA, and 3.8 miles would be natural surface, multi-use trails for hikers, bicyclists, and equestrian.

To help offset the challenging access to the steep, rugged terrain leading to ridge tops, park usage accommodations would conform to the Park District policy on use of OPDMD. In addition, trails would be rated according to the UTAP and the State Park Accessibility Standards when evaluating trail difficulty and presence of obstacles (e.g., boulders, low overhanging limbs).

Therefore, implementation of the proposed project would include additional EVMA trails thereby improving emergency vehicle access within the project site. In addition, emergency access would still be possible along all roadways during and after construction of the proposed project. Additional traffic due to the operations or construction of the project is not expected to significantly impact any of the surrounding roadways or intersections. Therefore, the proposed project would not result in inadequate emergency access, this impact would be considered less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

3.18 TRIBAL CULTURAL RESOURCES

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

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

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

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

As stated in Section 3.5, Cultural Resources, an HRE was prepared in compliance with CEQA regulations and the Park District Master Plan policies. EDS utilized research obtained at the Northwest Information Center (NWIC) of the California Historical Information Systems (CHRIS), San Ramon Valley Historical Society, and Contra Costa County Historical Society, as well as various online sources to obtain details regarding previous property ownership and to develop a historic context in which to evaluate the historic significance of the existing built environment resources within the Chen property. EDS also conducted an intensive level field survey to document the existing circa 1950 barn and corrals to formulate assessments within the current setting. In addition, Ms. De

Shazo completed Department of Parks and Recreation (DPR) 523 forms for the circa 1950 barn, corrals, and associated features.

Based on the results of the record search and field survey, it was determined that the built-environment resources within the Chen property are not included in a local register of historical resources, and do not qualify for listing on the CRHR. Therefore, the resource does not meet the definition of a Historical Resource under CEQA. Therefore, this impact would be less than significant.

If such resources were identified during construction and found to be a tribal cultural resource, any impacts to the resource resulting from implementation of the project would be potentially significant. However, as noted in Section 3.5, Cultural Resources, implementation of Mitigation Measures CUL-1 through CUL-3 would protect previously unrecorded or unknown cultural resources, including Native American artifacts and human remains, should these be encountered during project construction. As a result, the project would result in a less-than-significant impact to tribal cultural resources. This topic will not be discussed in the EIR.

3.19 UTILITIES AND SERVICE SYSTEMS

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

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

Water Infrastructure. Water service in Contra Costa County is provided either by special service districts or by nine municipalities. Two major water providers are in the County: the East Bay Municipal Utility District (EBMUD) and the Contra Costa Water District (CCWD). EBMUD delivers water directly to its customers after it is treated. CCWD provides treated water services to several cities in the Central County area and several city and other water agencies buy "raw," untreated water from CCWD, treat it, and then sell it to their own local customers. CCWD is not limited to providing domestic urban water supplies. Other services include wholesale treated water, reclaimed water, and industrial, agricultural and landscaping irrigation water supplies.

EBMUD provides treated water to all of western Contra Costa County, the Lamorinda area, portions of Walnut Creek and Pleasant Hill, and all of the San Ramon Valley. EBMUD is the largest water district in Northern California and serves well over a million customers in Alameda and Contra Costa County. EBMUD brings water from the Mokelumne River watershed in the Sierra Nevada through three 81-mile aqueducts to the East Bay.

EBMUD has adopted a Water Supply Management Program which identifies the security, shortage and safety and health problems associated with its water supply. Concurrently, EBMUD began a comprehensive work program to update the Water Supply Management Program and to study possible water supply improvement projects to solve these projects. These proposed programs consider the needs of the existing ultimate service boundary to the year 2020. The programs do not consider extension of water service outside the ultimate boundary.

The other major water supplier, CCWD, supplies treated water to all urbanized areas in Central Contra Costa County that are not serviced by EBMUD: the northern and eastern portion of Walnut Creek, most of Pleasant Hill, all of Concord and Clayton, the Hidden Lakes area of Martinez, and the unincorporated areas of Vine Hill, Pacheco, Clyde, Port Chicago, and along Marsh Creek Road to the Morgan Territory.

The CCWD treated water system consists of a San Joaquin Delta intake at Rock Slough, a river intake and pumping station at Mallard Slough near Bay Point, Mallard Reservoir north of Concord where raw Delta water is stored, and a modern water treatment plant near Mallard Reservoir. The Las Vaqueros Reservoir located in East County provides a high quality water supply during the dry months. The CCWD wholesales raw water to industry and several municipal water companies, including the cities of Antioch, Pittsburg, and Martinez. Other agencies which buy untreated water from CCWD are the Southern California Water Company (serving Bay Point) and the Oakley Water District.

The third source of water in Contra Costa County is groundwater supplies. Several small public and private water companies extract underground water through wells and convey it to nearby customers. Most of these are in East County areas such as Bethel Island, Knightsen, Byron, and Discovery Bay. Periodic droughts experienced by the region have underlined the importance of water conservation efforts. Contra Costa has adopted specific water conservation regulations that apply to all new development in unincorporated areas. These regulations require new development to limit lawn areas and to install drought resistant landscaping, among other conditions of approval for development projects.

The proposed project would not include water service at the proposed staging area. Trail work areas would not be irrigated during or following construction, and trail use activities associated with new and established trails would not require development of water systems. As a result, impacts associated with the development of new water supply systems would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

Wastewater Infrastructure. As discussed in Section 3.19.a, Central Contra Costa Sanitary District (Central San) provides wastewater collection, treatment, and disposal services; recycled water production and distribution; and household hazardous waste collection for Alamo, Danville, Lafayette, Moraga, Orinda, Pleasant Hill, Walnut Creek; portions of Martinez and San Ramon; and unincorporated communities within central Contra Costa County. Central San also cleans the wastewater from the cities of Concord and Clayton, and they maintain their collection systems.

The proposed project would generate wastewater from restroom usage at the vault toilets. Wastewater generated by the project would be transferred to the Lake Chabot Regional Park for disposal into Castro Valley Sanitary District's sewer system. Wastewater generated by the proposed project would be minimal. Therefore, Castro Valley Sanitary District's sewer system would have sufficient capacity to serve the proposed project. As a result, the proposed project would not require or result in the construction of new facilities or expansion of existing ones and impacts would be less than significant. No mitigation measures would be required. This topic will not be discussed in the EIR.

Storm water Drainage. The proposed project would include minor grading activities, creek restoration, and construction of a new staging area that would slightly alter drainage patterns. Compliance with the Construction General Permit and regular trail maintenance to prevent erosion would ensure that changes to drainage patterns, and the Park District's applicable technical specifications (identified in Table 3.F of this Initial Study), would result in less-than-significant impacts related to erosion and siltation. As discussed above, the proposed project would create a very limited amount of new impervious surfaces, and the runoff from the new impervious surfaces would be directed to surrounding pervious surfaces. Therefore, the proposed project would result in a less-than-significant impact related to storm drain facilities, and no mitigation measures would be required. This topic will not be discussed in the EIR.

Electric Power, Natural Gas, or Telecommunications Facilities. The proposed project does not include relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities. Therefore, the proposed project would result in a less-than-significant impact related to electric power, natural gas, or telecommunication facilities, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

Construction of the proposed project would temporarily require small amounts of water for cleanup activities. During trail construction, water would be provided via a water truck as no utility lines exist along the proposed trail alignment. Use of water at the trails would cease when construction is complete. Sufficient water supplies are available to provide for the project's minimal water needs during the construction phase of the project.

In addition, the proposed project would not include water service to the project site except for water cattle troughs, and trail work areas would not be irrigated during or following construction. In 2018, a Natural Resources Conservation Service (NRCS) project developed a water distribution system in Las Trampas that provided spring-fed water into a water storage tank that gravity fed the cattle troughs. Revegetation seeding would be used to limit erosion would be planted in the fall and would be established during winter rains. Similarly, staging area landscaping may require temporary irrigation until plants are established. Trail use activities associated with new and established trails would not require development of water systems. As a result, impacts associated with the development of new water supply systems would be less than significant and no mitigation would be required. This topic will not be discussed in the EIR.

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

As discussed above in response to 3.19.a, the proposed project would result in minimal restroom usage at the vault toilets. Wastewater generated by the project would be transferred to the Lake

Chabot Regional Park for disposal into Castro Valley Sanitary District's sewer system. Therefore, impacts related to the capacity of the existing wastewater treatment plant would be less than significant and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

Solid waste collection services for the Project area are currently regulated by the Central Contra Costa Solid Waste Authority (CCCSWA). Republic Services, formerly called Allied Waste Services, is responsible for the collection, transfer, and disposal of residential and commercial garbage, recycling, and organics in Lafayette, Moraga, Orinda, Walnut Creek, and surrounding unincorporated communities of Contra Costa County.

Presently, three separate landfill sites are disbursed geographically throughout Contra Costa County, with one site serving West County, one serving Central and South County, and another serving East County. The landfill closest to the project site is located at 4001 North Vasco Road in Livermore, CA 94551.

To minimize the quantity of solid waste that ends up in landfills the Park District has implemented several strategies for dealing with solid waste to facilitate compliance with state and local laws. These waste reduction strategies include: 1) using chippers to reduce the volume of green waste and allowing this material to remain on-site for reuse as mulch; 2) collecting construction and demolition (C&D) materials at the Tilden Corporation Yard or the South County Corporation Yard where they can be co-mingled (mixed together) and then taken to a Recycling and Transfer Station for recycling; and 3) collecting metal scraps for recycling either through drop off at one of four District sites or when there is a one-time need for collecting large amounts of metal scraps, having a recycling company drop off a temporary metal scrap bin, that they will remove when the bin is full.

To monitor solid waste in District parklands, park staff coordinates all trash, compost and recycling collection volumes and submits this data for tracking.

Regular trash collection services would be provided to the project site and public littering or dumping of any material onto Las Trampas is prohibited. Illegal trash is removed by District maintenance crews and then properly disposed. Although use of Las Trampas would increase with development of a new staging area and additional trails, new trash and recycling receptacles would be provided to serve the increased demand. Because the amount of solid waste generated by the project would be minimal and because the Park District would properly dispose of any illegal littering, the proposed project would not affect landfill capacity and would comply with all statutes and regulations related to solid waste. This impact would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The California Integrated Waste Management Act of 1989 (AB 939) changed the focus of solid waste management from landfill to diversion strategies such as source reduction, recycling, and composting. The purpose of the diversion strategies is to reduce dependence on landfills for solid waste disposal. AB 939 established mandatory diversion goals of 25 percent by 1995 and 50 percent by 2000. The proposed project would be required to comply with all federal, State, and local regulations related to solid waste. Furthermore, the proposed project would be required to comply with all standards related to solid waste diversion, reduction, and recycling during project construction and operation of the project. Therefore, the proposed project is anticipated to result in less-than-significant impacts related to potential conflicts with federal, State, and local statutes and regulations related to solid waste. No mitigation measures would be required. This topic will not be discussed in the EIR.

3.20 WILDFIRE

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

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

Implementation of the proposed project would not result in the permanent modification of existing roadway alignments and includes features which would result in long-term improvements to park emergency access. Areas of Las Trampas would be closed to visitors when construction activities occur, such as the staging area. In the case that temporary lane closures would be required along Bollinger Canyon Road, the District would provide temporary traffic controls as appropriate to facilitate traffic flow and to permit the movement of emergency vehicles. Therefore, implementation of the proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. This impact would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

As discussed above in response 3.9.g., the majority of the project site is mapped by CalFire as being within a high fire severity zone, and very high fire severity zones are located northwest of the project site.[34] Portions of the Park District's Ordinance 38 pertain to fires and are summarized above in Table 3.E., included in Section 3.9, Hazards and Hazardous Materials. In addition, the 2001 Wildland Management Policies and Guidelines were developed to ensure the proper use and enhancement of wildland resources. The 2001 document includes several fire hazard reduction guidelines that require the Park District to use environmentally acceptable and economically

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[34] CalFire, 2007, op. cit.

feasible methods to maintain fuels at acceptable levels. The Park District considers a full range of options for managing wildland vegetation including grazing, prescribed fire, mechanical (mowing), chemical (application of herbicides), and biological methods that may include the use of native herbivores.

Implementation of Ordinance 38 and the Wildland Management Policies and Guidelines would ensure that potential impacts related to wildfires would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

The proposed project would result in the installation and maintenance of a new parking area, as well as recreational trails. As described above, the 2001 Wildland Management Policies and Guidelines were developed to ensure the proper use and enhancement of wildland resources. The 2001 document includes several fire hazard reduction guidelines that require the Park District to use environmentally acceptable and economically feasible methods to maintain fuels at acceptable levels. The Park District considers a full range of options for managing wildland vegetation including grazing, prescribed fire, mechanical (mowing), chemical (application of herbicides), and biological methods that may include the use of native herbivores.

Implementation of the Wildland Management Policies and Guidelines would ensure that potential impacts related to wildfires would be less than significant, and no mitigation measures would be required. This topic will not be discussed in the EIR.

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

As discussed above, the 2001 Wildland Management Policies and Guidelines were developed to ensure the proper use and enhancement of wildland resources. The 2001 document includes several fire hazard reduction guidelines that require the Park District to use environmentally acceptable and economically feasible methods to maintain fuels at acceptable levels. The Park District considers a full range of options for managing wildland vegetation including grazing, prescribed fire, mechanical (mowing), chemical (application of herbicides), and biological methods that may include the use of native herbivores. As a result, the potential impacts resulting from wildfires would be diminished, and the project would result in less-than-significant impacts related to exposing people or structures to risks of post-fire conditions. This topic will not be discussed in the EIR.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

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

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

The project site is located within an open space preserve that supports sensitive habitat and special-status species. Potentially jurisdictional drainages, ponds, and seasonal wetlands are also located along or adjacent to the proposed trail alignment. The EIR will evaluate the project's potential to have substantial adverse effects on special-status species, riparian habitat, protected drainages, ponds, and wetlands, and wildlife movement corridors and nursery sites, according to the criteria identified above for topics 3.4.a. through 3.4.d. Mitigation measures will be recommended as appropriate.

Implementation of Mitigation Measures CUL-1 through CUL-3 would ensure that potential impacts to cultural resources that could be uncovered during construction activities would be reduced to a less-than-significant level.

Implementation of Mitigation Measure GEO-1 would ensure that potential impacts to paleontological resources that could be uncovered during construction activities would be reduced to a less-than-significant level.

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

The proposed project's impacts would be individually limited and not cumulatively considerable due to the site-specific nature of the potential impacts. The potentially significant impacts that can be reduced to a less-than-significant level with implementation of recommended mitigation measures include the topics of air quality, cultural resources, hazards, and noise. These impacts would primarily be related to construction-period activities, would be temporary in nature, and would not substantially contribute to any potential cumulative impacts associated with these topics.

For the topic of air quality, potentially significant impacts to air quality standards associated with project construction would be reduced to less-than-significant levels with implementation of Mitigation Measure AIR-1.

For the topic of cultural resources, potentially significant impacts to archaeological resources would be reduced to less-than-significant levels with implementation of Mitigation Measures CUL-1, through CUL-3.

For the topic of geology and soils, potentially significant impacts to paleontological resources would be reduced to less-than-significant levels with implementation of Mitigation Measure GEO-1.

For the topic of hazards, with implementation of Mitigation Measure HAZ-1 to address potential impacts related to the accidental release of hazards into the environment impacts would be less than significant.

For the topic of noise, implementation of Mitigation Measure NOI-1 would reduce potential construction period noise impacts for sensitive receptors to less-than-significant levels.

For the topics of agriculture and forestry resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, transportation/traffic, tribal cultural resources, and utilities and service systems, the project would have no impacts or less-than-significant impacts, and therefore, the project would not substantially contribute to any potential cumulative impacts for these topics.

However, as discussed in this Initial Study, potentially significant impacts related to aesthetics and biological resources may result from the proposed project. These impacts, as well as any cumulatively considerable impacts that may result from the proposed project related to these issues, will be evaluated in the EIR.

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

The proposed project would not result in any environmental effects that would cause substantial direct or indirect adverse effects on human beings. No further analysis will be required in the EIR.

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APPENDIX A

AIR QUALITY IMPACT ANALYSIS

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SCREENCHECK DRAFT

AIR QUALITY IMPACT ANALYSIS

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT

EAST BAY REGIONAL PARK DISTRICT

LSA

October 2018

SCREENCHECK DRAFT

AIR QUALITY IMPACT ANALYSIS

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT
EAST BAY REGIONAL PARK DISTRICT

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October 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/m^3	micrograms per cubic meter
AAQS	Ambient Air Quality Standards
AB 197	Assembly Bill 197
AB 32	Assembly Bill 32 (2006 California Global Warming Solutions Act)
AQIA	Air Quality Impact Analysis
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
CalEPA	California Environmental Protection Agency
CAP	Climate Action Plan
CAT	Climate Action Team
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
EBRPD	East Bay Regional Park District
GDP	gross domestic product
GHGs	greenhouse gases
GWP	Global Warming Potential
HFCs	hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
LOS	levels of service
LUDP	Las Trampas Regional Wilderness Land Use Development Plan

LUPA	Land Use Plan Amendment
mg/m^3	milligrams per cubic meter
MMT	million metric tons
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_3	ozone
Pb	lead
PFCs	perfluorocarbons
PM_{10}	respirable particulate matter
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
SAP	Sustainability Action Plan
SB 32	Senate Bill 32 (California Global Warming Solutions Act of 2016)
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

AIR QUALITY IMPACT ANALYSIS

INTRODUCTION

LSA Associates, Inc. (LSA) has completed an Air Quality Impact Analysis (AQIA) for the proposed Southern Las Trampas Wilderness Regional Preserve (Las Trampas) Land Use Plan Amendment (LUPA) Project (project) within the East Bay Regional Park District (EBRPD or Park District). The LUPA would formally incorporate approximately 760 acres from five parcels into Las Trampas, which would expand the amount of open parkland in Las Trampas to a total of approximately 4,876 acres. The project is in the southern portion of Las Trampas in south-central Contra Costa County, on the western periphery of the San Ramon Valley within the City of San Ramon, Town of Danville, and unincorporated areas. A project overview map is included in Figure 1.

This AQIA has been prepared using methods and assumptions recommended in the *CEQA Air Quality Guidelines* of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, this analysis describes existing air quality, potential impacts generated by the project on local carbon monoxide (CO) levels, emissions generated from project-related sources, and regional air pollution. An air quality emission analysis was conducted using the California Emissions Estimator Model version 2016.3.2 (CalEEMod) to assess the potential air quality emissions associated with construction and operation of the project.

PROJECT DESCRIPTION

Project Goals and Objectives

The 2018 LUPA would serve as an amendment to the 1993 Las Trampas Land Use Development Plan. The main purposes of the 2018 LUPA are to:

- Formally append and open approximately 760 acres within five parcels into Las Trampas: Chen, Elworthy, Peter's Ranch, Faria, Podva;
- Evaluate one new staging area off of Bollinger Canyon Road located on the Chen parcel. The District is considering two locations for the staging area; however the Chen parcel is the District's preferred location. Therefore, this analysis focuses on the Chen parcel location for the proposed staging area;
- Evaluate two six-car trailhead lots off of Bollinger Canyon Road located on the Faria parcel; and
- Evaluate approximately 4.5 miles of proposed trail connections including defining final trail alignments, appropriate trail use and routine maintenance requirements.

The LUPA would be consistent with the District's guiding policy document, the 2013 Master Plan[2], which provides for the preparation of land use plans to: direct the long-term development and

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[1] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

[2] East Bay Regional Park District, 2013. *2013 Master Plan*. July 16.

management of individual parks; identify major facility development; and establish appropriate land use designations in accordance with the vision of the Park District.

The LUPA would serve as a supplement to the Las Trampas Regional Wilderness Land Use Development Plan (LUDP) adopted in November 1993, and the Las Trampas Regional Wilderness Resource Analysis adopted in August 1991. The Resource Analysis described and analyzed important natural and man-made resources in the parklands and identified resource and land planning issues for the LUDP. The LUDP provided policies and implementation measures for Las Trampas Regional Wilderness, Little Hills Regional Recreation Area, and the western end of the Las Trampas to Mount Diablo Regional Trail. The Peter's Ranch parcel acquired prior to the 1993 LUDP was briefly mentioned in the LUDP as the southern non-contiguous parcel.

Project Background

The project area is known for its steep topography and diverse natural resources. The steep and rugged hills with their many side ridges and valleys create a complex habitat for native species and provide a challenging experience for park visitors. The geographical center of the project area is Las Trampas Ridge, which rises 700 feet above Bollinger Canyon Road. In addition to the rugged topography, the project area includes numerous rock outcrops.

The project area consists of five parcels that would be appended to Las Trampas and includes three that the District currently owns: Peter's Ranch, Chen, and Elworthy. The Elworthy parcel is currently open to the public, and park visitors can access the Elworthy parcel from a 0.5-mile trail connector through a 182-acre Elworthy private property scenic easement. A 12-car staging area on the Elworthy scenic easement was constructed by the developer prior to District acceptance of the Elworthy parcel, and was opened to the public in 2015. The Peter's Ranch and Chen parcels are currently landbanked and are not open to the public.

Two additional parcels, Podva and Faria, would be dedicated to the District as mitigation for residential development projects. Thirty acres of the 96-acre Podva parcel would be under a conservation easement. The developer is providing to the District an approximately one-mile trail through the Podva parcel that connects to trails within Las Trampas, as well as a trailhead with on-street parking.

The entire 144-acre Faria dedication would be under conservation easement, with the exception of a trail connector to the Calaveras Ridge Trail, a trail loop on the western portion, and carve-outs for two six-car trailhead parking areas, which would be set aside for the District to develop additional public access points in the future. The long-term management plans associated with the conservation easements placed on these properties would be incorporated and referenced in the LUPA.

A project overview map is included in Figure 2 and the Chen Staging Area is shown in Figure 3.

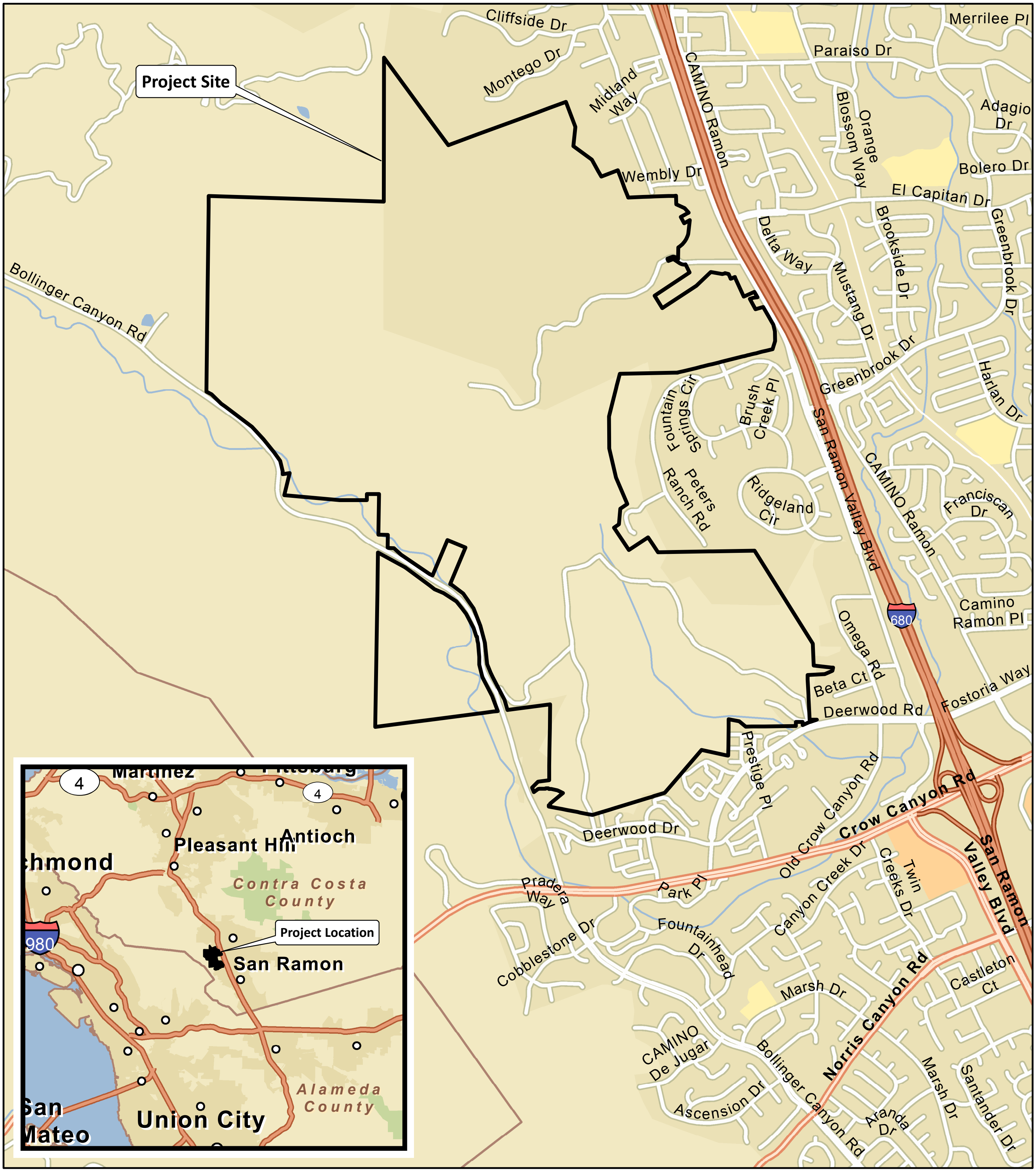

FIGURE 1

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0 1000 2000
FEET

SOURCE: ESRI StreetMap North America (2012).

Las Trampas LUPA Tech Studies

Project Location and Regional Vicinity Map

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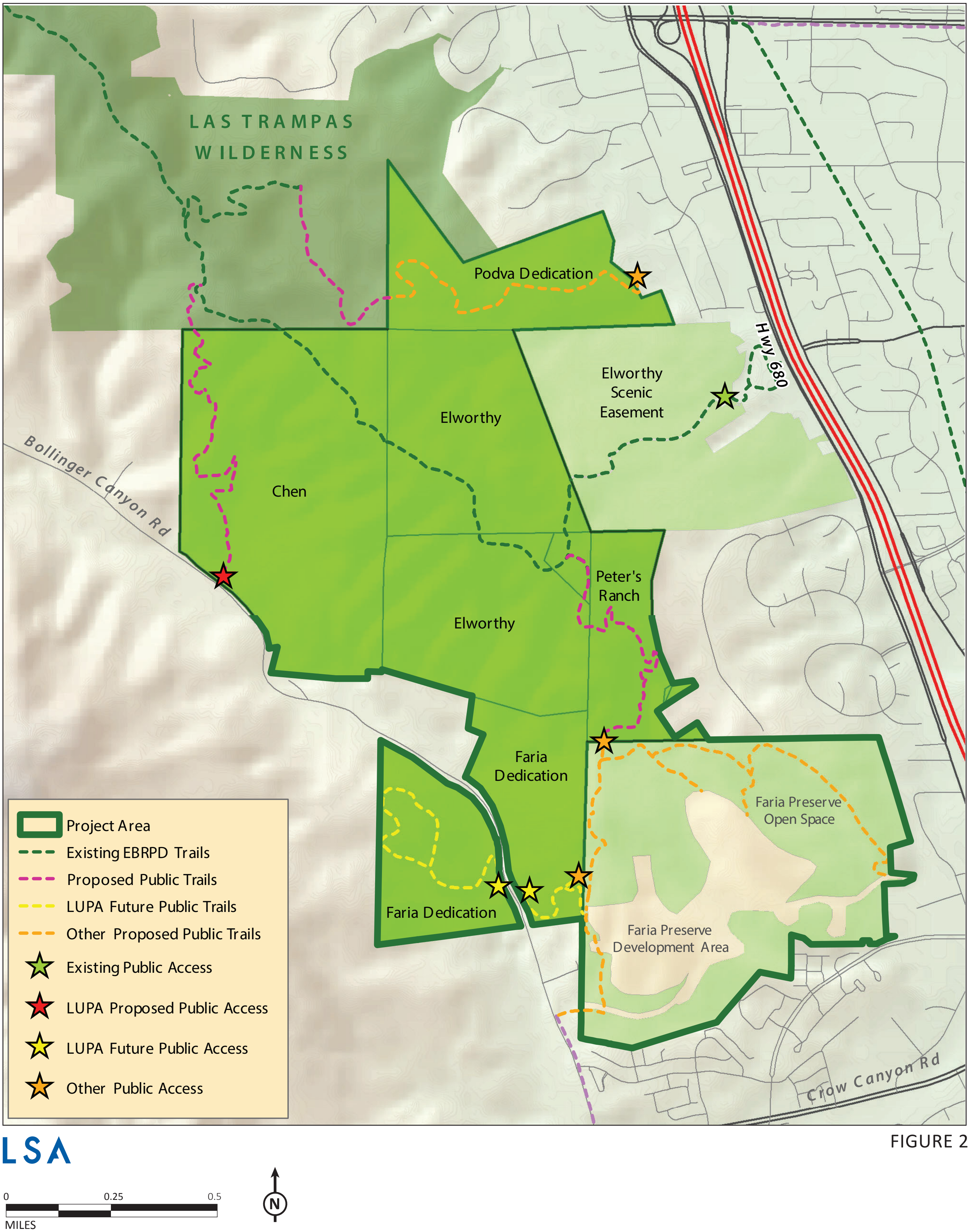

LSA

FIGURE 2

Las Trampas LUPA Tech Studies

Overview Map

SOURCE: EBRPD, AUGUST 2018.

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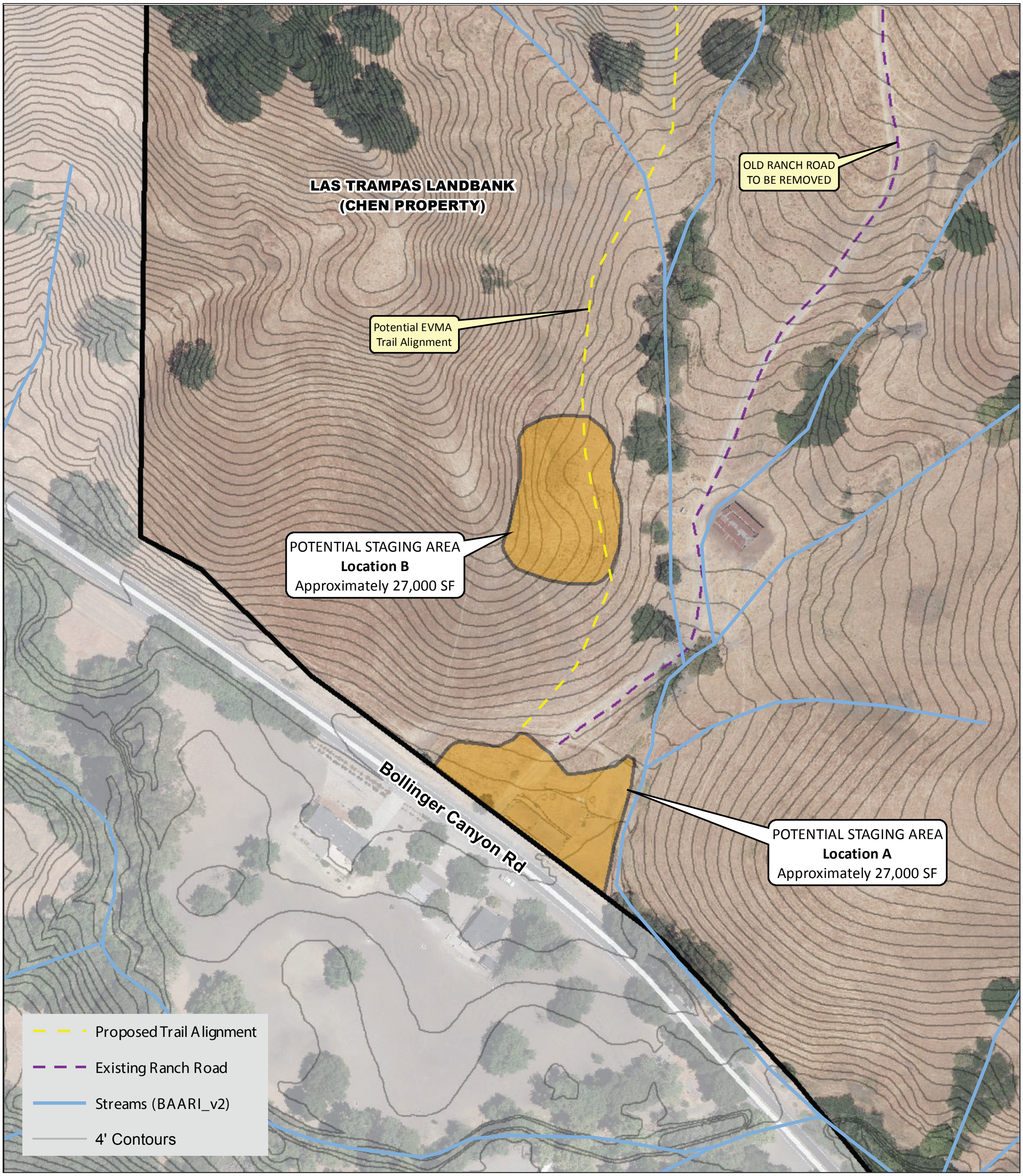

FIGURE 3

Las Trampas LUPA Tech Studies

Chen Staging Area

SOURCE: EBRPD, AUGUST 2018.

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Proposed Project

The project proposes to open to the public approximately two miles of narrow (single-track) trails and 2.5 miles of emergency vehicle and maintenance access (EVMA) roads for a total of approximately 4.5 miles of new trails. New trail construction would involve the use of mechanized equipment, such as a mini excavators and manual labor using hand tools.

The proposed project would divide the project area into natural and recreation/staging units, as defined by the District's 2013 Master Plan. The proposed project would designate the vast majority of the project area as a natural unit in which the land would remain undeveloped with the exception of recreational trails. Public infrastructure would be concentrated in the remaining land comprising of one staging area and two small trailhead lots. Proposed project elements would include the following actions:

- Develop a staging area on the Chen property to serve as the southern gateway to Las Trampas, with all-weather, compacted gravel parking to accommodate up to 25 vehicles, benches, restroom, trail connections, information signs and landscaping. The District is considering two locations for the staging area; however this location is preferred. Therefore, this analysis focuses on this location for the proposed staging area;

- Develop one 1.1-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from existing roads and trails and connecting to Bollinger Canyon Road via the Chen property;

- Develop one 0.5-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from the Podva property;

- Develop one 0.8-mile narrow trail segment of the Calaveras Ridge Trail on the Peter's Ranch property, connecting future City of San Ramon public trails on an adjacent property to existing trails on the Elworthy property;

- Develop two small parking trailhead areas to accommodate up to six cars on the Faria parcel with fencing, gates, and signs stating park regulations and hours; and

- Develop two trails to allow pedestrian, bicycle and equestrian access into Las Trampas from the six-car trailhead lots.

SUMMARY OF FINDINGS

This AQIA found that construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. In addition, GHG emissions released during construction and operation of the project are estimated to be lower than significance thresholds, and would not be cumulatively considerable. The proposed project would not result in significant air quality or GHG impacts.

AIR QUALITY BACKGROUND

This section provides background information on air pollutants and their health effects. It also provides brief information from the California Air Resources Board's *Air Quality and Land Use Handbook*[3] (ARB Handbook) and the supplement; *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*,[4] a brief description of the general health risks of toxics, and the CEQA significance criteria for project evaluation.

Air Pollutants and Health Effects

Both State and federal governments have established health-based Ambient Air Quality Standards (AAQS) for six criteria air pollutants:[5] carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O_3 and NO_2, are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally.

The primary pollutants of concern in the project area are O_3, CO, and PM. Significance thresholds established by an air district are used to manage total regional and local emissions within an air basin based on the air basin's attainment status for criteria pollutants. These emission thresholds were established for individual development projects that would contribute to regional and local emissions and could adversely affect or delay the Air Basin's projected attainment target goals for nonattainment criteria pollutants.

Because of the conservative nature of the significance thresholds, and the basin-wide context of individual development project emissions, there is no direct correlation between a single project and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds are those with regional effects, such as ozone precursors like nitrogen oxides (NO_x) and reactive organic gases (ROG).

Occupants of facilities such as schools, daycare centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality.

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[3] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.

[4] California Air Resources Board, 2017. *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory.*

[5] Criteria pollutants are defined as those pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Residential areas are considered more sensitive to air quality conditions, compared to commercial and industrial areas, because people generally spend longer periods of time at their residences, with greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise.

Ozone (O_3)

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_x. The main sources of ROG and NO_x, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide (CO)

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. CO transport is limited - it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Extremely high levels of CO, such as those generated when a vehicle is running in an unventilated garage, can be fatal.

Particulate Matter (PM)

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from manmade and natural sources. Particulate matter is categorized in two size ranges: PM_{10} for particles less than 10 microns in diameter and $PM_{2.5}$ for particles less than 2.5 microns in diameter. In the Bay Area, motor vehicles generate about half of the air basin's particulates, through tailpipe emissions as well as brake pad, tire wear, and entrained road dust. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the California Air Resources Board (ARB), studies in the United States and elsewhere have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, asthma attacks, and studies of children's health in California have demonstrated that particle pollution may significantly reduce lung function growth in children. The ARB also reports that statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[6]

Nitrogen Dioxide (NO_2)

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection.

Sulfur Dioxide (SO_2)

SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease. SO_2 also reduces visibility and the level of sunlight at the ground surface.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery factories. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the United States Environmental Protection Agency (USEPA) established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the USEPAs regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs do not have ambient air quality standards, but are regulated by the USEPA and ARB. In 1998, ARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. ARB has completed a risk management process that identified potential cancer risks for a range of activities and land uses that are

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[6] California Air Resources Board, 2011. *Fact Sheets*. Website: www.arb.ca.gov/html/brochure/pm10.htm October.

characterized by use of diesel-fueled engines.[7] High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, and schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

The BAAQMD regulates TACs using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated, and considered together with information regarding the toxic potency of the substances, in order to provide a quantitative estimate of health risks.[8] As part of ongoing efforts to identify and assess potential health risks to the public, the BAAQMD has collected and compiled air toxics emissions data from industrial and commercial sources of air pollution throughout the Bay Area. Monitoring data and emissions inventories of TACs help the BAAQMD determine health risk to Bay Area residents.

Ambient monitoring concentrations of TACs indicate that pollutants emitted primarily from motor vehicles (1,3-butadiene and benzene) account for slightly over 50 percent of the average calculated cancer risk from ambient air in the Bay Area.[9] According to the BAAQMD, ambient benzene levels declined dramatically in 1996 with the advent of Phase 2 reformulated gasoline. Due to this reduction, the calculated average cancer risk based on monitoring results has been reduced to 143 in 1,000,000; however, this risk does not include the risk resulting from exposure to diesel particulate matter or other compounds not monitored.

Unlike TACs emitted from industrial and other stationary sources noted above, most diesel particulate matter is emitted from mobile sources – primarily “off-road” sources such as construction and mining equipment, agricultural equipment, and truck-mounted refrigeration units, as well as trucks and buses traveling on freeways and local roadways. Agricultural and mining equipment is not commonly used in urban parts of the Bay Area, while construction equipment typically operates for a limited time at various locations. As a result, the readily identifiable locations where diesel particulate matter is emitted in the Bay Area include high-traffic roadways and other areas with substantial truck traffic.

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[7] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Available online at www.arb.ca.gov/diesel/factsheets/rrpfactsheet.pdf (accessed December 27, 2017). October.

[8] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggests a potential public health risk. Such an assessment generally evaluates chronic, long term effects, including the increased risk of cancer as a result of exposure to one or more TACs.

[9] Bay Area Air Quality Management District, 2013. *Toxic Air Contaminant Control Program Annual Report 2013 Volume 1.* Website: www.baaqmd.gov/research-and-data/air-toxics/annual-report (accessed December 27, 2017). May.

Although not specifically monitored, recent studies indicate that exposure to diesel particulate matter may contribute significantly to a cancer risk (a risk of approximately 500 to 700 in 1,000,000) that is greater than all other measured TACs combined.[10] The ARB's Diesel Risk Reduction Plan is intended to substantially reduce diesel particulate matter emissions and associated health risks through introduction of ultra-low-sulfur diesel fuel – a step already implemented – and cleaner-burning diesel engines. The technology for reducing diesel particulate matter emissions from heavy-duty trucks is well established, and both State and federal agencies are moving aggressively to regulate engines and emission control systems to reduce and remediate diesel emissions. ARB anticipates that by 2020 average statewide diesel particulate matter concentrations will decrease by 85 percent from levels in 2000 with full implementation of the Diesel Risk Reduction Plan, meaning that the Statewide health risk from diesel particulate matter is expected to decrease from 540 cancer cases in 1,000,000 to 21.5 cancer cases in 1,000,000. It is likely that the Bay Area cancer risk from diesel particulate matter will decrease by a similar factor by 2020.

Table 1: Sources and Health Effects of Air Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust • Natural events, such as decomposition of organic matter	• Reduced tolerance for exercise • Impairment of mental function • Impairment of fetal development • Death at high levels of exposure • Aggravation of some heart diseases (angina)
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust • High temperature stationary combustion • Atmospheric reactions	• Aggravation of respiratory illness • Reduced visibility • Reduced plant growth • Formation of acid rain
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight	• Aggravation of respiratory and cardiovascular diseases • Irritation of eyes • Impairment of cardiopulmonary function • Plant leaf injury
Lead (Pb)	• Contaminated soil	• Impairment of blood functions and nerve construction • Behavioral and hearing problems in children
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	• Stationary combustion of solid fuels • Construction activities • Industrial processes • Atmospheric chemical reactions	• Reduced lung function • Aggravation of the effects of gaseous pollutants • Aggravation of respiratory and cardiorespiratory diseases • Increased cough and chest discomfort • Soiling • Reduced visibility
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels • Smelting of sulfur-bearing metal ores Industrial processes	• Aggravation of respiratory diseases (asthma, emphysema) • Reduced lung function • Irritation of eyes • Reduced visibility • Plant injury • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board (2015).

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[10] Ibid.

Table 2: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]		Federal Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]
Ozone (O3)[h]	1-Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 μg/m^3)		0.070 ppm (137 μg/m^3)		
Respirable Particulate Matter (PM10)[i]	24-Hour	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		–		
Fine Particulate Matter (PM2.5)[i]	24-Hour	-		35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	12.0 μg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	–	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO2)[j]	Annual Arithmetic Mean	0.03 ppm (57 μg/m^3)	Gas Phase Chemiluminescence	53 ppb (100 μg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 μg/m^3)		100 ppb (188 μg/m^3)	-	
Lead (Pb)[l,m]	30-Day Average	1.5 μg/m^3	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 μg/m^3 (for certain areas)[l]	Same as Primary Standard	
	Rolling 3-Month Average[i]	–		0.15 μg/m^3		
Sulfur Dioxide (SO2)[k]	24-Hour	0.04 ppm (105 μg/m3)	Ultraviolet Fluorescence	0.14 ppm (for certain areas)	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-Hour	–		–	0.5 ppm (1300 μg/m^3)	
	1-Hour	0.25 ppm (655 μg/m^3)		75 ppb (196 μg/m^3)[k]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[k]	–	
Visibility-Reducing Particles[l]	8-Hour	See footnote n	Beta Attenuation and Transmittance through Filter Tape.	No Federal Standards		
Sulfates	24-Hour	25 μg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[j]	24-Hour	0.01 ppm (26 μg/m^3)	Gas Chromatography			

Table notes are provided on the following page.

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and 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.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For 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 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current national policies.

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

[d] Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[e] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

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

[g] Reference method as described by the USEPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the USEPA.

[h] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[i] On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24- hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[j] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[k] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

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

[m] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[n] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

°C = degrees Celsius
ARB = California Air Resources Board
USEPA = United States Environmental Protection Agency
ppb = parts per billion
ppm = parts per million
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Source: California Air Resources Board, 2016. https://www.arb.ca.gov/research/aaqs/aaqs2.pdf

Greenhouse Gases and Global Climate Change

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2° Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other greenhouse gases (GHGs) are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[11]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this air quality analysis, the term "GHGs" will refer collectively to the six gases listed above only.

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[11] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table 3 shows the GWP for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

Table 3: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-Year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC* (Intergovernmental Panel on Climate Change, 2007).

The following discussion summarizes the characteristics of the six GHGs and black carbon.

Carbon Dioxide (CO_2)

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic out gassing, decomposition of organic matter and evaporation from the oceans. Human caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere.

In 2012, CO_2 emissions from fossil fuel combustion accounted for approximately 94 percent of U.S. CO_2 emissions and approximately 86.5 percent of California's overall GHG emissions (CO_2e) from 2000-2012. The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of GHG emissions.

Methane (CH_4)

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California. Methane accounted for approximately 7.2 percent of gross climate change emissions (CO_2e) in California from 2000-2014.[12]

Total annual emissions of methane are approximately 500 million tons, with manmade emissions accounting for the majority. As with CO_2, the major removal process of atmospheric methane—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and methane concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O)

Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for approximately 2.9 percent of man-made greenhouse gas emissions (CO_2e) in California, 2000-2012. [13]

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6)

Hydrofluorocarbons are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[14] Perfluorocarbons and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs. Hydrofluorocarbons, PFCs, and SF_6 accounted for about 4.1 percent of man-made greenhouse gas emissions (CO_2e) in California, 2000-2012. [15]

Black Carbon

Black carbon is the most strongly light-absorbing component of PM formed by burning fossil fuels such as coal, diesel, and biomass. Black carbon is emitted directly into the atmosphere in the form of

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[12] Ibid.

[13] Ibid.

[14] The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

[15] Ibid.

$PM_{2.5}$ and is the most effective form of PM, by mass, at absorbing solar energy. Per unit of mass in the atmosphere, black carbon can absorb a million times more energy than CO_2.[16] Black carbon contributes to climate change both directly, such as absorbing sunlight, and indirectly, such as affecting cloud formation. However, because black carbon is short-lived in the atmosphere, it can be difficult to quantify its effect on global-warming.

Most U.S. emissions of black carbon come from mobile sources (52 percent), particularly from diesel fueled vehicles. The other major source of black carbon is open biomass burning, including wildfires, although residential heating and industry also contribute. The ARB estimates that the annual black carbon emissions in California have decreased approximately 70 percent between 1990 and 2010 and are expected to continue to decline significantly due to controls on mobile diesel emissions.

Air Quality Regulatory Setting

The USEPA and the California ARB regulate direct emissions from motor vehicles. The BAAQMD is the regional agency primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as monitoring ambient pollutant concentrations.

Federal Clean Air Act

The 1970 Federal Clean Air Act authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required of areas of the nation that exceed the standards. Under the Clean Air Act, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans to demonstrate how they will achieve the national standards by specified dates.

California Clean Air Act

In 1988, the California Clean Air Act required that all air districts in the State endeavor to achieve and maintain CAAQS for carbon monoxide, ozone, sulfur dioxide and nitrogen dioxide by the earliest practical date. The California Clean Air Act provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan (CAP) shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

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[16] U.S. Environmental Protection Agency, 2015. *Black Carbon*. Website: www3.epa.gov/blackcarbon/basic.html (accessed on May 18, 2017). September.

California Air Resources Board (ARB) Handbook

The California ARB has developed an Air Quality and Land Use Handbook[17] which is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. According to the ARB Handbook, recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. The ARB Handbook recommends that county and city planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds.

Land use designations with air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners and large gasoline service stations. Key recommendations in the ARB Handbook include taking steps to avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day;
- Within 1,000 feet of a major service and maintenance rail yard;
- Immediately downwind of ports (in the most heavily impacted zones) and petroleum refineries;
- Within 300 feet of any dry cleaning operation (for operations with two or more machines, provide 500 feet); and
- Within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater).

The ARB Handbook specifically states that its recommendations are advisory and acknowledges land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

The recommendations are generalized and do not consider site specific meteorology, freeway truck percentages or other factors that influence risk for a particular project site. The purpose of the land use compatibility analysis is to further examine the project site for actual health risk associated with the location of new housing on the project site.

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[17] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.

Bay Area Air Quality Management District

The BAAQMD has jurisdiction over most air quality matters in the San Francisco Bay Area Air Basin. The BAAQMD is tasked with implementing certain programs and regulations required by the Federal Clean Air Act and the California Clean Air Act. The BAAQMD prepares plans to attain State and national ambient air quality standards.

The Clean Air Plan guides the region's air quality planning efforts to attain the CAAQS. The BAAQMD 2017 Clean Air Plan, which was adopted on April 19, 2017 by the BAAQMD Board of Directors, is the current Clean Air Plan which contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and NO_x), particulate matter and greenhouse gas emissions.

The Bay Area 2017 Clean Air Plan:

- Describes the Air District's plan towards attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among bay area communities;
- Defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas reduction targets for 2030 and 2050;
- Provides a regional climate protection strategy that will put the Bay area on a pathway to achieve GHG reduction targets; and
- Includes a wide range of control measures designed to decrease emissions of air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants, to reduce emissions of methane and other "Super-GHGs" that are potent climate pollutants in the near term and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

East Bay Regional Parks District

Master Plan. The EBRPD's 2013 Master Plan[18] contains policies for achieving the highest standards of service in resource conservation, management, interpretation, public access, and recreation. The goal of the Master Plan is to maintain a careful balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of the parklands. The Master Plan also contains the following policies relating to providing parking and trailheads at convenient locations, which are applicable to the proposed project. In addition, the Master Plan contains the following policies that support the ability of visitors to use alternative modes of transportation.

- <u>Policy RM1b</u>: The District will specifically track and monitor the effects of climate change on its resources, interceding when necessary to relocated or protect in-situ resources that are being degraded or lost by this shift in the environment.

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[18] East Bay Regional Parks District, 2013. *East Bay Regional Park District Master Plan 2013.* July 16.

- Policy PA4: The District will provide access to parklands and trails to suit the level of expected use. Where feasible, the District will provide alternatives to parking on or use of neighborhood streets. The District will continue to advocate and support service to the regional park system by public transit.

- Policy PA5: The District will cooperate with local and regional planning efforts to create more walkable and bikeable communities, and coordinate park access opportunities with local trails and bike paths developed by other agencies to promote green transportation access to the Regional Parks and Trails.

- Policy RFA2: The District will provide a diverse system of non-motorized trails to accommodate a variety of recreational users including hikers, joggers, people with dogs, bicyclists, and equestrians. Both wide and narrow trails will be designed and designated to accommodate either single or multiple users based on location, recreational intensity, environmental, and safety considerations. The District will focus on appropriate trail planning and design, signage, and trail user education to promote safety and minimize conflicts between users.

- Policy RFA3: The District will continue to add narrow trails designated as both single- and multi-use for hikers, equestrians, dog walkers, and bike riders throughout the system of regional parklands.

- Policy RFA4: The District will expand its unpaved multi-use trail system as additional acreage and new parks are added. The District will continue to provide multi-use trails to link parks and to provide access to park visitor destinations.

- Policy RFA5: The District will continue to plan for and expand the system of paved, multi-use regional trails connecting parklands and major population centers.

Contra Costa County

Contra Costa County addresses air quality in the Conservation Element of the General Plan.[19] Goals, policies, and implementation measures included in the Conservation Element are designed to achieve desired improvements to air quality through proper planning for land use and transportation. Policies relevant to this project include the following:

- Policy 8-101: A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.

- Policy 8-102: A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

- Policy 8-103: When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.

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[19] Contra Costa, County, of, 2010. *Contra Costa County General Plan 2005 – 2020.* July.

- Policy 8-104: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

- Policy 8-105: Land uses which are sensitive to air pollution shall be separated from sources of air pollution.

- Implementation Measure 8-dl: Review major development applications for consistency with regional air quality plan assumptions.

- Implementation Measure 8-dp: Review proposed development to encourage maximum use of bicycle, pedestrian and transit modes of transportation.

City of San Ramon

The City of San Ramon addresses air quality in the Air Quality and Greenhouse Gas chapter of the General Plan.[20] Policies listed in the Air Quality and Greenhouse Gas Element are designed to cooperate with regional agencies and private companies, encourage smart growth, support transit oriented development, promote multimodal transit and complete streets, support pedestrian-oriented development, and provide facilities that encourage bicycling. Policies relevant to this project include the following:

- Implementing Policy 12.4-I-3: Analyze the air quality and climate change impacts of discretionary projects using applicable regulatory guidance; for example, the BAAQMD's CEQA Air Quality Guidelines.

- Implementing Policy 12.4-I-4: Use the City's environmental review process to impose appropriate mitigation measures on new development to reduce air quality and greenhouse gas emissions impacts.

- Implementing Policy 12.5-I-1: Minimize air quality and climate change impacts through project review, evaluation, and conditions of approval when planning the location and design of land use projects and transportation system projects needed to accommodate expected City population growth.

- Implementing Policy 12.6-I-3: Require construction and grading activities to incorporate particulate emissions reduction measures.

- Implementing Policy 12.7-I-4: Provide information to encourage the use of transportation modes that minimize motor vehicle use and the resulting air pollution and greenhouse gas emissions.

- Implementing Policy 12.7-I-5: Construct and promote infrastructure and facilities that support and encourages the use of low-emission transportation and alternative modes of travel,

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[20] San Ramon, City of, 2015. *City of San Ramon General Plan 2035.* April 28.

including a safe and comprehensive bicycle and pedestrian system that connects all parts of the City.

Town of Danville

The Town of Danville addresses air quality in the Resources and Hazards Element of the General Plan.[21] Goals, policies, and implementation measures contained in the Resources and Hazards Element aim to reduce local air pollution in an effort to limit health hazards, maintain a quality living environment, and achieve regional air quality improvements. Policies relevant to this project include the following:

- Policy 33.01: Make land use and transportation decisions which promote walking and bicycling, and help to sustain public transportation.
- Policy 33.04: During the development review process, impose appropriate mitigation measures on new development to reduce greenhouse gas emissions.
- Policy 34.02: Consider air pollution impacts during the local development review process. Development should be located and regulated to minimize the emission of direct and indirect air contaminants.
- Policy 34.03: Implement appropriate controls and “best practice” requirements on construction and grading activities to minimize airborne dust and other particulate matter.
- Policy 34.05: Ensure that future non-residential developments are evaluated through the CEQA process and/or the BAAQMD permit process to ensure that they do not result in a significant health risk.

Global Climate Change Regulation

This section describes regulations related to Global Climate Change at the federal, State, and local level.

Federal Regulations

The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the USEPA has the authority to regulate CO_2 emissions under the federal Clean Air Act. While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the USEPA commenced several actions in 2009 to implement a regulatory approach to global climate change.

This includes the 2009 USEPA final rule for mandatory reporting of GHGs from large GHG emission sources in the United States. Additionally, the USEPA Administrator signed an endangerment finding action in 2009 under the Clean Air Act, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6)

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[21] Danville, Town of, 2013. *The Town of Danville 2030 General Plan*. March 19.

constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

State Regulations

The ARB is the lead agency for implementing climate change regulations in the State. Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems. Key efforts by the State are described below.

Executive Order S-3-05 (2005). Governor Arnold Schwarzenegger signed Executive Order S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. The executive order declared that increased temperatures could reduce snowpack in the Sierra Nevada Mountains, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established California's GHG emissions reduction targets, which established the following goals:

- GHG emissions should be reduced to 2000 levels by 2010;
- GHG emissions should be reduced to 1990 levels by 2020; and
- GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies in order to collectively and efficiently reduce GHGs. A biannual progress report must be submitted to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

The Secretary of CalEPA leads this Climate Action Team (CAT) made up of representatives from State agencies as well as numerous other boards and departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the State's Climate Adaptation Strategy. The CAT is also responsible for reporting on the progress made toward meeting the Statewide GHG targets that were established in the executive order and further defined under Assembly Bill 32, the "Global Warming Solutions Act of 2006" (AB 32). The first CAT Report to the Governor and the Legislature was released in March 2006, which it laid out 46 specific emission reduction strategies for reducing GHG emissions and reaching the targets established in the Executive Order. The CAT Report to the Governor and Legislature and will be updated and issued every two years thereafter; the most recent was released in December 2010.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is AB 32, passed by the State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. In response to AB 32, California began to address climate change by employing a comprehensive, long-term approach to cut the State's GHG emissions to 1990 levels by 2020 and to maintain and continue reductions post 2020.

AB 32 requires the ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the emission reduction targets and to reduce GHGs that contribute to global climate change. Pursuant to AB 32, the Scoping Plan must "*identify and make recommendations on direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives*" in order to achieve the 2020 goal, and achieve "*the maximum technologically feasible and cost-effective GHG emission reductions*" by 2020 and maintain and continue reductions beyond 2020.

The Initial Scoping Plan in 2008 presented the first economy-wide approach to reducing emissions and highlighted the value of combining both carbon pricing with other complementary programs to meet California's 2020 GHG emissions cap while ensuring progress in all sectors. The coordinated set of policies in the Initial Scoping Plan employed strategies tailored to specific needs, including market-based compliance mechanisms, performance standards, technology requirements, and voluntary reductions. The Initial Scoping Plan also described a conceptual design for a cap-and-trade program that included eventual linkage to other cap-and-trade programs to form a larger regional trading program.

AB 32 requires ARB to update the scoping plan at least every five years. The First Update to the Scoping Plan (First Update), approved in 2014, presented an update on the program and its progress toward meeting the 2020 limit. It also developed the first vision for the long-term progress that the State endeavors to achieve. In doing so, the First Update laid the groundwork to transition to the post-2020 goals set forth in Executive Orders S-3-059 and B-16-2012.10 It also recommended the need for a 2030 mid-term target to establish a continuum of actions to maintain and continue reductions, rather than only focusing on targets for 2020 or 2050.

Senate Bill 32, California Global Warming Solutions Act of 2016, and Assembly Bill 197. In summer 2016 the Legislature passed, and the Governor signed, Senate Bill 32 (SB 32) and Assembly Bill 197 (AB 197). SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an Intergovernmental Panel on Climate Change (IPCC) analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million carbon dioxide equivalent (CO_2e) and reduce the likelihood of catastrophic impacts from climate change.

The companion bill to SB 32, AB 197, provides additional direction to ARB on the following areas related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air emissions data that are collected by ARB was posted in December 2016.

Contra Costa County. Contra Costa County adopted a Climate Action Plan (CAP) on December 15, 2015.[22] The CAP is designed to demonstrate the County's commitment to addressing the County's commitment to addressing the challenges of climate change by reducing local GHG emissions while improving community health. This CAP identifies how the County will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's General Plan and other policy documents. In addition to reducing GHG emissions, the CAP includes GHG reduction measures and actions to reduce GHG emissions from community-wide sources that relate to energy efficiency, renewable energy, land use and transportation, solid waste, water conservation, and government operations.

City of San Ramon. The City of San Ramon adopted a CAP on August 23, 2011, as its primary strategy for ensuring that the buildout of the General Plan 2030 will not conflict with the implementation of AB 32. AB 32 requires California to reduce statewide greenhouse gas emissions to 1990 levels by the year 2020. This CAP is designed to reduce community related and City operations related greenhouse gas emissions to a degree that would not hinder or delay implementation of AB 32.

This CAP identifies how the City of San Ramon will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's General Plan and other policy documents. In addition to reducing GHG emissions, the CAP includes GHG reduction measures and actions to reduce GHG emissions from community-wide sources.

Town of Danville. The Town of Danville adopted a Sustainability Action Plan (SAP) on March 19, 2013, as its primary strategy for ensuring that the buildout of the General Plan 2030 to encourage more environmentally sustainable practices in Danville, to help reach emission reduction targets that were adopted through AB 32 in 2006. AB 32 requires California to reduce statewide greenhouse gas emissions to 1990 levels by the year 2020. The SAP is designed to reduce community related and County operations related greenhouse gas emissions to a degree that would not hinder or delay implementation of AB 32.

This SAP identifies how the County will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's General Plan and other policy documents. In addition to reducing GHG emissions, the CAP includes GHG reduction measures and actions to reduce GHG emissions from community-wide sources.

ENVIRONMENTAL SETTING

Attainment Status

The ARB is required to designate areas of the State as attainment, nonattainment or unclassified for all State standards. An *attainment* designation for an area signifies that pollutant concentrations did

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[22] Contra Costa, County of, 2015. *Contra Costa County Climate Action Plan*. December 15.

not violate the standard for that pollutant in that area. A *nonattainment* designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An *unclassified* designation signifies that data does not support either an attainment or nonattainment status. The California Clean Air Act divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The USEPA also designates areas as attainment, nonattainment, or classified. Table 4 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

Existing Climate and Air Quality

Contra Costa County lies east of the San Pablo Bay, bounded by Alameda County to the south, San Joaquin County to the east, and Solano and Sacramento counties to the north.

Temperatures in and around the San Ramon and Diablo Valleys are warm in the summer and cool in the winter, largely because of their distance from the moderating effect of water bodies and because the California Coast Range blocks marine air flow into the valleys. The Carquinez Strait region remains temperate due to its proximity to water and oceanic air flows. In winter, average daily temperatures are mild, with tule fog common at night. Average summer temperatures are typically mild overnight and warm during the day, with cooler temperatures and stronger winds more common along the western coast. Wind speeds are generally low throughout the region and winds typically blow from northwest to southwest. However, strong afternoon gusts are common in the northern portion of the county around the Carquinez Strait. Annual rainfall averages between 18 and 23 inches across the county.[23]

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[23] Bay Area Air Quality Management District, 2016. *Contra Costa County Climate*. April 25.

Table 4: San Francisco Bay Area Basin Attainment Status

	Averaging Time	California Standards [a]		National Standards [b]	
		Concentration	Attainment Status	Concentration [c]	Attainment Status
Ozone (O_3)	8-Hour	0.070 ppm (137µg/m^3)	Nonattainment [h]	0.075 ppm	Nonattainment [d]
	1-Hour	0.09 ppm (180 µg/m^3)	Nonattainment	Not Applicable	Not Applicable [e]
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment [f]
	1-Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 µg/m^3)	Attainment	0.100 ppm	Unclassified
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Not Applicable	0.053 ppm (100 µg/m^3)	Attainment
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	1-Hour	0.25 ppm (655 µg/m^3)	Attainment	0.075 ppm (196 µg/m^3)	Attainment
	Annual Arithmetic Mean	Not Applicable	Not Applicable	0.030 ppm (80 µg/m^3)	Attainment [j]
Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	Nonattainment [g]	Not Applicable	Not Applicable
	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	Nonattainment [g]	15 µg/m^3	Attainment
	24-Hour	Not Applicable	Not Applicable	35 µg/m^3 [i]	Nonattainment

Source: Bay Area Attainment Status (Bay Area Air Quality Management District, 2017).

[a] California standards for ozone, carbon monoxide (except in the Lake Tahoe air basin), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter – PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on average. The Lake Tahoe CO standard is 6.0 ppm, a level one-third the national standard and two-thirds the State standard.

[b] National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially-designed clusters of sites falls below the standard.

[c] National air quality standards are set by USEPA at levels determined to be protective of public health with an adequate margin of safety.

[d] In June 2004, the Bay Area was designated as a marginal nonattainment area for the national 8-hour ozone standard. USEPA lowered the national 8-hour ozone standard from 0.80 to 0.75 PPM (i.e., 75 ppb), effective May 27, 2008.

Table notes continued on next page.

[e] The national 1-hour ozone standard was revoked by USEPA on June 15, 2005.

[f] In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.

[g] In June 2002, ARB established new annual standards for $PM_{2.5}$ and PM_{10}.

[h] The 8-hour California ozone standard was approved by the ARB on April 28, 2005 and became effective on May 17, 2006.

[I] On January 9, 2013, USEPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ national standard. This USEPA rule suspends key SIP requirement as long as monitoring data continues to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area will continue to be designated as nonattainment for the national 24-hour $PM_{2.5}$ standard until such time as the Air District submits a redesignation request and a maintenance plan to USEPA and USEPA approves the proposed redesignation.

[j] On June 2, 2010, the USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 National Ambient Air Quality Standards (NAAQS), however, must be used until one year following USEPA initial designations of the new 1-hour SO_2 NAAQS.

Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.
ppm = parts per million
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

Ozone and fine particle pollution, or $PM_{2.5}$, are the major regional air pollutants of concern in the San Francisco Bay Area. Ozone is primarily a problem in the summer, and fine particle pollution in the winter. Ozone and $PM_{2.5}$ infrequently exceed health standards in the portion of Contra Costa County west of the East Bay hills. The San Francisco Bay keeps air temperatures above freezing in winter and well below 100 degrees on even the warmest summer days.[24]

In eastern Contra Costa County, summer afternoon temperatures frequently approach triple digits, spurring ozone levels to exceed health standards. In winter, $PM_{2.5}$ can be transported westward through the Carquinez Strait from the Central Valley where it adds to wood smoke, causing health standards to be exceeded.[25]

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standard, have declined substantially as a result of aggressive programs by the BAAQMD and other regional, State and federal agencies. The reduction of peak concentrations represents progress in improving public health; however the Bay Area still exceeds the State standard for 1-hour ozone as well as the State and federal 8-hour standards. Levels of PM_{10} have exceeded State standards two of the last three years, and the area is considered a nonattainment area for this pollutant relative to the State standards. The Bay Area is an unclassified area for the federal PM_{10} standard.

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[24] Ibid.

[25] Ibid.

No exceedances of the State or federal CO standards have been recorded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a maintenance area for State and federal CO standards.

Air Quality Monitoring Results

Air quality monitoring stations are located throughout the nation and maintained by the local air pollution control district and state air quality regulating agencies. Ambient air data collected at permanent monitoring stations are used by the USEPA to identify regions as attainment or nonattainment depending on whether the regions met the requirements stated in the primary National Ambient Air Quality Standards (NAAQS). Attainment areas are required to maintain their status through moderate, yet effective air quality maintenance plans. Nonattainment areas are imposed with additional restrictions as required by the USEPA. In addition, different classifications of attainment such as marginal, moderate, serious, severe, and extreme are used to classify each air basin in the state on a pollutant-by-pollutant basis. Different classifications have different mandated attainment dates and are used as guidelines to create air quality management strategies to improve air quality and comply with the NAAQS by the attainment date. A region is determined to be unclassified when the data collected from the air quality monitoring stations do not support a designation of attainment or nonattainment, due to lack of information, or a conclusion cannot be made with the available data.

Pollutant monitoring results for the years 2014 to 2016 at the San Ramon 9885 Alcosta Boulevard ambient air quality monitoring station (the closest monitoring station to the project site) and where data were not available in San Ramon, the Concord 2975 Treat Boulevard are shown in Table 5. Based on the monitoring data, air quality in Contra Costa County has generally been good. As indicated in the monitoring results, one violation of the 1-hour State ozone standard was recorded in 2015 and 2016. The State 8-hour ozone standard was exceeded four times in 2014, six times in 2015, and twice in 2016. In addition, the federal 8-hour ozone standard was exceeded four times in 2014, six times in 2015, and once in 2016. The CO, PM_{10}, $PM_{2.5}$, NO_2, and SO_2 standards were not exceeded in this area during the 3-year period.

Greenhouse Gas Emissions Inventory

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of greenhouse gases is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, California, and local greenhouse gas emission inventories.

Global Emissions

Worldwide net emissions (including the effects of land use and forestry) of greenhouse gases in 2010 were 46 billion metric tons[26] of CO_2e per year.[27] This represents a 35 percent increase from 1990.

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[26] A metric ton is equivalent to approximately 1.1 tons.

Table 5: Ambient Air Quality at the San Ramon 9885 Alcosta Boulevard Monitoring Station

Pollutant	Standard	2014	2015	2016
Carbon Monoxide (CO)[a]				
Maximum 1-hour concentration (ppm)		1.4	1.4	1.2
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		1.1	1.3	1.0
Number of days exceeded:	State: > 9 ppm	0	0	0
	Federal: > 9 ppm	0	0	0
Ozone (O_3)				
Maximum 1-hour concentration (ppm)		0.086	0.106	0.101
Number of days exceeded:	State: > 0.09 ppm	0	1	1
Maximum 8-hour concentration (ppm)		0.077	0.085	0.083
Number of days exceeded:	State: > 0.07 ppm	4	6	2
	Federal: > 0.08 ppm	4	6	1
Coarse Particulates (PM_{10})[a]				
Maximum 24-hour concentration (µg/m^3)		42.5	24.0	19.0
Number of days exceeded:	State: > 50 µg/m^3	0	0	0
	Federal: > 150 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		14.1	13.1	11.5
Exceeded for the year:	State: > 20 µg/m^3	0	0	0
	Federal: > 50 µg/m^3	0	0	0
Fine Particulates ($PM_{2.5}$)[a]				
Maximum 24-hour concentration (µg/m^3)		30.6	31.0	20.7
Number of days exceeded:	Federal: > 35 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		6.7	8.8	6.1
Exceeded for the year:	State: > 12 µg/m^3	0	0	0
	Federal: > 12 µg/m^3	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-hour concentration (ppm)		0.037	0.037	0.026
Number of days exceeded:	State: > 0.250 ppm	0	0	0
Annual arithmetic average concentration (ppm)		ND	ND	ND
Exceeded for the year:	Federal: > 0.053 ppm	ND	ND	ND
Sulfur Dioxide (SO_2)[a]				
Maximum 1-hour concentration (ppm)		0.0029	0.00067	0.0011
Number of days exceeded:	State: > 0.25 ppm	0	0	0
Maximum 3-hour concentration (ppm)		ND	ND	ND
Number of days exceeded:	Federal: > 0.50 ppm	ND	ND	ND
Maximum 24-hour concentration (ppm)		0.00045	0.0002	0.00024
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.00045	0.000052	0.000077
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Source: USEPA, 2017.

[a] Data taken from the Concord – 2975 Treat Boulevard ambient air quality monitoring station

ppm = parts per million; µg/m^3 = micrograms per cubic meter; ND = No data. There was insufficient (or no) data to determine the value.

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[27] U.S. Environmental Protection Agency, 2017. *Inventory of U.S. Greenhouse Gas Emissions and Sinks. 1990-2015.* Available online at: www.epa.gov/sites/production/files/2017-02/documents/2017_complete_report.pdf (accessed December 27, 2017).

United States Emissions

In 2015, the United States emitted about 6.5 billion metric tons of CO_2e or about 21 metric tons per year per person. The total 2015 CO_2e emissions represent a 3.5 percent increase since 1990 but a 10 percent decrease since 2005. Of the six major sectors nationwide – residential, commercial, agricultural, industry, transportation, and electricity generation – electricity generation accounts for the highest amount of greenhouse gas emissions (approximately 29 percent), with transportation second at 27 percent; these emissions are generated entirely from direct fossil fuel combustion.[28]

State of California Emissions

The ARB is responsible for developing the California Greenhouse Gas Emission Inventory. This inventory estimates the amount of greenhouse gases emitted to and removed from the atmosphere by human activities within the State and supports the AB 32 Climate Change Program.

According to ARB emission inventory estimates, California emitted approximately 441.5 million metric tons of CO_2e emissions in 2014.[29] This represents an overall decrease of 9.4 percent since peak levels in 2004. During the 2000 to 2014 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 13.9 metric tons per person to 11.4 metric tons per person in 2014, which is an 18 percent decrease.[30] Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product (GDP)) is declining, representing a 28 percent decline since the 2001 peak, while the state's GDP has grown 28 percent during this period.[31]

California greenhouse gas emissions from the transportation sector—still the State's largest single source of greenhouse gases, contributing 36 percent of total emissions—grew by 1 percent in 2014, although emissions from this sector are still 13 percent lower than peak levels in 2005.[32] The ARB attributes much of this decrease to the growing statewide fleet of fuel-efficient vehicles—the hybrid vehicle market share increased in 2012 to 7.4 percent from the 2011 level of 5.4 percent.[33]

ARB staff has projected 2020 unregulated greenhouse gas emissions, which represent the emissions that would be expected to occur in the absence of any greenhouse gas reduction actions, would be 507 million metric tons (MMT) of CO_2e.[34] The total emissions are lower than originally forecast (596 MMT) in the AB 32 Scoping Plan to account for new estimates for future fuel and energy demand and accounting for the recent economic recession.

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[29] California Air Resources Board, 2014. *California Greenhouse Gas Emission Inventory*. Website: www.arb.ca.gov/cc/inventory/data/data.htm (accessed December, 27, 2017).

[30] Ibid.

[31] Ibid.

[32] Ibid.

[33] Ibid.

[34] California Air Resources Board, 2013. *Greenhouse Gas Inventory: 2020 Emissions Forecast.* Website: https://www.arb.ca.gov/cc/inventory/data/bau.htm (accessed December, 27, 2017).

Greenhouse gas emissions in 2020 from the transportation sector as a whole are expected to increase to 184 MMT of CO_2e (2012 inventory is 167 MMT of CO_2e). The industrial sector consists of large stationary sources of greenhouse gas emissions and includes oil and gas production and refining facilities, cement plants, and large manufacturing facilities. Emissions for this sector are forecast to grow to 91.5 MMT of CO_2e by 2020, an increase of approximately 3 percent from the 2012 emissions inventory level. The commercial and residential sectors are expected to contribute 45.3 MMT of CO_2e, or about 9 percent of the total Statewide greenhouse gas emissions in 2020.[35]

San Francisco Bay Area Emissions

The BAAQMD established a climate protection program in 2005 to acknowledge the link between climate change and air quality. The BAAQMD regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates greenhouse gas emissions produced by the San Francisco Bay Area in 2011.[36] The inventory, which was published January 2015, updates the previous BAAQMD greenhouse gas emission inventory for base year 2007.

In 2011, 86.6 million metric tons of CO_2e of greenhouse gases were emitted by the San Francisco Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the San Francisco Bay Area's greenhouse gas emissions in 2011. The transportation sector (including on-road motor vehicles, locomotives, ships and boats, and aircraft) contributed 39.7 percent of greenhouse gas emissions and the industrial and commercial sectors (excluding electricity and agriculture) contributed 35.7 percent of greenhouse gas emissions in the Bay Area. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 14 percent of the total greenhouse gas emissions. Off-road equipment such as construction, industrial, commercial, and lawn and garden equipment contributed 1.5 percent of greenhouse gas emissions.

Contra Costa County Emissions

BAAQMD provided estimated greenhouse gas emissions for the San Francisco Bay Area in year 2011 in its Bay Area Emissions Inventory Summary Report: Greenhouse Gases.[37] The inventory quantifies greenhouse gas emissions from a wide variety of sources and is arranged by sector to facilitate detailed analysis of emissions sources.

As shown in Table 6, the largest percentage of greenhouse gas emissions are from the industrial/commercial sector, approximately 47 percent, followed by the electricity/co-generation and transportation sectors, 23 and 4 percent, respectively. The residential fuel sector was responsible for 3 percent and the off-road equipment and agricultural/farming sectors were responsible for 1 percent.

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[35] Ibid.

[36] Bay Area Air Quality Management District, 2015. *Source Inventory of Bay Area Greenhouse Gas Emissions.* January.

[37] Bay Area Air Quality Management District, 2015. *Inventory Summary Report: Greenhouse Gases, Base Year 2011*. January

Table 6: Contra Costa County Greenhouse Gas Emissions by Sector, 2011

	2011 Greenhouse Gas Emissions	
Sector	**Million Metric Tons CO_2e per Year**	**Percent of Total**
Industrial/Commercial	17.8	56
Residential Fuel	1.0	3
Electricity/Co-Gen.	7.2	23
Off-Road Equipment	0.2	1
Transportation	5.0	16
Agricultural/Farming	0.2	1
Total	**31.9**	**100**

Source: Bay Area Air Quality Management District, 2015.

METHODOLOGY

Numerous air quality modeling tools are available to assess air quality impacts of projects; however, certain air districts such as the BAAQMD have created guidelines and requirements to conduct air quality analysis. The analysis of air quality impacts for the proposed project followed the BAAQMD *CEQA Air Quality Guidelines*.[38]

In June 2010, BAAQMD adopted updated draft California Environmental Quality Act (CEQA) Air Quality Guidelines and finalized them in May 2011. These guidelines superseded previously adopted agency air quality guidelines of 1999 and were intended to advise lead agencies on how to evaluate potential air quality impacts.

In late 2010, the Building Industry Association filed a lawsuit in Alameda Superior Court, challenging the BAAQMD CEQA Guidelines on the grounds that the agency did not comply with CEQA. On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD *CEQA Air Quality Guidelines*. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. In May of 2012, the BAAQMD filed an appeal of the court's decision. In August of 2013 the First District Court of Appeal overturned the trial court and held that the thresholds of significance were not subject to CEQA review. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review.

On December 21, 2015, the California Supreme Court rejected the BAAQMD's requirement for a so-called reverse CEQA analysis, and concluded that CEQA does not generally require a lead agency to consider the effects of existing environmental conditions on a proposed project's future residents. The Court also noted that assessing the impacts of the environment on the project is not required by CEQA.

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[38] Bay Area Air Quality Management District, 2017, op. cit.

In May 2017, the BAAQMD published an updated version of the CEQA Guidelines, which includes revisions made to address the Supreme Court's opinion. The 2017 CEQA Guidelines include thresholds to evaluate project impacts in order to protectively evaluate the potential effects of the project on air quality. These protective thresholds are appropriate in the context of the size, scale, and location of the project.

Operational Emissions

The air quality analysis includes estimating emissions associated with long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by mobile (indirect) sources associated with the proposed project. In addition, localized air quality impacts (i.e., higher carbon monoxide concentrations or "hot spots") near intersections or roadway segments in the project vicinity would potentially occur due to project generated vehicle trips.

Consistent with BAAQMD guidance for estimating emissions associated with land use development projects, the California Emission Estimator Model (CalEEMod v.2016.3.2) was used to calculate the long-term operational emissions associated with the project.

Construction Emissions

Construction activities can generate a substantial amount of air pollution. In some cases, the emissions from construction represent the largest air quality impact associated with a project. Construction activities are considered temporary; however, short term impacts can contribute to exceedances of air quality standards. Construction activities include site preparation, earthmoving and general construction. The emissions generated from these common construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel and gasoline powered equipment, portable auxiliary equipment, and worker commute trips. CalEEMod was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site.

Greenhouse Gas Emissions

Greenhouse gas emissions associated with the proposed project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term greenhouse gas emissions associated with project-related vehicular trips. Recognizing that the field of global climate change analysis is rapidly evolving, the approaches advocated most recently indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, construction activities, and any other significant source of emissions within the project area. CalEEMod was used to quantify greenhouse gas emissions generated by the proposed project.

THRESHOLDS OF SIGNIFICANCE

The State *CEQA Guidelines* indicate that a project would normally have a significant adverse air quality impact if project-generated pollutant emissions would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The BAAQMD has further defined these criteria of significance to indicate the project would result in a significant air quality impact if it would:

- Violate the Bay Area Air Quality Management District's air quality standards or contribute substantially to an existing or projected air quality violation by:
    - Generating average daily criteria air pollutant emissions of ROG, NO_x or $PM_{2.5}$ exhaust emissions in excess of 54 pounds per day or PM_{10} exhaust emissions of 82 pounds per day during project construction;
    - For project operations, generating average daily criteria air pollutant emissions of ROG, NO_x, or $PM_{2.5}$ in excess of 54 pounds per day, or maximum annual emissions of 10 tons per year. For emissions of PM_{10}, generating average daily emissions of 82 pounds per day or 15 tons per year; or
    - Contributing to CO concentrations exceeding the State ambient air quality standards of 9 ppm averaged over 8 hours and 20 ppm for 1-hour for project operations.

It should be noted that the emission thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety, these emission thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

- Expose sensitive receptors (including residential areas) or the general public to toxic air contaminants in excess of the following thresholds:
    - An excess cancer risk level of more than 10 in one million, or non-cancer (i.e., chronic or acute) risk greater than 1.0 hazard index from a single source;

  - An incremental increase of greater than 0.3 µg/m^3 annual average $PM_{2.5}$ from a single source;

  - An excess cancer risk level of more than 100 in one million, or non-cancer risk greater than 100 in one million from all sources; or

  - An incremental increase of greater than 0.8 µg/m^3 annual average $PM_{2.5}$ from all sources.

The State CEQA Guidelines indicate that a project would normally have a significant adverse greenhouse gas emission impact if the project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reduction the emissions of greenhouse gases.

The BAAQMD has further defined these criteria of significance to indicate the project would result in a less-than-significant air quality impact if it would:

- Result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2e a year; or

- Result in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2e per service population (residents plus employees).

IMPACTS AND MITIGATION MEASURES

The project would affect air quality both during construction and operation. Operational impacts would be indirect and primarily related to vehicle trips generated by future visitors.

This section identifies the air quality impacts associated with implementation of the proposed project.

Air Quality Impacts

This section describes the construction and operational phase emission impacts.

Consistency with Existing Air Quality Plans

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan, which was adopted on April 19, 2017. The Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health. The Clean Air Plan defines a control strategy to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce greenhouse gas emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project does the following: 1) supports the goals of the Clean Air

Plan; 2) includes applicable control measures from the Clean Air Plan; and 3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

Transportation and Mobile Source Control Measures. The BAAQMD identifies control measures as part of the Clean Air Plan to reduce ozone precursor emissions from stationary, area, mobile, and transportation sources. The Transportation Control Measures are designed to reduce emissions from motor vehicles by reducing vehicle trips and vehicle miles traveled (VMT) in addition to vehicle idling and traffic congestion. The proposed project is not expected to result in significant increase in the generation of vehicle trips or VMT. In addition, portions of the project site are located within walking or cycling distance from the surrounding residential area, and therefore would support the ability of visitors to use alternative modes of transportation. Therefore, this proposed project would not conflict with the identified Transportation and Mobile Source Control Measures of the Clean Air Plan.

Land Use and Local Impact Measures. The Clean Air Plan includes Land Use and Local Impacts Measures (LUMs) to achieve the following: promote mixed-use, compact development to reduce motor vehicle travel and emissions; and ensure that planned growth is focused in a way that protects people from exposure to air pollution from stationary and mobile sources of emissions. The LUMs identified by the BAAQMD are not specifically applicable to the proposed project as they relate to actions the BAAQMD will take to reduce impacts from goods movement and health risks in affected communities. The proposed project would include approximately 4.5 miles of new trails to be opened within an existing recreational area. Therefore, the proposed project would not conflict with any of the LUMs of the Clean Air Plan.

Energy Measures. The Clean Air Plan also includes Energy and Climate Control Measures, which are designed to reduce ambient concentrations of criteria pollutants and reduce emissions of CO_2. Implementation of these measures is intended to promote energy conservation and efficiency in buildings throughout the community, promote renewable forms of energy production, reduce the “urban heat island” effect by increasing reflectivity of roofs and parking lots, and promote the planting of (low-VOC-emitting) trees to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants. The measures include voluntary approaches to reduce the heat island effect by increasing shading in urban and suburban areas through the planting of trees. The proposed project would include approximately two miles of public trails and approximately 2.5 miles of EVMA roads for a total of approximately 4.5 miles new trails. The proposed project would also include a staging area with all-weather, compacted gravel parking to accommodate up to 25 vehicles and two small parking trailheads to accommodate up to six vehicles. The proposed project would not increase ambient concentrations of criteria pollutants or emissions of CO_2. Therefore the project would not conflict with the Energy and Climate Control Measures. As discussed above, implementation of the proposed project would not disrupt or hinder implementation of the applicable measures outlined in the Clean Air Plan, including Transportation and Mobile Source Control Measures, Land Use and Local Impact Measures, and Energy Measures.

Violate Air Quality Standards

The following section describes the project’s CO impacts and construction- and operation-related air quality impacts. The conclusions are summarized at the end of each subsection. As discussed, impacts would be less than significant for localized CO emission and operational emissions. Impacts associated with construction-period emissions would be less than significant with implementation of the required BAAQMD Basic Construction Mitigation Measures.

Construction Emissions. During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Site preparation and project construction would involve grading, paving, and some building activities. Construction-related effects on air quality from the proposed project would be greatest during the grading phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

The trails would be constructed mostly with hand tools, which would only result in minimal amounts of pollutants. Construction emissions for the staging area and parking lots were estimated using CalEEMod, consistent with BAAQMD recommendations. Construction of the staging area and parking lots would include approximately 750 cubic yards of cut and approximately 100 cubic yards of fill, which were included as inputs to the CalEEMod analysis. Other specific construction details are not yet known; therefore default assumptions (e.g., construction duration and fleet activities) from CalEEMod were used. The construction duration was assumed to occur for approximately 6 months.

Table 7: Project Construction Emissions in Pounds Per Day

Project Construction	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Average Daily Emissions	0.7	6.9	0.4	0.4
BAAQMD Thresholds	54.0	54.0	82.0	54.0
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: LSA, 2017.

As shown in Table 7, construction emissions associated with the project would be less than significant for ROG, NO_x and $PM_{2.5}$ and PM_{10} exhaust emissions. The BAAQMD and City of San Ramon General Plan Implementing Policy 12.6-I-3 require the implementation of Basic Construction Mitigation Measures to reduce construction dust (fugitive PM_{10} and $PM_{2.5}$) impacts to a less-than-significant level as follows:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the EBRPD regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Operational Air Quality Impacts. Long-term air emission impacts are those associated with area sources and mobile sources involving any change related to the proposed project. In addition to the short-term construction emissions, the project would also generate long-term air emissions, such as those associated with changes in permanent use of the project site. These long-term emissions are primarily mobile source emissions that would result from vehicle trips associated with the proposed project. Area sources, such as landscape equipment, would also result in pollutant emissions.

PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles. Since much of the project traffic fleet would be made up of light-duty gasoline-powered vehicles, a majority of the PM_{10} emissions would result from entrainment of roadway dust from vehicle travel.

Typically, energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand include building mechanical systems, such as heating and air conditioning, lighting, and plug-in electronics, such as refrigerators or cooking equipment. Greater building or appliance efficiency reduces the amount of energy for a given activity and thus lowers the resultant emissions. The emission factor is determined by the fuel source, with cleaner energy sources, like renewable energy, producing fewer emissions than conventional sources. The proposed project would generate a minimal amount of energy source emissions which would be associated with lighting at the staging area.

Area source emissions associated with the project would include emissions from the use of landscaping equipment, if any.

The project would result in low levels of off-site emissions due to energy generation associated with lighting. However, these emissions would be minimal and would not exceed the pollutant thresholds established by the BAAQMD.

The proposed project would include approximately two miles of public trails and approximately 2.5 miles of EVMA roads for a total of approximately 4.5 miles new trails. The proposed project would also include a staging area with all-weather, compacted gravel parking to accommodate up to 25 vehicles and two small parking trailheads to accommodate up to 6 vehicles. The proposed project would also include cattle operations at the staging area a few times each year for grazing purposes.

Emission estimates for the project were calculated using CalEEMod. Model results are shown in Table 8. Trip generation rates for the project were based on the Circulation Assessment,[39] which estimates the proposed project would generate a maximum of 460 net new average daily trips. This analysis is conservative because the maximum daily trips would primarily occur on during the peak season on weekend days.

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[39] LSA, 2018. *Circulation Assessment Las Trampas Wilderness Regional Preserve Land Use Plan Amendment*. May.

The daily emissions associated with project operational trip generation, energy and area sources are identified in Table 8 for ROG, NO_x, PM_{10}, and $PM_{2.5}$. The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project; emissions are released in other areas of the air basin. Because the resulting emissions are dispersed rapidly and contribute only a small fraction of the region's air pollution, air quality in the immediate vicinity of the project site would not substantially change compared to existing conditions or the air quality monitoring data reported in Table 5. Model results are shown in Appendix A.

The results shown in Table 8 indicate the project would not exceed the significance criteria for daily ROG, NO_2, PM_{10} or $PM_{2.5}$ emissions; therefore, the proposed project would not have a significant effect on regional air quality and mitigation would not be required.

Table 8: Project Operation Emissions

Project Construction	ROG	NO_x	PM_{10}	$PM_{2.5}$
Emissions in Pounds Per Day				
Area Source Emissions	0.0	0.0	0.0	0.0
Energy Source Emissions	0.0	0.0	0.0	0.0
Mobile Source Emissions	0.9	4.1	2.4	0.7
Total Emissions	**0.9**	**4.1**	**2.4**	**0.7**
BAAQMD Threshold	**54.0**	**54.0**	**82.0**	**54.0**
Exceed?				
Emissions in Tons Per Year				
Area Source Emissions	0.0	0.0	0.0	0.0
Energy Source Emissions	0.0	0.0	0.0	0.0
Mobile Source Emissions	0.2	0.7	0.4	0.1
Total Emissions	**0.2**	**0.7**	**0.4**	**0.1**
BAAQMD Threshold	**10.0**	**10.0**	**15.0**	**10.0**
Exceed?	**No**	**No**	**No**	**No**

Source: LSA, 2017.

Therefore, the proposed project would not be a significant source of operational criteria pollutant emissions and this impact would be less than significant.

Localized CO Impacts. The BAAQMD has established a screening methodology that provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.

- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the proposed project would not conflict with the Contra Costa County Countywide Transportation Plan for designated roads or highways, a regional transportation plan, or other agency plans. The proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour, or increase traffic volumes at affected intersections to more than 24,000 vehicles per hour. Therefore, the project would not result in localized CO concentrations that exceed State or federal standards and impacts would be less-than-significant.

Exposure of Sensitive Receptors to Toxic Air Contaminants

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks. The closest sensitive receptor includes the single-family residence located approximately 40 feet west of the proposed staging area. In addition, other single-family residences would be located approximately 75 feet from proposed trails.

According to the BAAQMD, a project would result in a significant impact if it would: individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in one million, increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 micrograms per cubic meter ($\mu g/m^3$). A significant cumulative impact would occur if the project in combination with other projects located within a 1,000-foot radius of the project site would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 $\mu g/m^3$ on an annual average basis. Impacts from substantial pollutant concentrations are discussed below.

As described above, construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement the BAAQMD Basic Construction Mitigation Measures described above. With implementation of these mitigation measures, project construction emissions would be below the BAAQMD significance thresholds and, once the project is constructed, the project would not be a source of substantial emissions. In addition, individuals using the trails would not be impacted by existing roadway emissions due to the short term use of the trails for recreation. Therefore, sensitive receptors are not expected to be exposed to substantial pollutant concentrations during project construction or operation, and potential impacts would be considered less than significant.

Cumulative Impact Assessment

CEQA defines a cumulative impact as two or more individual effects, which when considered together, are considerable or which compound or increase other environmental impacts. According to the BAAQMD, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself; result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Therefore, if daily average or annual emissions of operational-related criteria air pollutants exceed any applicable threshold established by the BAAQMD, the proposed project would result in a cumulatively significant impact.

As discussed above, implementation of the proposed project would generate less than significant operational emissions. As shown in the project-specific air quality impacts discussion above, the proposed project would not result in individually significant impacts and therefore would also not make a cumulatively considerable contribution to regional air quality impacts.

Objectionable Odors

During project construction, some odors may be present due to diesel exhaust. However, these odors would be temporary and limited to the construction period. The proposed project would not include any activities or operations that would generate objectionable odors and once operational, the project would not be a source of odors. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people.

Greenhouse Gas Impacts

This section discusses the project's impacts related to the release of greenhouse gas emissions for both construction and project operation.

Generate Significant Greenhouse Gas Emissions

Construction Activities. Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction.

Using CalEEMod, it is estimated that the project would generate approximately 66 metric tons of CO_2e during the construction period. Implementation of the BAAQMD Basic Construction Mitigation Measures would further reduce GHG emissions during the construction period to ensure impacts remain less than significant.

Operational GHG Emissions. The proposed project would include approximately two miles of public trails and approximately 2.5 miles of EVMA roads for a total of approximately 4.5 miles new trails. The proposed project would also include a staging area with all-weather, compacted gravel parking to accommodate up to 25 vehicles and two small parking trailheads to accommodate up to six vehicles.

When calculating project GHG emissions to compare to the thresholds of significance, the BAAQMD recommends that the lead agency consider project design features, attributes, and local development requirements as part of the project as proposed and not as mitigation measures. Consistent with BAAQMD guidance, GHG emissions were estimated using CalEEMod. Model results are shown in Table 9. Trip generation rates for the project were based on the Circulation Assessment,[40] which estimates the proposed project would generate a maximum of 460 net new average daily trips. This analysis is conservative because the maximum daily trips would primarily occur on during the peak season on weekend days.

Table 9 shows the calculated GHG emissions for the proposed project. Mobile source emissions associated with park visitors are the primary emissions comprising 99 percent of total CO_2e emissions. Water source emissions are approximately 1 percent of the total. Additional calculation details are provided in Appendix B.

Table 9: GHG Emissions (Metric Tons Per Year)

Emissions Source	Operational Emissions				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Area Source Emissions	0.0	0.0	0.0	0.0	0
Energy Source Emissions	0.0	0.0	0.0	0.0	0
Mobile Source Emissions	483.4	0.0	0.0	483.9	99
Waste Source Emissions	0.0	0.0	0.0	0.0	0
Water Source Emissions	0.2	0.0	0.0	0.2	1
Total Emissions				**484.1**	**100**

Source: LSA, 2017.

As discussed above, according to the BAAQMD, a project would have less-than-significant GHG emissions if it would meet one or more of the following criteria: result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2e a year, or result in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2e per service population (residents plus employees). Based on the analysis results, the proposed project would generate approximately 484.1 metric tons of CO_2e which is well below the BAAQMD's numeric threshold of 1,100 metric tons CO_2e. Therefore, the project would not have a significant effect on the environment related to greenhouse gas emissions.

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[40] LSA, 2017. op. cit.

Consistency with Greenhouse Gas Reduction Plans

The Contra Costa County CAP, adopted in 2015, addresses local climate change and includes GHG reduction targets to comply with Assembly Bill 32, the California Global Warming Solutions Act of 2006. The CAP strategy is primarily based upon the land use, transportation, and conservation policies that are included in the General Plan. The CAP demonstrates that through land use planning/density choices, reduction in vehicle miles traveled, and energy conservation measures, the county contributes to the State greenhouse gas reduction targets.

In addition, the City of San Ramon CAP, adopted in 2011, addresses local climate change and includes GHG reduction targets to comply with Assembly Bill 32, the California Global Warming Solutions Act of 2006. The CAP strategy is primarily based upon the land use, transportation, and conservation policies that are included in the General Plan 2030. The CAP demonstrates that through land use planning/density choices, reduction in vehicle miles traveled, and energy conservation measures, the City contributes to the State greenhouse gas reduction targets.

The Town of Danville SAP, adopted in 2013, identifies more environmentally sustainable practices in Danville, to help reach emission reduction targets that were adopted through Assembly Bill 32 in 2006. Assembly Bill (AB) 32 requires California to reduce statewide greenhouse gas emissions to 1990 levels by the year 2020. The SAP is designed to reduce community-related and County operations related greenhouse gas emissions to a degree that would not hinder or delay implementation of AB 32.

As discussed above, the proposed project would open to the public approximately two miles of narrow (single-track) trails and 2.5 miles of EVMA roads for a total of approximately 4.5 miles of new trails. Strategy Measure LUT 1.5 of the County's CAP states the County will work with the Contra Costa Transportation Authority to improve access to community-wide bicycle and pedestrian networks by closing gaps in the network, removing barriers, and providing additional bike- and pedestrian-oriented infrastructure. In addition, the San Ramon CAP includes Policy 5.7.I-11, which states that the City will work with Caltrans to improve bicycle and pedestrian safety and freeway crossings. Additionally, Strategy T-3 of the CAP states the City will provide a safe and well-connected system of bicycle paths, lanes, and trails to increase bicycle use. Lastly, the Danville SAP Policy LT-9 requires implementation of General Plan policies to create a safer, more connected, and enhanced bicycle network in Danville. The project is consistent with these policies as it would extend existing trails, enhancing safety, and improving efficiency of trail use for bicycle transportation.

The proposed project would not result in a substantial increase in GHG emissions; and therefore, is consistent with the Contra Costa County CAP, San Ramon CAP, and Danville SAP and would not generate emissions that would exceed the project-level significance criteria established by the BAAQMD. The project would also be consistent with the strategies and policies included in the Contra Costa County CAP, San Ramon CAP, and Danville SAP. Therefore, the proposed project would not conflict with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This impact would be less than significant.

CONCLUSION

Based on the analysis presented above, construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. Implementation of BAAQMD Basic Construction Mitigation Measures would further reduce construction dust impacts. The proposed project is not expected to produce significant emissions that would affect nearby sensitive receptors. The project would also not result in objectionable odors affecting a substantial number of people. GHG emissions released during construction and operation of the project are estimated to be lower than significance thresholds, and would not be cumulatively considerable. The project would also be consistent with local plans adopted for the purposed of reducing GHG emissions. Therefore, the proposed project would not result in significant air quality or GHG impacts.

APPENDIX A

CALEEMOD OUTPUT SHEETS

Las Trampas Project - Construction Analysis

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	12.00	Space	0.11	4,800.00	0
Parking Lot	25.00	Space	0.22	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - update based on latest PG&E Data

Land Use - Based on PD

Construction Phase - Based on Default Caleemod Assumptions

Off-road Equipment -

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Based on detailed construction fleet

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Caleemod Default

Off-road Equipment - Provided in Construction Detailed Fleet

Trips and VMT -

Demolition -

Grading - Per the current exhibit, the earthwork is approxiamtely: 750 cy cut and 100 cy fill

Architectural Coating -

Vehicle Trips -

Road Dust - Based on Project information

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation - paint

Table Name	Column Name	Default Value	New Value
tblGrading	MaterialExported	0.00	750.00
tblGrading	MaterialImported	0.00	100.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	100	0

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0647	0.6241	0.4380	7.2000e-004	5.4000e-003	0.0381	0.0435	1.6200e-003	0.0351	0.0367		65.8255	65.8255	0.0177	0.0000	66.2686
Maximum	**0.0647**	**0.6241**	**0.4380**	**7.2000e-004**	**5.4000e-003**	**0.0381**	**0.0435**	**1.6200e-003**	**0.0351**	**0.0367**		**65.8255**	**65.8255**	**0.0177**	**0.0000**	**66.2686**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0647	0.6241	0.4380	7.2000e-004	5.4000e-003	0.0381	0.0435	1.6200e-003	0.0351	0.0367		65.8254	65.8254	0.0177	0.0000	66.2685
Maximum	**0.0647**	**0.6241**	**0.4380**	**7.2000e-004**	**5.4000e-003**	**0.0381**	**0.0435**	**1.6200e-003**	**0.0351**	**0.0367**		**65.8254**	**65.8254**	**0.0177**	**0.0000**	**66.2685**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**1-1-2018**	**3-31-2018**	0.3558	0.3558
2	**4-1-2018**	**6-30-2018**	0.3309	0.3309
		Highest	0.3558	0.3558

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Service Installation	Site Preparation	1/13/2018	1/15/2018	5	1	Service Preparation
2	Grading	Grading	1/16/2018	1/17/2018	5	2	Grading
3	Building Construction	Building Construction	1/18/2018	6/6/2018	5	100	Building Construction

4	Asphalt	Paving	6/7/2018	6/13/2018	5	5	Asphalt
5	Architechtural Coating	Architectural Coating	6/14/2018	6/20/2018	5	5	Architechtural coating

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.33

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 888

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Service Installation	Graders	1	8.00	187	0.41
Service Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Buidling Construction	Cranes	1	4.00	231	0.29
Buidling Construction	Forklifts	2	6.00	89	0.20
Buidling Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Asphalt	Cement and Mortar Mixers	4	6.00	9	0.56
Asphalt	Pavers	1	7.00	130	0.42
Asphalt	Rollers	1	7.00	80	0.38
Asphalt	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architechtural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Service Installation	2	5.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	106.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Buidling Construction	5	6.00	2.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

Asphalt	7	18.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architechtural Coating	1	1.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Service Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005		0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9000e-004	4.8800e-003	2.1300e-003	0.0000		2.1000e-004	2.1000e-004		1.9000e-004	1.9000e-004		0.4458	0.4458	1.4000e-004	0.0000	0.4492
Total	**3.9000e-004**	**4.8800e-003**	**2.1300e-003**	**0.0000**	**2.7000e-004**	**2.1000e-004**	**4.8000e-004**	**3.0000e-005**	**1.9000e-004**	**2.2000e-004**		**0.4458**	**0.4458**	**1.4000e-004**	**0.0000**	**0.4492**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005		0.0184	0.0184	0.0000	0.0000	0.0184
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**		**0.0184**	**0.0184**	**0.0000**	**0.0000**	**0.0184**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005		0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9000e-004	4.8800e-003	2.1300e-003	0.0000		2.1000e-004	2.1000e-004		1.9000e-004	1.9000e-004		0.4458	0.4458	1.4000e-004	0.0000	0.4492
Total	**3.9000e-004**	**4.8800e-003**	**2.1300e-003**	**0.0000**	**2.7000e-004**	**2.1000e-004**	**4.8000e-004**	**3.0000e-005**	**1.9000e-004**	**2.2000e-004**		**0.4458**	**0.4458**	**1.4000e-004**	**0.0000**	**0.4492**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005		0.0184	0.0184	0.0000	0.0000	0.0184
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**		**0.0184**	**0.0184**	**0.0000**	**0.0000**	**0.0184**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-004	0.0000	8.0000e-004	4.2000e-004	0.0000	4.2000e-004		0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0600e-003	9.4300e-003	7.7800e-003	1.0000e-005		6.2000e-004	6.2000e-004		5.9000e-004	5.9000e-004		1.0608	1.0608	2.0000e-004	0.0000	1.0659
Total	**1.0600e-003**	**9.4300e-003**	**7.7800e-003**	**1.0000e-005**	**8.0000e-004**	**6.2000e-004**	**1.4200e-003**	**4.2000e-004**	**5.9000e-004**	**1.0100e-003**		**1.0608**	**1.0608**	**2.0000e-004**	**0.0000**	**1.0659**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1000e-004	0.0175	3.3300e-003	4.0000e-005	9.0000e-004	7.0000e-005	9.6000e-004	2.5000e-004	7.0000e-005	3.1000e-004		4.1475	4.1475	2.2000e-004	0.0000	4.1529
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005		0.0737	0.0737	0.0000	0.0000	0.0737
Total	**5.5000e-004**	**0.0175**	**3.6400e-003**	**4.0000e-005**	**9.8000e-004**	**7.0000e-005**	**1.0400e-003**	**2.7000e-004**	**7.0000e-005**	**3.3000e-004**		**4.2211**	**4.2211**	**2.2000e-004**	**0.0000**	**4.2267**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-004	0.0000	8.0000e-004	4.2000e-004	0.0000	4.2000e-004		0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	1.0600e-003	9.4300e-003	7.7800e-003	1.0000e-005		6.2000e-004	6.2000e-004		5.9000e-004	5.9000e-004		1.0608	1.0608	2.0000e-004	0.0000	1.0659
Total	**1.0600e-003**	**9.4300e-003**	**7.7800e-003**	**1.0000e-005**	**8.0000e-004**	**6.2000e-004**	**1.4200e-003**	**4.2000e-004**	**5.9000e-004**	**1.0100e-003**		**1.0608**	**1.0608**	**2.0000e-004**	**0.0000**	**1.0659**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1000e-004	0.0175	3.3300e-003	4.0000e-005	9.0000e-004	7.0000e-005	9.6000e-004	2.5000e-004	7.0000e-005	3.1000e-004		4.1475	4.1475	2.2000e-004	0.0000	4.1529
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005		0.0737	0.0737	0.0000	0.0000	0.0737
Total	**5.5000e-004**	**0.0175**	**3.6400e-003**	**4.0000e-005**	**9.8000e-004**	**7.0000e-005**	**1.0400e-003**	**2.7000e-004**	**7.0000e-005**	**3.3000e-004**		**4.2211**	**4.2211**	**2.2000e-004**	**0.0000**	**4.2267**

3.4 Buidling Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0542	0.5516	0.3876	5.7000e-004		0.0354	0.0354		0.0326	0.0326		52.0058	52.0058	0.0162	0.0000	52.4106
Total	**0.0542**	**0.5516**	**0.3876**	**5.7000e-004**		**0.0354**	**0.0354**		**0.0326**	**0.0326**		**52.0058**	**52.0058**	**0.0162**	**0.0000**	**52.4106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.9000e-004	0.0127	3.4000e-003	3.0000e-005	5.9000e-004	9.0000e-005	6.9000e-004	1.7000e-004	9.0000e-005	2.6000e-004		2.4475	2.4475	1.5000e-004	0.0000	2.4512
Worker	1.2100e-003	9.2000e-004	9.2700e-003	2.0000e-005	2.3700e-003	2.0000e-005	2.3900e-003	6.3000e-004	2.0000e-005	6.5000e-004		2.2106	2.2106	7.0000e-005	0.0000	2.2123
Total	**1.7000e-003**	**0.0137**	**0.0127**	**5.0000e-005**	**2.9600e-003**	**1.1000e-004**	**3.0800e-003**	**8.0000e-004**	**1.1000e-004**	**9.1000e-004**		**4.6581**	**4.6581**	**2.2000e-004**	**0.0000**	**4.6635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0542	0.5516	0.3876	5.7000e-004		0.0354	0.0354		0.0326	0.0326		52.0058	52.0058	0.0162	0.0000	52.4105
Total	**0.0542**	**0.5516**	**0.3876**	**5.7000e-004**		**0.0354**	**0.0354**		**0.0326**	**0.0326**		**52.0058**	**52.0058**	**0.0162**	**0.0000**	**52.4105**

Mitigated Construction Off-Site

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

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.9000e-004	0.0127	3.4000e-003	3.0000e-005	5.9000e-004	9.0000e-005	6.9000e-004	1.7000e-004	9.0000e-005	2.6000e-004		2.4475	2.4475	1.5000e-004	0.0000	2.4512
Worker	1.2100e-003	9.2000e-004	9.2700e-003	2.0000e-005	2.3700e-003	2.0000e-005	2.3900e-003	6.3000e-004	2.0000e-005	6.5000e-004		2.2106	2.2106	7.0000e-005	0.0000	2.2123
Total	**1.7000e-003**	**0.0137**	**0.0127**	**5.0000e-005**	**2.9600e-003**	**1.1000e-004**	**3.0800e-003**	**8.0000e-004**	**1.1000e-004**	**9.1000e-004**		**4.6581**	**4.6581**	**2.2000e-004**	**0.0000**	**4.6635**

3.5 Asphalt - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3000e-003	0.0219	0.0181	3.0000e-005		1.2800e-003	1.2800e-003		1.1800e-003	1.1800e-003		2.4270	2.4270	6.8000e-004	0.0000	2.4441
Paving	4.3000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7300e-003**	**0.0219**	**0.0181**	**3.0000e-005**		**1.2800e-003**	**1.2800e-003**		**1.1800e-003**	**1.1800e-003**		**2.4270**	**2.4270**	**6.8000e-004**	**0.0000**	**2.4441**

Unmitigated Construction Off-Site

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

Worker	1.8000e-004	1.4000e-004	1.3900e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004		0.3316	0.3316	1.0000e-005	0.0000	0.3318
Total	**1.8000e-004**	**1.4000e-004**	**1.3900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**		**0.3316**	**0.3316**	**1.0000e-005**	**0.0000**	**0.3318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3000e-003	0.0219	0.0181	3.0000e-005		1.2800e-003	1.2800e-003		1.1800e-003	1.1800e-003		2.4270	2.4270	6.8000e-004	0.0000	2.4441
Paving	4.3000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7300e-003**	**0.0219**	**0.0181**	**3.0000e-005**		**1.2800e-003**	**1.2800e-003**		**1.1800e-003**	**1.1800e-003**		**2.4270**	**2.4270**	**6.8000e-004**	**0.0000**	**2.4441**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.4000e-004	1.3900e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004		0.3316	0.3316	1.0000e-005	0.0000	0.3318
Total	**1.8000e-004**	**1.4000e-004**	**1.3900e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**		**0.3316**	**0.3316**	**1.0000e-005**	**0.0000**	**0.3318**

3.6 Architechtural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.0900e-003					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5000e-004	5.0100e-003	4.6400e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		0.6383	0.6383	6.0000e-005	0.0000	0.6398
Total	**3.8400e-003**	**5.0100e-003**	**4.6400e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**		**0.6383**	**0.6383**	**6.0000e-005**	**0.0000**	**0.6398**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005		0.0184	0.0184	0.0000	0.0000	0.0184
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**		**0.0184**	**0.0184**	**0.0000**	**0.0000**	**0.0184**

Mitigated Construction On-Site

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

Category	tons/yr										MT/yr					
Archit. Coating	3.0900e-003					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5000e-004	5.0100e-003	4.6400e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		0.6383	0.6383	6.0000e-005	0.0000	0.6398
Total	**3.8400e-003**	**5.0100e-003**	**4.6400e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**		**0.6383**	**0.6383**	**6.0000e-005**	**0.0000**	**0.6398**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005		0.0184	0.0184	0.0000	0.0000	0.0184
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**		**0.0184**	**0.0184**	**0.0000**	**0.0000**	**0.0184**

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000		0.6814	0.6814	7.0000e-005	1.0000e-005	0.6873
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000		0.6814	0.6814	7.0000e-005	1.0000e-005	0.6873
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	1680	0.2210	2.0000e-005	0.0000	0.2229
Parking Lot	3500	0.4604	5.0000e-005	1.0000e-005	0.4644
Total		**0.6814**	**7.0000e-005**	**1.0000e-005**	**0.6873**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	1680	0.2210	2.0000e-005	0.0000	0.2229
Parking Lot	3500	0.4604	5.0000e-005	1.0000e-005	0.4644
Total		**0.6814**	**7.0000e-005**	**1.0000e-005**	**0.6873**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.3000e-003	0.0000	3.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		6.6000e-004	6.6000e-004	0.0000	0.0000	7.1000e-004
Unmitigated	1.3000e-003	0.0000	3.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		6.6000e-004	6.6000e-004	0.0000	0.0000	7.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.1000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.6000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		6.6000e-004	6.6000e-004	0.0000	0.0000	7.1000e-004
Total	**1.3000e-003**	**0.0000**	**3.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**0.0000**	**7.1000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.1000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.6000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		6.6000e-004	6.6000e-004	0.0000	0.0000	7.1000e-004
Total	**1.3000e-003**	**0.0000**	**3.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**0.0000**	**7.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Las Trampas Project - Operational Analysis

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.33	Acre	0.33	14,374.80	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - update based on latest PG&E Data

Land Use - Based on PD

Construction Phase - Based on Default Caleemod Assumptions

Off-road Equipment -

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Based on detailed construction fleet

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Caleemod Default

Off-road Equipment - Provided in Construction Detailed Fleet

Trips and VMT -

Demolition -

Grading - Per the current exhibit, the earthwork is approxiamtely: 750 cy cut and 100 cy fill

Architectural Coating -

Vehicle Trips - Trip generation based on the Circulation Assessment prepared for the proposed project.

Road Dust - Based on Project information

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation - paint

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	106.00
tblVehicleTrips	ST_TR	22.75	1,393.94
tblVehicleTrips	SU_TR	16.74	1,393.94
tblVehicleTrips	WD_TR	1.89	1,393.94

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1505	0.7224	1.7365	5.2800e-003	0.4224	6.7600e-003	0.4292	0.1134	6.3700e-003	0.1198		483.4243	483.4243	0.0198	0.0000	483.9197
Waste						0.0000	0.0000		0.0000	0.0000		0.0000	6.0900e-003	3.6000e-004	0.0000	0.0151
Water						0.0000	0.0000		0.0000	0.0000		0.1810	0.1810	2.0000e-005	0.0000	0.1826
Total	**0.1506**	**0.7224**	**1.7365**	**5.2800e-003**	**0.4224**	**6.7600e-003**	**0.4292**	**0.1134**	**6.3700e-003**	**0.1198**		**483.6053**	**483.6114**	**0.0202**	**0.0000**	**484.1174**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1505	0.7224	1.7365	5.2800e-003	0.4224	6.7600e-003	0.4292	0.1134	6.3700e-003	0.1198		483.4243	483.4243	0.0198	0.0000	483.9197
Waste						0.0000	0.0000		0.0000	0.0000		0.0000	6.0900e-003	3.6000e-004	0.0000	0.0151
Water						0.0000	0.0000		0.0000	0.0000		0.1810	0.1810	2.0000e-005	0.0000	0.1826
Total	**0.1506**	**0.7224**	**1.7365**	**5.2800e-003**	**0.4224**	**6.7600e-003**	**0.4292**	**0.1134**	**6.3700e-003**	**0.1198**		**483.6053**	**483.6114**	**0.0202**	**0.0000**	**484.1174**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1505	0.7224	1.7365	5.2800e-003	0.4224	6.7600e-003	0.4292	0.1134	6.3700e-003	0.1198		483.4243	483.4243	0.0198	0.0000	483.9197
Unmitigated	0.1505	0.7224	1.7365	5.2800e-003	0.4224	6.7600e-003	0.4292	0.1134	6.3700e-003	0.1198		483.4243	483.4243	0.0198	0.0000	483.9197

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	460.00	460.00	460.00	1,134,455	1,134,455
Total	460.00	460.00	460.00	1,134,455	1,134,455

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.570523	0.041853	0.194077	0.115893	0.018544	0.005373	0.016909	0.024079	0.002502	0.002562	0.005975	0.000872	0.000837

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Unmitigated	1.4000e-004	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.4000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005

Total	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.4000e-004					0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Total	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.1810	2.0000e-005	0.0000	0.1826
Unmitigated	0.1810	2.0000e-005	0.0000	0.1826

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.393189	0.1810	2.0000e-005	0.0000	0.1826
Total		**0.1810**	**2.0000e-005**	**0.0000**	**0.1826**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.393189	0.1810	2.0000e-005	0.0000	0.1826
Total		**0.1810**	**2.0000e-005**	**0.0000**	**0.1826**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0900e-003	3.6000e-004	0.0000	0.0151
Unmitigated	6.0900e-003	3.6000e-004	0.0000	0.0151

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151
Total		**6.0900e-003**	**3.6000e-004**	**0.0000**	**0.0151**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0151

Total		**6.0900e-003**	**3.6000e-004**	**0.0000**	**0.0151**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Las Trampas Project - Operational Analysis

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.33	Acre	0.33	14,374.80	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - update based on latest PG&E Data

Land Use - Based on PD

Construction Phase - Based on Default Caleemod Assumptions

Off-road Equipment -

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Based on detailed construction fleet

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Caleemod Default

Off-road Equipment - Provided in Construction Detailed Fleet

Trips and VMT -

Demolition -

Grading - Per the current exhibit, the earthwork is approxiamtely: 750 cy cut and 100 cy fill

Architectural Coating -

Vehicle Trips - Trip generation based on the Circulation Assessment prepared for the proposed project.

Road Dust - Based on Project information

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation - paint

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	106.00
tblVehicleTrips	ST_TR	22.75	1,393.94
tblVehicleTrips	SU_TR	16.74	1,393.94
tblVehicleTrips	WD_TR	1.89	1,393.94

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.9381	3.8271	9.8980	0.0308	2.4111	0.0371	2.4482	0.6453	0.0349	0.6803		3,102.2052	3,102.2052	0.1211		3,105.2326
Total	**0.9389**	**3.8271**	**9.8981**	**0.0308**	**2.4111**	**0.0371**	**2.4482**	**0.6453**	**0.0349**	**0.6803**		**3,102.2053**	**3,102.2053**	**0.1211**	**0.0000**	**3,105.2327**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.9381	3.8271	9.8980	0.0308	2.4111	0.0371	2.4482	0.6453	0.0349	0.6803		3,102.2052	3,102.2052	0.1211		3,105.2326
Total	**0.9389**	**3.8271**	**9.8981**	**0.0308**	**2.4111**	**0.0371**	**2.4482**	**0.6453**	**0.0349**	**0.6803**		**3,102.2053**	**3,102.2053**	**0.1211**	**0.0000**	**3,105.2327**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

Mitigated	0.9381	3.8271	9.8980	0.0308	2.4111	0.0371	2.4482	0.6453	0.0349	0.6803		3,102.2052	3,102.2052	0.1211		3,105.2326
Unmitigated	0.9381	3.8271	9.8980	0.0308	2.4111	0.0371	2.4482	0.6453	0.0349	0.6803		3,102.2052	3,102.2052	0.1211		3,105.2326

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	460.00	460.00	460.00	1,134,455	1,134,455
Total	460.00	460.00	460.00	1,134,455	1,134,455

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.570523	0.041853	0.194077	0.115893	0.018544	0.005373	0.016909	0.024079	0.002502	0.002562	0.005975	0.000872	0.000837

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Unmitigated	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Total	**7.4000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**7.0000e-005**	**7.0000e-005**	**0.0000**		**8.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Total	**7.4000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**7.0000e-005**	**7.0000e-005**	**0.0000**		**8.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Las Trampas Project - Operational Analysis

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	0.33	Acre	0.33	14,374.80	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - update based on latest PG&E Data

Land Use - Based on PD

Construction Phase - Based on Default Caleemod Assumptions

Off-road Equipment -

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Based on detailed construction fleet

Off-road Equipment - Provided in Construction Detailed Fleet

Off-road Equipment - Caleemod Default

Off-road Equipment - Provided in Construction Detailed Fleet

Trips and VMT -

Demolition -

Grading - Per the current exhibit, the earthwork is approxiamtely: 750 cy cut and 100 cy fill

Architectural Coating -

Vehicle Trips - Trip generation based on the Circulation Assessment prepared for the proposed project.

Road Dust - Based on Project information

Area Coating -

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation - paint

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	106.00
tblVehicleTrips	ST_TR	22.75	1,393.94
tblVehicleTrips	SU_TR	16.74	1,393.94
tblVehicleTrips	WD_TR	1.89	1,393.94

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.8256	4.0566	10.0160	0.0288	2.4111	0.0374	2.4485	0.6453	0.0352	0.6805		2,901.8713	2,901.8713	0.1232		2,904.9511
Total	**0.8264**	**4.0566**	**10.0160**	**0.0288**	**2.4111**	**0.0374**	**2.4485**	**0.6453**	**0.0352**	**0.6805**		**2,901.8713**	**2,901.8713**	**0.1232**	**0.0000**	**2,904.9512**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.8256	4.0566	10.0160	0.0288	2.4111	0.0374	2.4485	0.6453	0.0352	0.6805		2,901.8713	2,901.8713	0.1232		2,904.9511
Total	**0.8264**	**4.0566**	**10.0160**	**0.0288**	**2.4111**	**0.0374**	**2.4485**	**0.6453**	**0.0352**	**0.6805**		**2,901.8713**	**2,901.8713**	**0.1232**	**0.0000**	**2,904.9512**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8256	4.0566	10.0160	0.0288	2.4111	0.0374	2.4485	0.6453	0.0352	0.6805		2,901.8713	2,901.8713	0.1232		2,904.9511
Unmitigated	0.8256	4.0566	10.0160	0.0288	2.4111	0.0374	2.4485	0.6453	0.0352	0.6805		2,901.8713	2,901.8713	0.1232		2,904.9511

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	460.00	460.00	460.00	1,134,455	1,134,455
Total	460.00	460.00	460.00	1,134,455	1,134,455

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.570523	0.041853	0.194077	0.115893	0.018544	0.005373	0.016909	0.024079	0.002502	0.002562	0.005975	0.000872	0.000837

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Unmitigated	7.4000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005

Total	**7.4000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**7.0000e-005**	**7.0000e-005**	**0.0000**		**8.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000		8.0000e-005
Total	**7.4000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**7.0000e-005**	**7.0000e-005**	**0.0000**		**8.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

NOISE IMPACT ANALYSIS

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SCREENCHECK DRAFT

NOISE IMPACT ANALYSIS

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT
EAST BAY REGIONAL PARK DISTRICT

LSA

October 2018

SCREENCHECK DRAFT

NOISE IMPACT ANALYSIS

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT

EAST BAY REGIONAL PARK DISTRICT

Submitted to:

East Bay Regional Park District
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(559) 490-1210

October 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

CNEL	Community Noise Equivalent Level
dB	decibels
dBA	A-weighted decibels
EBRPD	East Bay Regional Park District
EVMA	emergency vehicle and maintenance access
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	frequency
in/sec	inches per second
L_{01}, L_{10}, L_{50}, L_{90}	fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, or 90 percent of a stated time period
Las Trampas	Las Trampas Wilderness Regional Preserve
L_{dn}	day/night average noise level
L_{eq}	equivalent continuous noise level
L_{max}, L_{min}	maximum/minimum noise level
LUDP	Las Trampas Regional Wilderness Land Use Development Plan
LUPA	Land Use Plan Amendment
L_V	velocity in decibels
PPV	peak particle velocity
rms	root mean square
USEPA	U.S. Environmental Protection Agency
vdB	vibration levels from noise

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NOISE IMPACT ANALYSIS

INTRODUCTION

LSA Associates, Inc. (LSA) has completed a Noise Impact Analysis for the proposed Southern Las Trampas Wilderness Regional Preserve (Las Trampas) Land Use Plan Amendment (LUPA) Project (project) within the East Bay Regional Park District (EBRPD or Park District). The LUPA would formally incorporate approximately 760 acres from five parcels into Las Trampas, which would expand the amount of open parkland in Las Trampas to a total of approximately 4,876 acres. The project is in the southern portion of Las Trampas in south-central Contra Costa County, on the western periphery of the San Ramon Valley within the City of San Ramon, Town of Danville, and unincorporated areas. A regional location map is included in Figure 1.

This Noise Impact Analysis examines potential impacts from noise sources in the project vicinity, including local roadways, through noise monitoring and analysis. Noise monitoring was conducted using the Larson Davis SoundTrack LxT sound level meter to assess the ambient noise environment on the project sites. Construction and operational noise levels were analyzed. Once operational, the project would generate noise through sources, such as parking lot activities and vehicle trips.

PROJECT DESCRIPTION

Project Goals and Objectives

The 2018 LUPA would serve as an amendment to the 1993 Las Trampas Land Use Development Plan. The main purposes of the 2018 LUPA are to:

- Formally append and open approximately 760 acres within five parcels into Las Trampas: Chen, Elworthy, Peter's Ranch, Faria, Podva;

- Evaluate one new staging area off of Bollinger Canyon Road located on the Chen parcel. The District is considering two locations for the staging area; however the Chen parcel is the District's preferred location. Therefore, this analysis focuses on the Chen parcel location for the proposed staging area;

- Evaluate two six-car trailhead lots off of Bollinger Canyon Road located on the Faria parcel; and

- Evaluate approximately 4.5 miles of proposed trail connections including defining final trail alignments, appropriate trail use and routine maintenance requirements.

The LUPA would be consistent with the District's guiding policy document, the 2013 Master Plan, which provides for the preparation of land use plans to: direct the long-term development and management of individual parks; identify major facility development; and establish appropriate land use designations in accordance with the vision of the East Bay Regional Park District.

The LUPA would serve as a supplement to the Las Trampas Regional Wilderness Land Use Development Plan (LUDP) adopted in November 1993, and the Las Trampas Regional Wilderness Resource Analysis adopted in August 1991. The Resource Analysis described and analyzed important natural and man-made resources in the parklands and identified resource and land planning issues for the LUDP. The LUDP provided policies and implementation measures for Las Trampas Regional Wilderness, Little Hills Regional Recreation Area, and the western end of the Las Trampas to Mount Diablo Regional Trail. The Peter's Ranch parcel acquired prior to the 1993 LUDP was briefly mentioned in the LUDP as the southern non-contiguous parcel.

Project Background

The project area consists of five parcels that would be appended to Las Trampas and includes three that the District currently owns: Peter's Ranch, Chen, and Elworthy. The Elworthy parcel is currently open to the public, and park visitors can access the Elworthy parcel from a 0.5-mile trail connector through a 182-acre Elworthy private property scenic easement. A 12-car staging area on the Elworthy scenic easement was constructed by the developer prior to District acceptance of the Elworthy parcel, and was opened to the public in 2015. The Peter's Ranch and Chen parcels are currently landbanked and are not open to the public.

Two additional parcels, Podva and Faria, would be dedicated to the District as mitigation for residential development projects. Thirty acres of the 96-acre Podva parcel would be under a conservation easement. The developer is providing to the District an approximately one-mile trail through the Podva parcel that connects to trails within Las Trampas, as well as a trailhead with on-street parking.

The entire 144-acre Faria dedication would be under a conservation easement, with the exception of a trail connector to the Calaveras Ridge Trail; a trail loop on the western portion; and carve-outs for two six-car trailhead parking which would be set aside for the District to develop additional public access points in the future. The long-term management plans associated with the conservation easements placed on these properties would be incorporated and referenced in the LUPA.

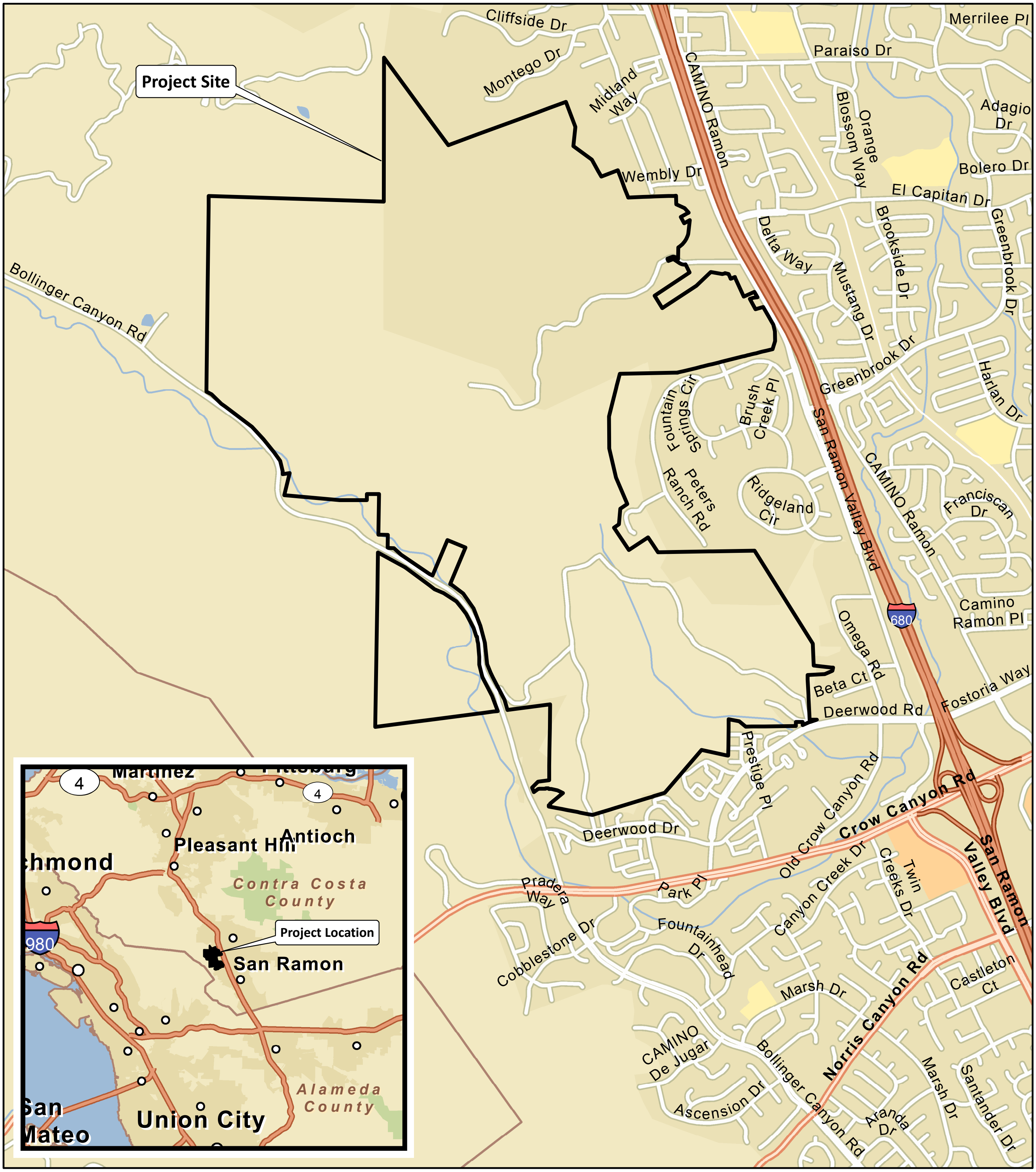
A project overview map is included in Figure 2 and the Chen Staging Area is shown in Figure 3.

Las Trampas is open between 8:00 a.m. and 5:30 p.m. during January 1 through February 13 and November 2 through December 31, between 8:00 a.m. and 6:00 p.m. during February 14 through March 8, between 8:00 a.m. and 7:00 p.m. during March 8 through May 20 and September 4 through November 1, and between 8:00 a.m. and 8:00 p.m. during May 21 through September 3.

Proposed Project

The project proposes to open to the public approximately two miles of narrow (single-track) trails and 2.5 miles of emergency vehicle and maintenance access (EVMA) roads for a total of approximately 4.5 miles of new trails. New trail construction would involve the use of mechanized equipment, such as a mini excavators and manual labor using hand tools.

The proposed project would divide the project area into natural and recreation/staging units, as defined by the District's 2013 Master Plan. The proposed project would designate the vast majority of the project area as a natural unit in which the land would remain undeveloped with the exception of recreational trails. Public infrastructure would be concentrated in the remaining land comprising of one staging area and two small trailhead lots.



LSA

FIGURE 1

Las Trampas LUPA Tech Studies

Project Location and Regional Vicinity Map

SOURCE: ESRI StreetMap North America (2012).

I:\EBR1702\GIS\Maps\Figure 1_Project Location and Regional Vicinity Map.mxd (12/21/2017)

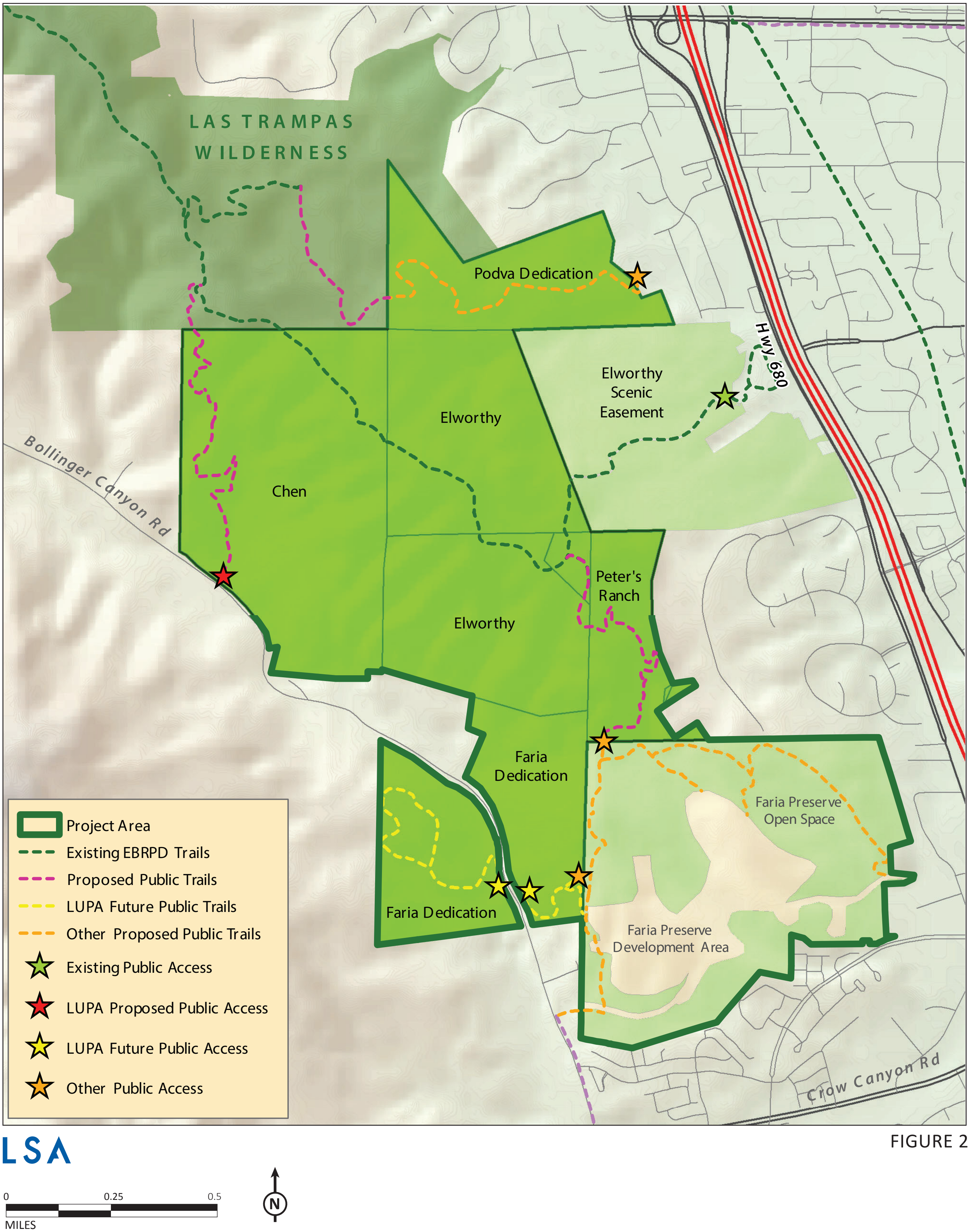


FIGURE 2

Las Trampas LUPA Tech Studies

Overview Map

SOURCE: EBRPD, AUGUST 2018.

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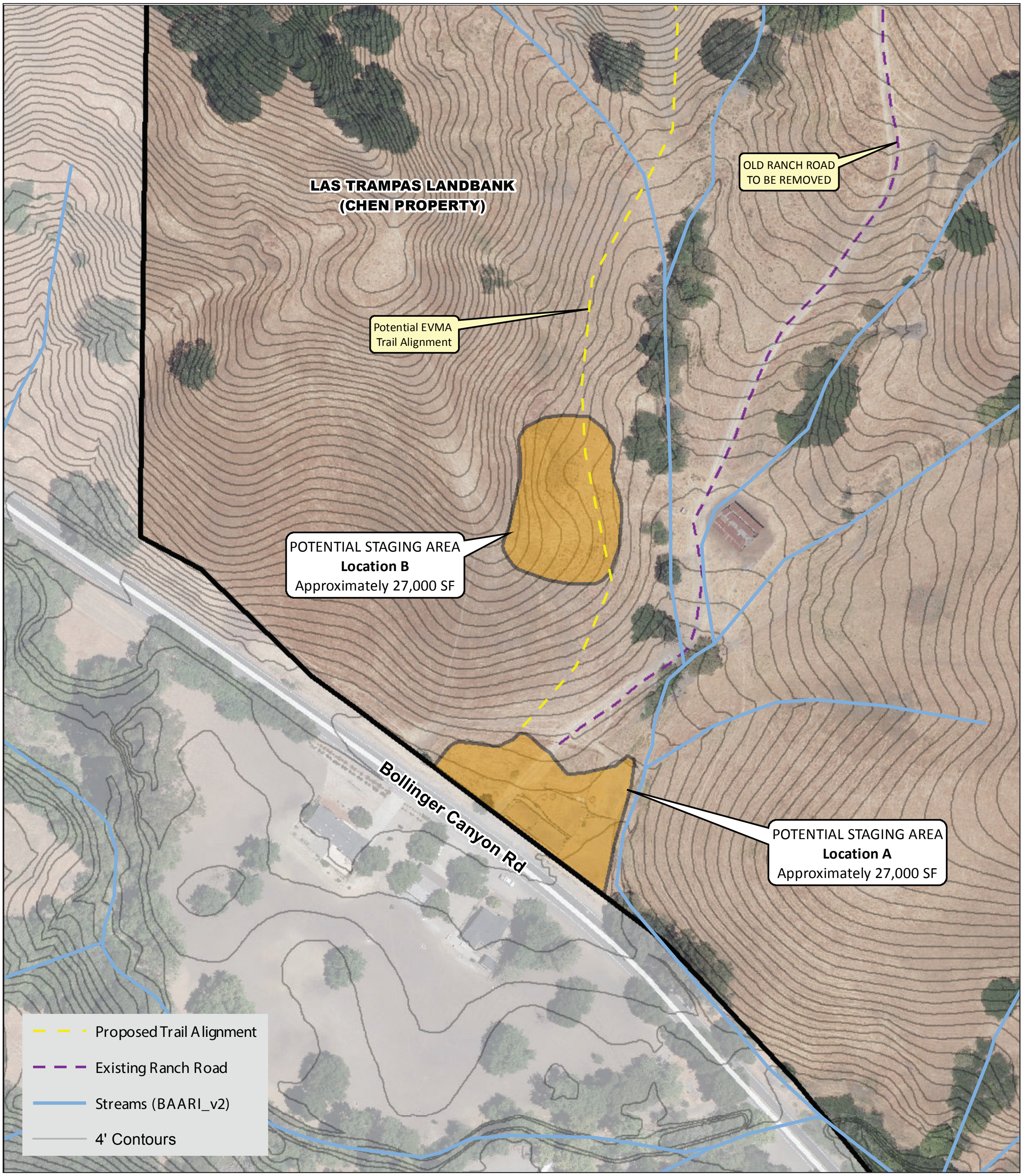

LSA

FIGURE 3

Las Trampas LUPA Tech Studies

Chen Staging Area

SOURCE: EBRPD, AUGUST 2018.

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Proposed project elements would include the following actions:

- Develop a staging area on the Chen property to serve as the southern gateway to Las Trampas, with all-weather, compacted gravel parking to accommodate up to 25 vehicles, benches, restroom, trail connections, information signs and landscaping. The District is considering two locations for the staging area; however the Chen parcel is the District's preferred location. Therefore, this analysis focuses on the Chen parcel location for the proposed staging area;

- Develop one 1.1-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from existing roads and trails and connecting to Bollinger Canyon Road via the Chen property;

- Develop one 0.5-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from the Podva property;

- Develop one 0.8-mile narrow trail segment of the Calaveras Ridge Trail on the Peter's Ranch property, connecting future City of San Ramon public trails on an adjacent property to existing trails on the Elworthy property;

- Develop two small parking trailhead areas to accommodate up to six cars on the Faria parcel with fencing, gates, and signs stating park regulations and hours; and

- Develop two trails to allow pedestrian, bicycle and equestrian access into Las Trampas from the six-car trailhead lots.

SUMMARY OF FINDINGS

This Noise Impact Analysis found that construction of the proposed project could result in short-term noise impacts on adjacent single-family residential uses; however, construction noise would be short-term and implementation of the recommended best management practices for project construction would reduce the construction noise impacts to the extent feasible. In addition, the proposed project would not result in any significant permanent noise level impacts.

BACKGROUND

This section provides background information on the evaluation of noise impacts including the characteristics of sound, measurement of sound, physiological effects of noise, and the regulatory framework for this analysis.

Characteristics of Sound

Noise is usually defined as unwanted sound and consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect our ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves, combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be measured precisely with instruments. The project analysis defines the noise environment of the project area in terms of sound intensity and the project's effect on adjacent sensitive land uses.

Measurement of Sound

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units (e.g., inches or pounds), decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) are 10 times more intense than 1 dB; 20 dB are 100 times more intense than 1 dB; and 30 dB are 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represent 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 A-weighted decibels (dBA) (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dBA for each doubling of distance in a hard-site environment, and the sound decreases 4.5 dBA for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average level (L_{dn}) based on dBA. CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as evening hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable.

Other noise rating scales that are important when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half of the time the noise level exceeds this level, and half of the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater since this level has been found to be the lowest audible change perceptible to humans in outdoor environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB, which is only noticeable in laboratory environments. The last category includes changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure (typically more than 8 hours, as defined by the Occupational Safety and Health Administration [OSHA]) to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions (thereby, affecting blood pressure and functions of the heart and the nervous system). In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dB, a tickling sensation occurs in the human ear, even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dB, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160 to 165 dB will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas.

Table 1 lists “Definitions of Acoustical Terms,” and Table 2 displays “Common Sound Levels and Their Noise Sources.”

Table 1: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dB to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Source: Harris, Cyril M., *Handbook of Acoustical Measurements and Noise Control*, 1991.

Table 2: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environment	Subjective Evaluation [a]
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle a few feet away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	Reference Level
Average Office	60	Quiet	½ as loud
Suburban Street	55	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	¼ as loud
Large Transformer	45	Quiet	
Average Residence Without Stereo Playing	40	Faint	⅛ as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing
	0	Very Faint	

Note:
[a] The threshold of hearing is the baseline.
Source: Compiled by LSA, 2015.

Characteristics of Groundborne Vibration

Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings. As the vibration propagates from the foundation throughout the remainder of the building, the vibration of floors and walls may be perceptible from the rattling of windows or a rumbling noise. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. When assessing annoyance from groundborne noise, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 micro-inch per second.

To distinguish vibration levels from noise levels, the unit is written as “VdB.” Human perception to vibration starts at levels as low as 67 VdB and sometimes lower. Annoyance due to vibration in residential settings starts at approximately 70 VdB. Groundborne vibrations are almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of the building, the motion does not provoke the same adverse human reaction.

Common sources of groundborne vibration include trains and construction activities such as blasting, pile driving and operating heavy earthmoving equipment. Typical vibration source levels from construction equipment are shown in Table 3. Although the table gives one level for each piece of equipment, it should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions. In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. For buildings considered of particular historical significance or that are particularly fragile structures, the damage threshold is approximately 96 VdB; the damage threshold for other structures is 100 VdB.[1]

Table 3: Typical Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft (in/sec)	Approximate VdB at 25 feet
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory roller		0.210	94
Hoe ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Notes: PPV= peak particle velocity; in/sec= inches per second
Source: Federal Transit Administration, 2006. *Transit Noise and Vibration Impact Assessment*. May.

Regulatory Framework

The federal, State, and local framework for noise standards is outlined below. The City of Los Altos has established standards in the General Plan and in the Municipal Code for land use projects that could potentially expose sensitive receptors to excessive noise levels.

U.S. Environmental Protection Agency

In 1972 Congress enacted the Noise Control Act. This act authorized the U.S. Environmental Protection Agency (USEPA) to publish descriptive data on the effects of noise and establish levels of sound *requisite to protect the public welfare with an adequate margin of safety.* These levels are separated into health (hearing loss levels) and welfare (annoyance levels), as shown in Table 4. The USEPA cautions that these identified levels are not standards because they do not take into account the cost or feasibility of the levels.

For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to an $L_{eq(24)}$ of 70 dBA. The "(24)" signifies an L_{eq} duration of 24 hours. The USEPA activity and interference guidelines are designed to ensure reliable

Table 4: Summary of USEPA Noise Levels

Effect	Level	Area
Hearing loss	$L_{eq}(24) \leq 70$ dB	All areas.
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq}(24) \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{eq} \leq 45$ dB	Indoor residential areas.
	$L_{eq}(24) \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March.

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[1] Harris, C.M., 1998. *Handbook of Acoustical Measurements and Noise Control.*

speech communication at about 5 feet in the outdoor environment. For outdoor and indoor environments, interference with activity and annoyance should not occur if levels are below 55 dBA and 45 dBA, respectively.

The noise effects associated with an outdoor L_{dn} of 55 dBA are summarized in Table 5. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 feet, and no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance.

Table 5: Summary of Human Effects in Areas Exposed to 55 dBA L_{dn}

Type of Effects	Magnitude of Effect
Speech – Indoors	100 percent sentence intelligibility (average) with a 5 dB margin of safety.
Speech – Outdoors	100 percent sentence intelligibility (average) at 1.4 feet 99 percent sentence intelligibility (average) at 3.2 feet 95 percent sentence intelligibility (average) at 11.5 feet
Average Community Reaction	None evident; 7 dB below level of significant complaints and threats of legal action and at least 16 dB below "vigorous action."
Complaints	1 percent dependent on attitude and other non-level related factors.
Annoyance	17 percent dependent on attitude and other non-level related factors.
Attitude Towards Area	Noise essentially the least important of various factors.

Source: U.S. Environmental Protection Agency, 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. March.

State of California

The State of California has established regulations that help prevent adverse impacts to occupants of buildings located near noise sources. Referred to as the *State Noise Insulation Standard*, it requires buildings to meet performance standards through design and/or building materials that would offset any noise source in the vicinity of the receptor. State regulations include requirements for the construction of new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings that are intended to limit the extent of noise transmitted into habitable spaces. These requirements are found in the California Code of Regulations, Title 24 (known as the Building Standards Administrative Code), Part 2 (known as the California Building Code), Appendix Chapters 12 and 12A. For limiting noise transmitted between adjacent dwelling units, the noise insulation standards specify the extent to which walls, doors, and floor ceiling assemblies must block or absorb sound. For limiting noise from exterior noise sources, the noise insulation standards set an interior standard of 45 dBA CNEL in any habitable room with all doors and windows closed. In addition, the standards require preparation of an acoustical analysis demonstrating the manner in which dwelling units have been designed to meet this interior standard, where such units are proposed in an area with exterior noise levels greater than 60 dBA CNEL. The proposed project would not include any new buildings; therefore, these regulations are not applicable to the proposed project and are provided for informational purposes only.

The State has also established land use compatibility guidelines for determining acceptable noise levels for specified land uses.

East Bay Regional Park District

Master Plan. The EBRPD's 2013 Master Plan[2] contains policies for achieving the highest standards of service in resource conservation, management, interpretation, public access, and recreation. The goal of the Master Plan is to maintain a careful balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of the parklands. The Master Plan also contains the following policies relating to providing parking and trailheads at convenient locations, which are applicable to the proposed project.

- Policy PA4: The District will provide access to parklands and trails to suit the level of expected use. Where feasible, the District will provide alternatives to parking on or use of neighborhood streets. The District will continue to advocate and support service to the regional park system by public transit.

- Policy PA5: The District will cooperate with local and regional planning efforts to create more walkable and bikeable communities, and coordinate park access opportunities with local trails and bike paths developed by other agencies to promote green transportation access to the Regional Parks and Trails.

Park Rules and Regulations: Ordinance 38. The EBRPD addresses noise in Section 908, Declaration of Noise Policy, in the EBRPD's Park Rules and Regulations: Ordinance 38.[3] The ordinance requires that devices such as radio, television sets, and similar devices shall not be used within the sleeping quarters of campgrounds of the District between the hours of 10:00 p.m. and 7:00 a.m. daily. In addition, the ordinance requires that the operation of sound-amplifying equipment shall only occur between the hours of 10:00 a.m. and 8:00 p.m. daily.

Contra Costa County

General Plan. Contra Costa County addresses Noise in the Noise Element.[4] The Noise Element sets noise and land use compatibility guidelines, as shown in Table 6 below. The Noise Element also contains goals and policies that seek to maintain appropriate noise conditions throughout the County. The following policies from the Noise Element are applicable to the proposed project.

- Policy 11-1: New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines contained in Table 6. These guidelines, along with the future noise levels shown in the future noise contours maps, should be used by the county as a guide for evaluating the compatibility of "noise sensitive" projects in potentially noisy areas.

- Policy 11-2: The standard for outdoor noise levels in residential areas is a DNL of 60 dB. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.

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[2] East Bay Regional Parks District, 2013. *East Bay Regional Park District Master Plan 2013.* July 16.

[3] East Bay Regional Parks District, 2016. *Ordinance 38 – Rules and Regulations.* Revised April 2016.

[4] Contra Costa, County of, 2010. *Contra Costa County General Plan 2005 – 2020.* July.

- Policy 11-3: If the primary noise source is train passbys, then the standard for outdoor noise levels in residential areas is a DNL of 70 dB. A higher DNL is allowable since the DNL is controlled by a relatively few number of train passbys that are disruptive outdoors only for short periods. Even though the DNL may be high, during the majority of the time the noise level will be acceptable.

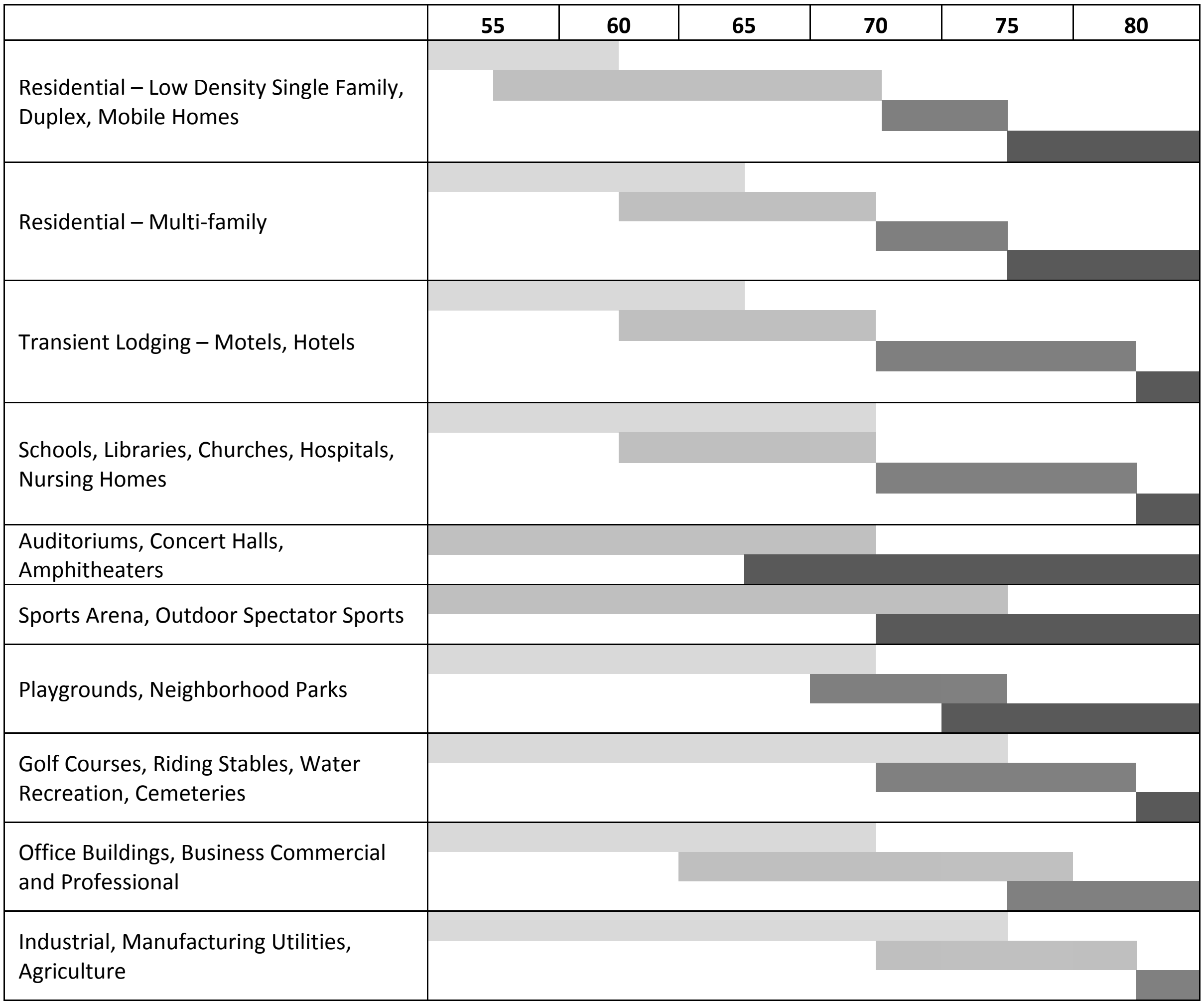
- Policy 11-6: If an area is currently below the maximum "normally acceptable" noise level, an increase in noise up to the maximum should not be allowed necessarily.

- Policy 11-7: Public projects shall be designed and constructed to minimize long-term noise impacts on existing residents.

- Policy 11-8: Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

- Policy 11-11: Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

Table 6: Community Noise Exposure L_{dn} or CNEL, dB



Source: Contra Costa County, 2010.

Normally Acceptable	░	Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional construction standards, without any special noise insulation requirements.
Conditionally Acceptable	▒	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
Normally Unacceptable	▓	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable	█	New construction or development clearly should not be undertaken.

City of San Ramon

General Plan. The City of San Ramon addresses Noise in the Noise Element.[5] The Noise Element sets noise and land use compatibility guidelines, as shown in Table 7 below. The Noise Element also contains implementing policies that are designed to help the City achieve an acceptable noise environment for the present and future residents of San Ramon. The following policies from the Noise Element are applicable to the proposed project.

- Implementing Policy 10.1-I-1: Minimize vehicular and stationary noise sources and noise emanating from intermittent activities.

- Implementing Policy 10.1-I-2: All projects that are exposed to noise greater than "normally acceptable" levels indicated in Table 7 shall be required to submit a noise analysis. Applicable noise attenuation measures shall be implemented with the DNL reduced to 45 dB in all habitable rooms.

- Implementing Policy 10.1-I-3: Acoustical and vibration studies shall be prepared by qualified professionals in accordance with industry-accepted methodology. All applicable and feasible vibration reduction measures shall be incorporated into project plans.

- Implementing Policy 10.1-I-4: Alternatives to sound walls such as building orientation and landscaped buffers shall be considered during the design process. If deemed appropriate, sound walls shall be well-designed and appropriately sited.

- Implementing Policy 10.1-I-5: New development shall minimize their noise impacts on adjacent properties through appropriate means, including, but not limited to, the following actions:

    - Screen and control noise sources, such as parking and loading facilities, outdoor activities and mechanical equipment,

    - Increase setbacks for noise sources from adjacent dwellings,

    - Retain or install fences, walls, and landscaping that serve as noise buffers,

    - Use soundproofing materials and other building practices or materials,

    - Encourage the use of commute alternatives,

    - Control hours of operation, including deliveries and trash pickup, to minimize noise impacts, and

    - Buffer noise along highways and arterial roadways through natural noise buffers and if necessary, install sound walls when compatible with neighborhood aesthetics and character.

- Implementing Policy 10.1-I-7: Implement the City's noise control standards to ensure appropriate regulation of common residential, commercial, and industrial noise sources.

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[5] San Ramon, City of, 2015. *City of San Ramon General Plan 2035.* April 28.

- Implementing Policy 10.1-I-8: Require new noise sources to use best available and practical control technology to minimize noise from all sources.

- Implementing Policy 10.1-I-14: Construction activities are exempt from the standards set forth in Table 7, but must implement all practical noise attenuation measures and practices to limit adverse impacts on nearby land uses.

- Implementing Policy 10.1-I-7: For purposes of city analyses of noise impacts, and for determining appropriate noise mitigation, a significant increase in ambient noise levels is assumed if the project causes ambient noise levels to exceed the following:

    - The ambient noise level is less than 60 dB L_{dn} and the project increases noise levels by 5 dB or more.

    - The ambient noise level is 60-65 dB L_{dn} and the project increases noise levels by 3 dB or more.

    - The ambient noise level is greater than 65 dB L_{dn} and the project increases noise levels by 1.5 dB or more.

Municipal Code. The City of San Ramon also addresses noise in the City's Municipal Code.[6] Chapter V – Noise Control permits construction noise when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. No construction is allowed on federal holidays.

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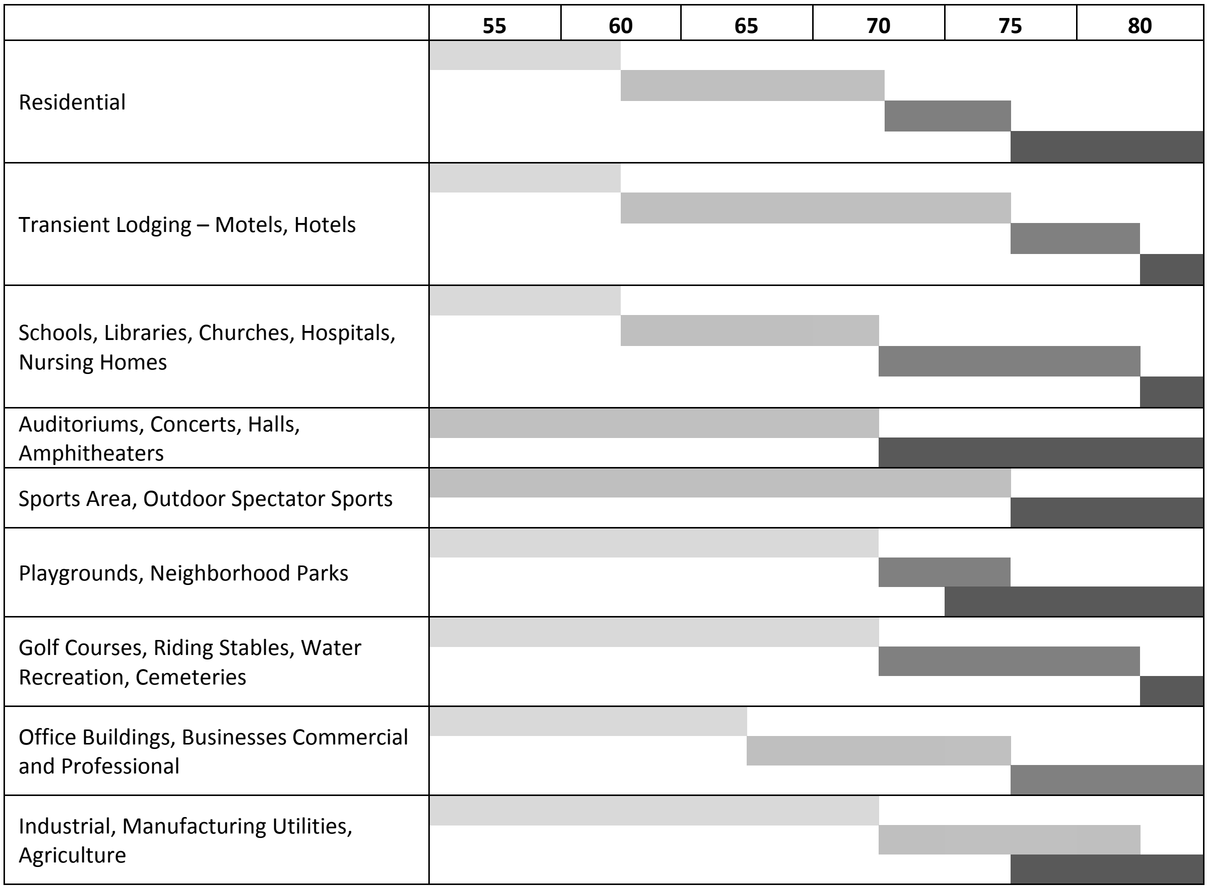
[6] San Ramon, City of, 2017. *San Ramon, CA Code of Ordinances.* May 26.

Table 7: Community Noise Exposure L_{dn} or CNEL, dB



Source: City of San Ramon, 2015.

Normally Acceptable	░	Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.
Conditionally Acceptable	▒	New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.
Normally Unacceptable	▓	New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.
Clearly Unacceptable	█	New construction or development should not be undertaken.

Town of Danville

General Plan. The Town of Danville addresses Noise in the Resources and Hazards Element.[7] The Resources and Hazards Element sets noise and land use compatibility guidelines, as shown in Table 7 below. The Resource and Hazards Element also contains policies that are designed to protect existing and future residents of Danville from hazards and nuisance associated with excessive levels of noise by maintaining or reducing noise intrusion levels in all areas of the Town to acceptable levels. The following policies from the Resources and Hazards Element are applicable to the proposed project.

- Policy 27.01: Ensure that new residential development projects meet acceptable noise level guidelines, as shown in Table 8.
- Policy 27.02: Require acoustical studies for major residential and other development projects, as appropriate, and impose noise mitigation measures accordingly.
- Policy 27.03: Protect the noise environment in existing residential areas. Where acceptable noise levels in residential areas would be exceeded or further impacted as a result of new development or transportation improvements, require the use of noise mitigation measures, such as wall barriers, berms, mufflers, sound traps, and baffles to reduce noise intrusion.
- Policy 27.05: Open space should be used, wherever practical, to provide an adequate spatial separator between noise sources and sensitive land uses.
- Policy 27.07: Protect parks and recreational areas from excessive noise to permit the enjoyment of sports and other leisure time activities.
- Policy 27.08: Require noise monitoring as needed to determine changes in noise levels over time, measure the effectiveness of project conditions of approval, and to ensure that appropriate mitigation programs are developed.
- Policy 27.09: Generally maintain exterior noise levels below 60 L_{dn} in areas where outdoor use is a major consideration, such as in residential backyards. Where the Town determines that this level cannot be achieved after reasonable mitigation has been applied, higher standards may be permitted at the discretion of the Town Council. In such cases, indoor noise levels should not exceed an L_{dn} of 45 dB.
- Policy 27.12: Require the preparation of groundborne vibration studies by qualified professionals in accordance with industry-accepted methodology where heavy construction activities involving significant site grading, underground, or foundation work will occur within 50 feet of residential or other vibration sensitive uses.
- Policy 27.13: Utilize noise reduction measures during all phases of construction activity to minimize the exposure of neighboring properties to excessive noise levels.

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[7] Danville, Town of, 2013. *The Town of Danville 2030 General Plan.* March 19.

Table 8: Land Use Compatibility Guidelines for Exterior Noise Levels

Land Use Category	Community Noise Equivalent Level (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density, Single Family, Duplex, Mobile Homes	50-60	55-70	70-75	75-85
Residential – Multifamily	50-65	60-70	70-75	75-85
Transient Lodging – Motel, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	700-80	80-85
Auditoriums, Concert Halls, Amphitheaters	Not Applicable	50-70	Not Applicable	C
Sports Arenas, Outdoor Spectator Sports	Not Applicable	50-70	Not Applicable	C
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	Not Applicable	70-80	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	Not Applicable
Industrial, Manufacturing, Utilities, Agricultural	50-75	70-80	75-85	Not Applicable

Source: Town of Danville, 2013.

Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design.
Clearly Unacceptable	New construction or development should generally not be undertaken.

Municipal Code. The Town of Danville also addresses noise in the Town's Municipal Code.[8] Chapter IV – Police Regulations permits construction noise when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays, and holidays.

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

This section describes the existing noise environment in the project site vicinity. Noise monitoring, traffic modeling, and noise modeling were used to quantify existing and future noise levels at the project site.

Ambient Noise Levels

The primary noise source impacting the project area results from traffic on Bollinger Canyon Road. Other noise sources not related to vehicles include birds and airplanes. Noise from motor vehicles is generated by engine vibrations, the interaction between the tires and the road, and the exhaust systems. Airport related noise levels are primarily associated with aircraft engine noise made while

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[8] Danville, Town of, 2017. *Danville, California Municipal Code.* April 4.

aircraft are taking off, landing, or running their engines while still on the ground. The Oakland International Airport is the closest airport and is located approximately 12 miles west of the project site. San Francisco International Airport is located approximately 22 miles southwest of the project. Aircraft noise is occasionally audible at the project site; however, no portion of the project site lies within the 65 dBA CNEL noise contours of these airports.

To assess existing noise levels, LSA conducted two short-term noise measurements on the project site on October 6, 2017. The short-term 15-minute noise measurements were recorded at different locations on the project site between 10:02 a.m. and 10:45 a.m. LSA also conducted one long-term noise measurement at the proposed staging area between October 6, 2017, and October 9, 2017. The long-term noise measurement captured hourly L_{eq} data as well as CNEL data, which incorporates the nighttime hours. Noise measurement data collected during the short-term and long-term noise monitoring is summarized in Table 9. The meteorological data conditions at the time of the short-term noise monitoring are shown in Table 10. Noise measurement sheets are provided in Appendix A.

As shown in Table 9, the short-term noise measurements indicate that ambient noise in the project site vicinity ranges from approximately 56.6 dBA to 58.5 dBA L_{eq}. The long-term noise measurement was 62.8 dBA L_{eq} and 65.9 dBA CNEL. Traffic on Bollinger Canyon Road was reported as the primary noise source.

Table 9: Ambient Noise Monitoring Results, dBA

Location Number	Location Description	Start Time	L_{eq}/ CNEL [a]	L_{max} [b]	L_{min} [c]	Primary Noise Sources
ST-1	North of Staging Area – northbound side	10:02 a.m.	56.6	75.5	29.3	Traffic on Bollinger Canyon Road, birds, aircraft overhead (screened out)
ST-2	South of LT-1 – northbound side	10:30 a.m.	58.5	75.4	30.9	Traffic on Bollinger Canyon Road, birds
LT-1	Proposed staging area across from 18515 Bollinger Canyon Road	11:00 a.m.	62.8/65.9	72.4	46.8	Traffic on Bollinger Canyon Road, birds, airplanes

Source: LSA (October 2017).

[a] L_{eq} represents the average of the sound energy occurring over the measurement time period for the short-term noise measurements. CNEL is the Community Noise Equivalent Level (CNEL) which is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as evening hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).

[b] L_{max} is the highest sound level measured during the measurement time period.

[c] L_{min} is the lowest sound level measured during the measurement time period.

Table 10: Meteorological Conditions During Ambient Noise Monitoring

Location Number	Average Wind Speed (mph)	Maximum Wind Speed (mph)	Temperature (˚F)
ST-1	1.0	3.0	70
ST-2	1.0	3.0	70

Source: LSA (October 2017).

Vehicular Traffic Noise

Motor vehicles with their distinctive noise characteristics are a major source of noise in Contra Costa County. The amount of noise varies according to many factors, such as volume of traffic, vehicle mix (percentage of cars and trucks), average traffic speed, and distance from the observer. Major contributing roadway noise sources in the project vicinity include Bollinger Canyon Road and Crow Canyon Road, as well as other arterial and collector roadways throughout the County.

Existing roadway traffic noise levels in the project vicinity were assessed using the Federal Highway Administration (FHWA) highway traffic noise prediction model (FHWA RD-77- 108). This model uses a typical vehicle mix for urban/suburban areas in California and requires parameters, including traffic volumes, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Existing traffic noise contours along modeled roadway segments are shown in Table 11. These noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. Appendix B provides the specific assumptions used in developing these noise levels and model printouts.

Table 11: Existing Traffic Noise Levels Without Project

Roadway Segment	ADT	Centerline to 70 dBA CNEL (feet)	Centerline to 65 dBA CNEL (feet)	Centerline to 60 dBA CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Bollinger Canyon Road - North of Chen Staging Area	1,650	< 50	< 50	< 50	59.1
Bollinger Canyon Road - Chen Staging Area to Faria Trailhead	1,650	< 50	< 50	< 50	59.1
Bollinger Canyon Road - Faria Trailhead to Deerwood Drive	1,650	< 50	< 50	< 50	59.1
Bollinger Canyon Road - Deerwood Drive to Crow Canyon Drive	1,590	< 50	< 50	< 50	57.6
Bollinger Canyon Road - South of Crow Canyon Drive	2,190	< 50	< 50	< 50	54.5
Deerwood Drive - East of Bollinger Canyon Road	390	< 50	< 50	< 50	50.1
Crow Canyon Drive - West of Bollinger Canyon Road	8,210	< 50	65	141	66.0
Crow Canyon Drive - East of Bollinger Canyon Road	9,700	< 50	81	161	64.5

Source: LSA (December 2017).
Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels

Existing Sensitive Land Uses in the Project Area

Certain land uses are considered more sensitive to noise than others. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The project site is located within and area that is predominantly open parkland and is surrounded by residential uses. The closest sensitive receptor includes the single-family residence located approximately 40 feet west of the proposed staging area. In addition, other single-family residences would be located approximately 75 feet from proposed trails.

METHODOLOGY

Evaluation of noise impacts associated with the proposed project includes the following:

- Determine the short-term construction noise levels at off-site noise sensitive uses and compare to the County of Contra Costa, City of San Ramon, and Town of Danville General Plan and Municipal Code Ordinance requirements;

- Determine the long-term noise levels at off-site noise sensitive uses and compare the levels to the County of Contra Costa, City of San Ramon, and Town of Danville pertinent noise standards; and

- Determine the required mitigation measures to reduce long-term on-site noise impacts from all sources.

THRESHOLD OF SIGNIFICANCE

The proposed project would have a significant noise effect if it would substantially increase the ambient noise levels in the project vicinity or conflict with adopted environmental plans and goals of applicable regulatory agencies, including, as appropriate, Contra Costa County, the City of San Ramon, and the Town of Danville. For the purposes of this analysis, the project would result in a significant noise impact if it would:

- Expose persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;

- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or

- Result in noise impacts associated with proximity to nearby airports.

PROJECT IMPACTS

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The project would result in short-term noise impacts due to construction and long-term impacts related to project operations, as described below.

Land Use Compatibility

The dominant source of noise in the project vicinity is traffic on Bollinger Canyon Road. As shown in Table 9, the long-term noise monitoring at the staging area measured 65.9 dBA CNEL. Contra Costa County, City of San Ramon, and Town of Danville set forth normally acceptable noise level standards for land use compatibility and outdoor exposure of new projects. The normally acceptable exterior noise level for recreational uses is up to 70 dBA CNEL under Contra Costa County, City of San Ramon, and Town of Danville noise standards. As identified above, the long-term noise monitoring identified noise levels of 65.9 dBA CNEL which indicates noise levels on the site would be below 70 dBA CNEL. In addition, noise levels would attenuate based on distance from Bollinger Canyon Road. Therefore, noise levels of 65.9 CNEL would only occur at the staging area and noise levels along the proposed trails would be expected to be much lower. Therefore, the project’s noise environment is consistent with Contra Costa County, City of San Ramon, and Town of Danville noise and land use compatibility standards.

Permanent Increase in Ambient Noise

The proposed project is located in a relatively quiet area with noise levels falling within the normally acceptable exterior noise level for park land uses and the conditionally acceptable exterior noise level for the adjacent residential uses according to Contra Costa County, City of San Ramon, and Town of Danville noise compatibility guidelines, as there are no substantial noise generators in the area and existing pass-through traffic levels produce moderate levels of noise. Implementation of the proposed project could expose existing nearby residences to noise generated from mobile source noise and stationary source noise. Mobile source noise would be attributable to the additional trips that would be a result of the proposed project. Stationary source noise would noise generated by parking lot activities and recreationalists using the trails.

Mobile Source Noise

To assess traffic noise impacts, the traffic noise levels along major roadway segments within the project vicinity were projected using FHWA modeling to predict traffic noise level conditions with and without the proposed project. FWHA modeling was based on existing traffic conditions, FWHA modeling results are summarized in Table 12. The table includes projected traffic noise levels as measured at 50 feet from the centerline of the outermost traveled lane along the modeled roadway segments. The model does not account for existing sound walls or terrain features that could reduce traffic noise levels at adjacent land uses, but rather assumes a reasonable worst-case direct line-of-sight over hard surface to the modeled traffic noise sources. Appendix B provides the specific assumptions used in developing these noise levels and model printouts.

Table 12: Existing Traffic Noise Levels Without and With Project

Roadway Segment	Existing Volumes					Existing Plus Future Projects Volumes				
	Without Project		With Project			Without Project		With Project		
	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	Increase from Baseline Conditions	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	ADT	L_{dn} (dBA) 50 feet from Centerline of Outermost Lane	Increase from Baseline Conditions
Bollinger Canyon Road - North of Chen Staging Area	1,650	59.1	1,650	59.1	0.0	1,650	59.1	1,650	59.1	0.0
Bollinger Canyon Road - Chen Staging Area to Faria Trailhead	1,650	59.1	2,080	60.1	1.0	1,650	59.1	1,865	59.6	0.5
Bollinger Canyon Road - Faria Trailhead to Deerwood Drive	1,650	59.1	2,300	60.5	1.4	2,065	60.0	2,715	61.2	1.2
Bollinger Canyon Road - Deerwood Drive to Crow Canyon Drive	1,590	57.6	2,235	59.1	1.5	2,875	60.2	3,520	61.1	0.9
Bollinger Canyon Road - South of Crow Canyon Drive	2,190	54.5	2,340	54.8	0.3	3,310	56.3	3,460	56.5	0.2
Deerwood Drive - East of Bollinger Canyon Road	390	50.1	390	50.1	0.0	390	50.1	390	50.1	0.0
Crow Canyon Drive - West of Bollinger Canyon Road	8,210	66.0	8,330	66.1	0.1	8,520	66.2	8,640	66.2	0.0
Crow Canyon Drive - East of Bollinger Canyon Road	9,700	64.5	10,070	64.7	0.2	10,130	64.7	10,500	64.9	0.2

Source: LSA (December 2017).

Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.

ADT = average daily traffic

CNEL = Community Noise Equivalent Level

dBA = A-weighted decibels

Table 12 shows a minor change in the traffic noise levels associated with the implementation of the proposed project. The largest increases in traffic-related noise as a result of the project would be along Bollinger Canyon Road, with a 1.5 dBA increase between Deerwood Drive and Crow Canyon Drive and a 1.4 dBA increase between Faria Trailhead and Deerwood Drive. These noise level increases would be less than the 3 dBA increase considered to be perceptible by the human ear in an outdoor environment and the resulting noise levels would be 59.1 and 60.5 dBA respectively, which would be in the normally acceptable and conditionally acceptable ranges at the nearby residential land uses. Therefore, no significant traffic noise impacts would occur for off-site land uses. As a result, no mitigation is required to address traffic-related noise.

Stationary Source Noise

Implementation of the proposed project could expose existing nearby sensitive receptors to noise generated from parking lot activities at the staging area and small parking areas on and off street. Parking noises, including engine sounds, car doors slamming, car alarms, and people conversing, could occur as a result of the proposed project at the project site. Typical parking lot activities, such as people conversing or doors slamming, generates noise levels of approximately 60 dBA to 70 dBA L_{max} at 50 feet.

The staging area would include parking for up to 25 vehicles and would include benches, a restroom, trail connections, information signs, and landscaping. The two small parking trailhead areas on the Faria parcel would each include parking for up to six cars and would include fencing, gates, and signs stating park regulations and hours.

As discussed above, the closest sensitive receptor includes the single-family residence located approximately 40 feet west of the proposed staging area. At 40 feet, there would be an increase of approximately 2 dBA from the reduced distance compared to the noise reference level measured at 50 feet. Therefore, based on distance attenuation, the closest receptor may be subject to parking lot noise levels of approximately 62 dBA to 72 dBA L_{max}.

The staging area is located within the jurisdiction of the Contra Costa County; therefore, County of Contra Costa noise standards were used to evaluate potential noise impacts associated with the proposed staging area. The County of Contra Costa addresses noise in terms of community noise equivalent levels; therefore, to analyze the 24-hour noise impact of the proposed project, park open-hours were used. Between January 1 and May 20 and September 4 through December 31, noise levels with the project would be approximately 66.0 dBA CNEL at the nearest residential property line. Between May 21 and September 3, noise levels with the project would be approximately 66.1 dBA CNEL at the nearest residential property line. Table 13 identifies noise levels with and without implementation of the proposed project. Calculations are provided in Appendix C.

Table 13: Operational Noise Levels With and Without Project at Nearest Receptor

	Existing Noise Levels	Parking Lot Noise Levels	Existing Plus Project Noise Levels	Noise Level Increase
January 1 – February 13 (8:00 a.m. – 5:30 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
February 14 – March 8 (8:00 a.m. – 6:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
March 8 – May 20 (8:00 a.m. – 7:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
May 21 – September 3 (8:00 a.m. – 8:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.1 dBA CNEL	0.2 dBA
September 4 – November 1 (8:00 a.m. – 7:00 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA
November 2 – December 31 (8:00 a.m. – 5:30 p.m.)	65.9 dBA CNEL	72 dBA L_{max}	66.0 dBA CNEL	0.1 dBA

Source: LSA (December 2017).

Note: CNEL is the Community Noise Equivalent Level (CNEL) which is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as evening hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours).

As shown in Table 13 above, due to the intermittent nature of parking lot activity, when averaged over a 24-hour period, noise levels associated with parking lot activity would result in a minimal increase of 0.1 to 0.2 dBA. This noise level is well below the 3 dBA increase considered to be perceptible by the human ear in an outdoor environment and less than the established significance criteria of a 3 dBA permanent increase in ambient noise levels. Noise levels would remain within the conditionally acceptable exterior noise level for residential land uses under Contra Costa County, City of San Ramon, and Town of Danville's land use compatibility standards. Maximum noise levels from cars passing were recorded at approximately 72 dBA to 75 dBA L_{max}, therefore door slamming noise levels ranging from 65 dBA to 72 dBA would be consistent with existing noise levels and would not result in a substantial increase in noise. Therefore, this impact would be considered less than significant.

In addition, Las Trampas Preserve is an existing open space use and park visitors would generate noise intermittently while visiting the proposed project, but would not generate noise levels that would exceed the applicable standards. In addition, the proposed trails are located approximately 75 feet from the nearest sensitive receptors. Voices from trail users may be audible at the nearest residences on occasion, but due to the distance and the minimal noise generated by hikers, the noise impact would be expected to be minimal. Therefore, the proposed project would not expose persons to noise in excess of local standards.

Groundborne Vibration and Groundborne Noise

Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors. Vibration energy propagates from a source, through intervening soil and rock layers, to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by the occupants as the motion of building surfaces, rattling of items on shelves or hanging on walls, or as a low-frequency rumbling noise. The rumbling noise is caused by the vibrating walls, floors, and ceilings radiating sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of groundborne vibration are construction activities (e.g., pavement breaking and operating heavy-duty earthmoving equipment), and occasional traffic on rough roads. In general, groundborne vibration from standard construction practices is only a potential issue when within 25 feet of sensitive uses. Groundborne vibration levels from construction activities very rarely reach levels that can damage structures; however, these levels are perceptible near the active construction site. With the exception of old buildings built prior to the 1950s or buildings of historic significance, potential structural damage from heavy construction activities rarely occurs. When roadways are smooth, vibration from traffic (even heavy trucks) is rarely perceptible.

The streets surrounding the project area are paved, smooth, and unlikely to cause significant groundborne vibration. In addition, the rubber tires and suspension systems of buses and other on-road vehicles make it unusual for on-road vehicles to cause groundborne noise or vibration problems. It is, therefore, assumed that no such vehicular vibration impacts would occur and, therefore, no vibration impact analysis of on-road vehicles is necessary. Additionally, once constructed, the proposed project would not contain uses that would generate groundborne vibration.

Construction Vibration

The nearest sensitive receptor is the single-family residence located approximately 40 feet west of the staging area. This construction vibration impact analysis discusses the level of human annoyance using vibration levels in VdB and will assess the potential for building damages using vibration levels in PPV (in/sec) because vibration levels calculated in RMS are best for characterizing human response to building vibration, while vibration level in PPV is best used to characterize potential for damage. The Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment*[9] guidelines indicate that a vibration level up to 102 VdB (an equivalent to 0.5 in/sec in PPV) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 in/sec in PPV).

Table 14 shows the PPV and VdB values at 25 feet from a construction vibration source. As shown in Table 14, bulldozers and other heavy-tracked construction equipment (except for pile drivers and vibratory rollers) generate approximately 87 VdB of groundborne vibration when measured at 25 feet, based on the Transit Noise and Vibration Impact Assessment. At this level, groundborne vibration would result in potential annoyance to residences and workers, but would not cause any damage to the buildings. Construction vibration, similar to vibration from other sources, would not have any significant effects on outdoor activities (e.g., those outside of residences and commercial/office buildings in the project vicinity). Outdoor site preparation for the project is expected to use a

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[9] Federal Transit Administration, 2006. Office of Planning and Environment. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. May.

bulldozer and loaded truck. The greatest levels of vibration are anticipated to occur during the site preparation phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts occur normally within the buildings. The formula for vibration transmission is provided below.

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref}\ x\ (25/D)^{1.5}$$

Table 14: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 feet	
	PPV (in/sec)	L_V (VdB) [a]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer [b]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment* (Federal Transit Administration, 2006).

[a] RMS vibration velocity in decibels (VdB) is 1 µin/sec.

[b] Equipment shown in **bold** is expected to be used on site.

µin/sec = micro-inches per second	PPV = peak particle velocity
in/sec = inches per second	RMS = root-mean-square
L_V = velocity in decibels	VdB = vibration velocity decibels

The main trail/road from the Chen staging area will be constructed using heavy equipment and even narrow trails may include use of a small excavator. For typical construction activity, the equipment with the highest vibration generation potential is the large bulldozer, which would generate 87 VdB at 25 feet. The closest residential structure is located 40 feet from the project construction boundary. Based on distance attenuation, the closest residences would experience vibration levels of up to 81 VdB (0.044 PPV [in/sec]). This vibration level at the closest residential structure from construction equipment or would not exceed the FTA threshold of 94 VdB (0.2 in/sec PPV) for building damage when bulldozers and loaded trucks operate within 50 feet of the project construction boundary. This level is also below the FTA's "barely perceptible" human response criteria of 0.04 PPV for transient sources of vibration events. In addition, trails would be constructed mostly with hand tools which would not be a significant source of vibration. Therefore, groundborne vibration impacts from project-related construction activities would be considered less-than-significant.

Temporary Increase in Ambient Noise

The proposed project is located approximately 40 feet from single-family residences. Construction activities associated with the LUPA could result in substantial temporary or periodic increases in ambient noise levels at staging, parking, access, and trail sites throughout the Las Trampas Preserve. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from one day to several days depending on the phase of construction. The level and types of noise impacts that would occur during construction are described below.

Short-term noise impacts would occur during grading and site preparation activities. Table 15 lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor, obtained from the FHWA Roadway Construction Noise Model. Construction-related short-term noise levels would be higher than existing ambient noise levels currently in the project area but would no longer occur once construction of the project is completed.

Two types of short-term noise impacts could occur during construction of the proposed project. The first type involves construction crew commutes and the transport of construction equipment and materials to the site for the proposed project, which would incrementally increase noise levels on Bollinger Canyon Road leading to the sites. As shown in Table 15, there would be a relatively high single-event noise exposure potential at a maximum level of 79 dBA L_{max} with trucks passing at 50 feet.

The second type of short-term noise impact is related to noise generated during excavation, grading, and construction on the project site. Construction is performed in discrete steps, or phases, each with its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Table 15 lists maximum noise levels recommended for noise impact assessments for typical construction equipment, based on a distance of 50 feet between the equipment and a noise receptor. Typical maximum noise levels can range up to 87 dBA L_{max} at 50 feet during the noisiest construction phases, when pile driving and rock drills are not used. It is not anticipated that construction of project would require the use of rock drills or pile drivers. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because earthmoving machinery is the noisiest construction equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Table 15: Noise Emission Reference Levels and Usage Factors

Equipment Description	Acoustical Usage Factor [a]	Predicted L_{max} at 50 feet (dBA, slow) [b]	Actual Measured L_{max} at 50 feet (dBA, slow) [c]
All Other Equipment > 5 HP	50	85	N/A [d]
Backhoe	40	80	78
Compactor (ground)	20	80	83
Compressor (air)	40	80	78
Concrete Mixer Truck	40	85	79
Concrete Pump Truck	20	82	81
Crane	16	85	81
Dozer	40	85	82
Dump Truck	40	84	76
Excavator	40	85	81
Flat Bed Truck	40	84	74
Front-End Loader	40	80	79
Generator	50	82	81
Gradall	40	85	83
Grader	40	85	N/A
Grapple (on backhoe)	40	85	87
Man Lift	20	85	75
Paver	50	85	77
Pickup Truck	40	55	75
Pneumatic Tools	50	85	85
Pumps	50	77	81
Roller	20	85	80
Scraper	40	85	84
Sheers (on backhoe)	40	85	96
Tractor	40	84	N/A
Vacuum Excavator (Vac-Truck)	40	85	85
Vacuum Street Sweeper	10	80	82
Ventilation Fan	100	85	79
Welder/Torch	40	73	74

Source: *Highway Construction Noise Handbook*, Table 9.1 (Federal Highway Administration 2006).

Note: Noise levels reported in this table are rounded to the nearest whole number.

[a] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

[b] Maximum noise levels were developed based on Specification (Spec.) 721.560 from the Central Artery/Tunnel (CA/T) program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.

[c] The maximum noise level was developed based on the average noise level measured for each piece of equipment during the CA/T program in Boston, Massachusetts.

[d] Since the maximum noise level based on the average noise level measured for this piece of equipment was not available, the maximum noise level developed based on Spec 721.560 would be used.

dBA = A-weighted decibels
HP = horsepower
L_{max} = maximum instantaneous noise level
kVA = kilovolt-amperes
N/A = not applicable
RCNM = Roadway Construction Noise Model
VMS = variable message sign

The nearest sensitive receptor is the single-family residence located approximately 40 feet west of the staging area. Project construction would result in short-term noise impacts on this adjacent receptor. The main trail/road from the Chen staging area will be constructed using heavy equipment and even narrow trails may include use of a small excavator. At a distance of 40 feet, there would be an increase of approximately 2 dBA compared to the noise reference level calculated as 50 feet from the active construction area. Therefore, the closest sensitive receptor may be subject to short-term construction noise reaching 89 dBA L_{max} when construction is occurring at the staging area boundary. Based on this maximum noise level and assuming a crane, forklift, tractor, welder, and air compressor would be operating simultaneously, construction of the proposed project would result in noise levels of approximately 84 dBA L_{eq} at the nearest sensitive receptor. This noise level would be higher than the existing measured ambient noise levels of approximately 56.6 dBA to 58.5 dBA L_{eq}. However, the total construction period would be approximately 6 months and construction equipment would operate at various locations within the approximately 0.75-acre staging area project site and would only generate this maximum noise level when operations occur at the boundary of the staging area closest to the receptor.

In addition, the proposed trails would be constructed mostly with hand tools. The proposed trails are located approximately 75 feet from the nearest sensitive receptors. Therefore, based on the distance between receptors from the trails and the type of construction activities, construction of the trails would not be expected to result in the exposure of sensitive receptors to noise levels in excess of standards.

Construction noise is permitted by Contra Costa County when activities occur during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods. Construction noise is also permitted by the City of San Ramon when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. No construction is allowed on federal holidays. In addition, construction noise is permitted by the Town of Danville when activities occur between the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays, and holidays.

- As discussed above, construction noise would result in a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Implementation of best management practices for project construction, as identified below, would reduce potential construction period noise impacts for the indicated sensitive receptors. Equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.

- Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the active project site.

- Prohibit extended idling time of internal combustion engines.

- All noise producing construction activities shall be limited to the hours of 7:30 a.m. and 7:00 p.m. Monday through Friday and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays and Sundays. No construction activity shall be allowed on holidays.

- Designate a "disturbance coordinator" at EBRPD who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and would determine and implement reasonable measures warranted to correct the problem.

Excessive Airport Noise

The proposed project is not located within 2 miles of a public or public use airport. The Oakland International Airport is the closest airport and is located approximately 12 miles west of the project site. San Francisco International Airport is located approximately 22 miles southwest of the project. Aircraft flyover noise is occasionally audible at the project sites, due to the flightpath of the regional airports in the vicinity; however, no portion of the project sites lies within the 65 dBA CNEL noise contours of any public airport nor does any portion of the project sites fall within 2 miles of any private airfield or heliport. Therefore, the proposed project would not result in the exposure of sensitive receptors to the excessive noise levels form aircraft noise sources.

CONCLUSION

As described in the analysis above, construction of the proposed project would result in short-term noise impacts on adjacent single-family residential uses; however, construction noise would be short-term and implementation of the recommended best management practices for project construction would reduce the construction noise impacts to the extent feasible. In addition, the proposed project would not result in a substantial increase in traffic volumes, therefore, the proposed project would not result in generate a substantial long-term traffic noise level increase. Implementation of the proposed project would also generate on-site stationary noise sources associated with parking lot activities. However, the proposed project would not result in any permanent increase of 3 dBA or more in ambient noise levels at the existing sensitive receptors in the project vicinity that are currently exposed to noise levels above the County of Contra Costa, City of San Ramon, and Town of Danville normally acceptable threshold for that type of land use.

APPENDIX A

NOISE MEASUREMENT SHEETS

Noise Measurement Survey

Project Number: ERB1702

Project Name: Las Trampas

Test Personnel: J.T. Stephens

Equipment: LD Lxt

Site Number: ST-1 Date: 10/6/17

Time: From 10:02 am To 10:17 a.m.

Site Location: North of Staging Area – Northbound side

Primary Noise Sources: Traffic on Bollinger Canyon Road, birds
Aircraft overhead (screened out)

Comments: Very quiet. With no breeze 35-38 dBA With breeze ~41 dBA

Adjacent Roadways: Bollinger Canyon – 2 lane road – 10 auto , 3 medium trucks

File:	61
L_{eq}	56.6
L_{max}	75.5
L_{min}	29.3
L_{50}	38.9
L_{90}	33.0

Atmospheric Conditions	
Average Wind Velocity (mph)	1.0
Maximum Wind Velocity (mph)	3.0
Temperature (F)	70
Relative Humidity (%)	

Noise Measurement Survey

Project Number: ERB1702

Test Personnel: J.T. Stephens

Project Name: Las Trampas

Equipment: LD Lxt

Site Number: ST-2 Date: 10/6/17

Time: From 10:30 am To 10:45 a.m.

Site Location: South of LT-1 – Northbound side

Primary Noise Sources: Traffic on Bollinger Canyon Road, birds

Comments: Very quiet other than vehicle pass-bys

Adjacent Roadways: Bollinger Canyon – 2 lane road – 17 auto , 1 medium trucks

File:	62
L_{eq}	58.5
L_{max}	75.4
L_{min}	30.9
L_{50}	38.3
L_{90}	33.1

Atmospheric Conditions	
Average Wind Velocity (mph)	1.0
Maximum Wind Velocity (mph)	3.0
Temperature (F)	70
Relative Humidity (%)	

Noise Measurement Survey

Project Number: ERB1702

Test Personnel: J.T. Stephens

Project Name: Las Trampas

Equipment: Quest Noise Pro NXM070024

Site Number: LT-1 Date: 10/6 – 10/9/17

Time: From 11:00 am To 12:00 p.m.

Site Location: Proposed staging area across from 18515 Bollinger Canyon Road

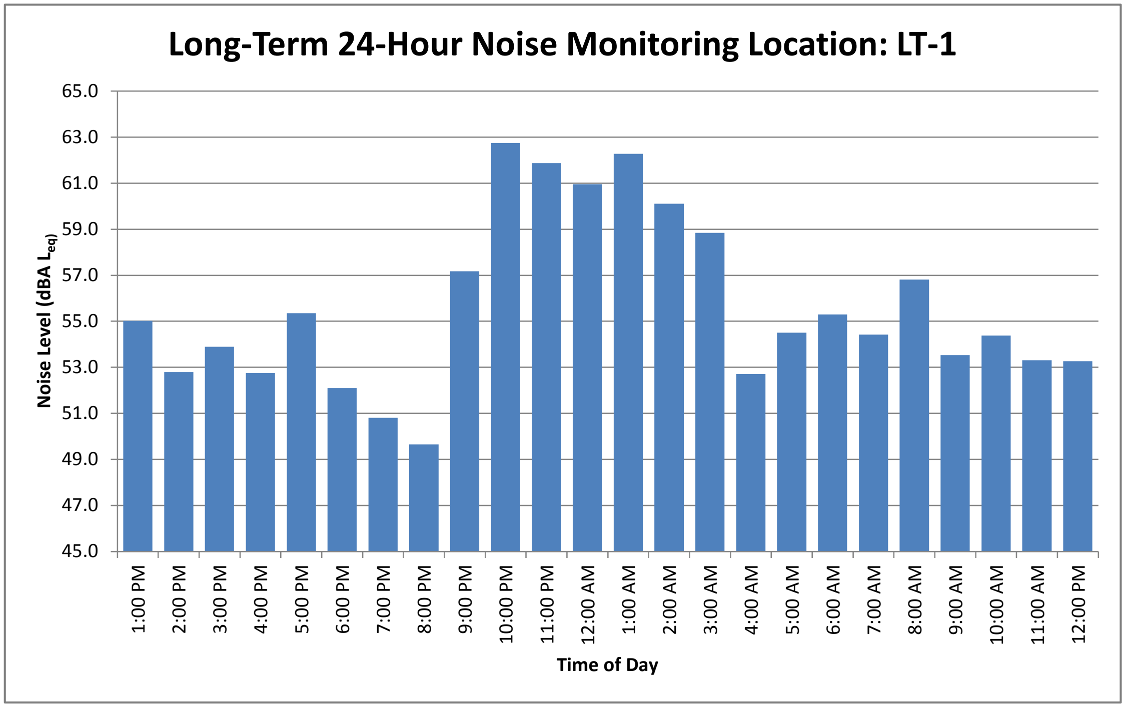
Primary Noise Sources: Traffic on Bollinger Canyon Road, birds, airplanes

Comments: 3 single-family homes across street

Adjacent Roadways: Bollinger Canyon – 2 lane road

		Hourly Leq	
13	1:00 PM	55.0	317407.8973
14	2:00 PM	52.8	190414.6951
15	3:00 PM	53.9	245426.3188
16	4:00 PM	52.8	188640.3496
17	5:00 PM	55.4	343054.7121
18	6:00 PM	52.1	161939.3336
19	7:00 PM	50.8	120490.7595
20	8:00 PM	49.6	92175.27782
21	9:00 PM	57.2	521779.6948
22	10:00 PM	62.8	18853934.24
23	11:00 PM	61.9	15377313.72
0	12:00 AM	61.0	12453308.98
1	1:00 AM	62.3	16918564.86
2	2:00 AM	60.1	10244968.27
3	3:00 AM	58.8	7667986.679
4	4:00 AM	52.7	1869901.29
5	5:00 AM	54.5	2819734.918
6	6:00 AM	55.3	3388649.901
7	7:00 AM	54.4	277243.0564
8	8:00 AM	56.8	479450.8693
9	9:00 AM	53.5	225834.4749
10	10:00 AM	54.4	274242.8736
11	11:00 AM	53.3	214226.6523
12	12:00 PM	53.3	212470.5171
		Ldn	65.9
		Peak Leq	62.8

Daytime	
Min	49.6
Max	57.2
Evening	
Min	
Max	
Night	
Min	52.7
Max	62.8



APPENDIX B

FHWA NOISE MODEL OUTPUT

```
                             TABLE Existing Traffic Volumes-01
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - North of Chen Staging
Area
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
_________________________________________________________________
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0

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                             TABLE Existing Traffic Volumes-02
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Chen Staging Area to
Faria Trailhead
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT


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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0


_________________________________________________________________
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```
                             TABLE Existing Traffic Volumes-03
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Faria Trailhead to
Deerwood Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0

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```
                             TABLE Existing Traffic Volumes-04
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Deerwood Drive to Crow
Canyon Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1590    SPEED (MPH): 40     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  57.63

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         83.5

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                             TABLE Existing Traffic Volumes-05
                 FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - South of Crow Canyon
Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2190    SPEED (MPH): 30     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 24      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  54.48

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         69.0

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                             TABLE Existing Traffic Volumes-06
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Deerwood Drive - East of Bollinger Canyon Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 390    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  50.10

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0          0.0

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                             TABLE Existing Traffic Volumes-07
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - West of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8210    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  66.03

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         65.4        140.5        302.4

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                             TABLE Existing Traffic Volumes-08
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - East of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9700    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 36      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  64.53

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         81.1        160.5        338.9

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```
                             TABLE Existing Plus Project Traffic
Volumes-01
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - North of Chen Staging
Area
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0

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                             TABLE Existing Plus Project Traffic
Volumes-02
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Chen Staging Area to
Faria Trailhead
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2080    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  60.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0         56.5        121.2

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                              TABLE Existing Plus Project Traffic
Volumes-03
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Faria Trailhead to
Deerwood Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2300    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  60.50

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0         60.4        129.6

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                             TABLE Existing Plus Project Traffic
Volumes-04
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Deerwood Drive to Crow
Canyon Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2235    SPEED (MPH): 40     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.11

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.7

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                             TABLE Existing Plus Project Traffic
Volumes-05
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - South of Crow Canyon
Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2340    SPEED (MPH): 30     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 24      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  54.77

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         71.7

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                             TABLE Existing Plus Project Traffic
Volumes-06
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Deerwood Drive - East of Bollinger Canyon Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 390    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  50.10

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0          0.0

_________________________________________________________________
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                             TABLE Existing Plus Project Traffic
Volumes-07
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - West of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8330    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  66.09

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         66.1        141.9        305.4

_________________________________________________________________
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```
                             TABLE Existing Plus Project Traffic
Volumes-08
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - East of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Project Traffic  Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10070    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 36      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  64.69

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         82.7        164.4        347.3

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```
                             TABLE Existing Plus Future Projects
Traffic Volumes -01
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - North of Chen Staging
Area
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
_________________________________________________________________
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0       104.0

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```
                             TABLE Existing Plus Future Projects
Traffic Volumes -02
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Chen Staging Area to
Faria Trailhead
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0

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```
                             TABLE Existing Plus Future Projects
Traffic Volumes -03
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Faria Trailhead to
Deerwood Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2065    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  60.03

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          56.3        120.7

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```
                             TABLE Existing Plus Future Projects
Traffic Volumes -04
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Deerwood Drive to Crow
Canyon Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2875    SPEED (MPH): 40     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

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_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  60.20

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0         57.7        123.8

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```
                             TABLE Existing Plus Future Projects
Traffic Volumes -05
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - South of Crow Canyon
Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3310    SPEED (MPH): 30     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 24      SITE CHARACTERISTICS: SOFT

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                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  56.28

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         88.5

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Traffic Volumes -06
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Deerwood Drive - East of Bollinger Canyon Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 390    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  50.10

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0          0.0

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Traffic Volumes -07
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - West of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
__________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8520    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

__________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  66.19

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         67.1        144.0        310.0

__________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Traffic Volumes -08
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - East of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10130    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 36      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  64.72

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         83.0        165.0        348.7

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-01
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - North of Chen Staging
Area
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1650    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.06

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0        104.0

_________________________________________________________________
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```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-02
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Chen Staging Area to
Faria Trailhead
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1865    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  59.59

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          52.6        112.8

_________________________________________________________________
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```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-03
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Faria Trailhead to
Deerwood Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2715    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  61.22

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0         67.4        144.8

_________________________________________________________________
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```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-04
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - Deerwood Drive to Crow
Canyon Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
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                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3520    SPEED (MPH): 40     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  61.08

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          66.0        141.6

_________________________________________________________________
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```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-05
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Bollinger Canyon Road - South of Crow Canyon
Drive
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
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_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3460    SPEED (MPH): 30     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING      NIGHT
       ---         -------      -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 24      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  56.47

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         90.9

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-06
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Deerwood Drive - East of Bollinger Canyon Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 390    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  50.10

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0          0.0

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-07
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - West of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8640    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  66.25

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         67.7        145.4        312.9

_________________________________________________________________
_____
```

```
                             TABLE Existing Plus Future Projects
Plus Project Traffic Volumes-08
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 01/30/2018
ROADWAY SEGMENT: Crow Canyon Drive - East of Bollinger Canyon
Road
NOTES: Southern Las Trampas Land Use Plan Amendment  - Existing
Plus Future Projects Plus Project Traffic Volumes
_________________________________________________________________
_____

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10500    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY        EVENING      NIGHT
       ---        -------      -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 36      SITE CHARACTERISTICS: SOFT

_________________________________________________________________
_____

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  64.87

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0         84.6        168.8        357.1

_________________________________________________________________
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```

APPENDIX C

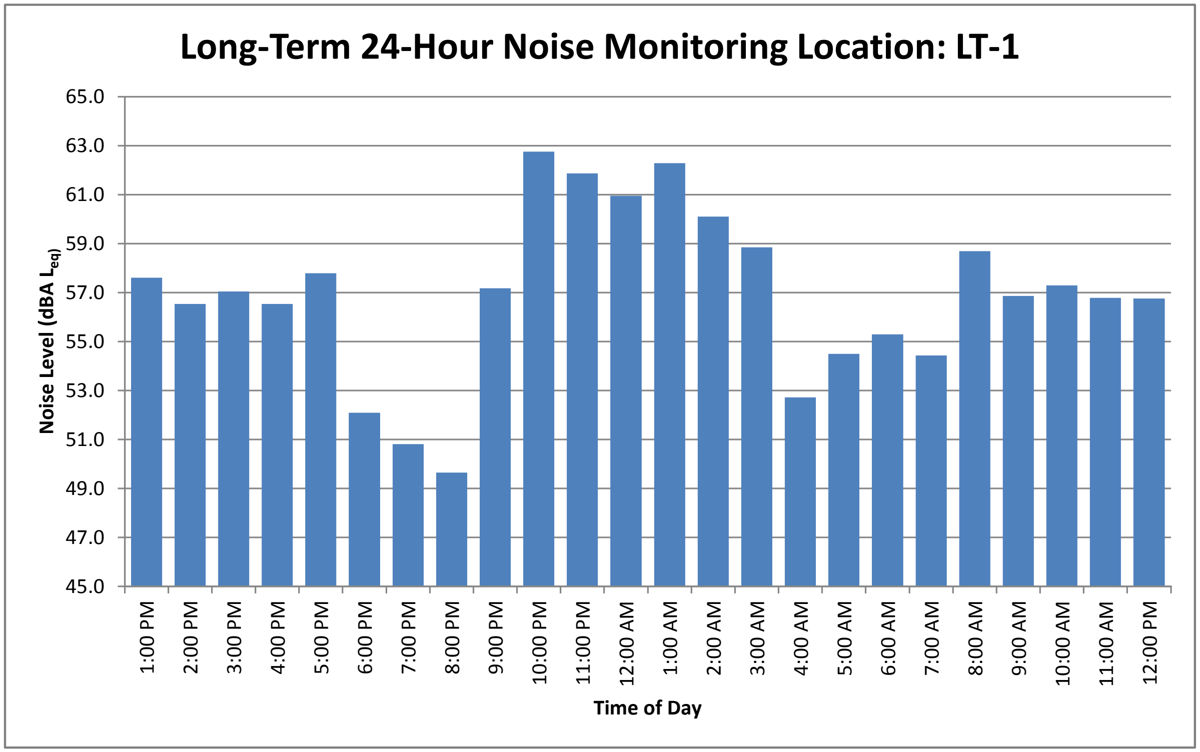
STATIONARY SOURCE NOISE CALCULATIONS

January 1 – February 13 and November 2 – December 31 (8:00 a.m. to 5:30 p.m.)

		Hourly Leq	
13	1:00 PM	57.6	576523.5099
14	2:00 PM	56.5	450279.5676
15	3:00 PM	57.0	506093.024
16	4:00 PM	56.5	450592.1204
17	5:00 PM	57.8	601933.1147
18	6:00 PM	52.1	161939.3336
19	7:00 PM	50.8	120490.7595
20	8:00 PM	49.6	92175.27782
21	9:00 PM	57.2	521779.6948
22	10:00 PM	62.8	18853934.24
23	11:00 PM	61.9	15377313.72
0	12:00 AM	61.0	12453308.98
1	1:00 AM	62.3	16918564.86
2	2:00 AM	60.1	10244968.27
3	3:00 AM	58.8	7667986.679
4	4:00 AM	52.7	1869901.29
5	5:00 AM	54.5	2819734.918
6	6:00 AM	55.3	3388649.901
7	7:00 AM	54.4	277243.0564
8	8:00 AM	58.7	738902.4298
9	9:00 AM	56.9	485599.5603
10	10:00 AM	57.3	536091.0985
11	11:00 AM	56.8	476890.0995
12	12:00 PM	56.8	473916.3656

Ldn	66.0
Peak Leq	62.8

Daytime	
Min	49.6
Max	58.7
Evening	
Min	
Max	
Night	
Min	52.7
Max	62.8

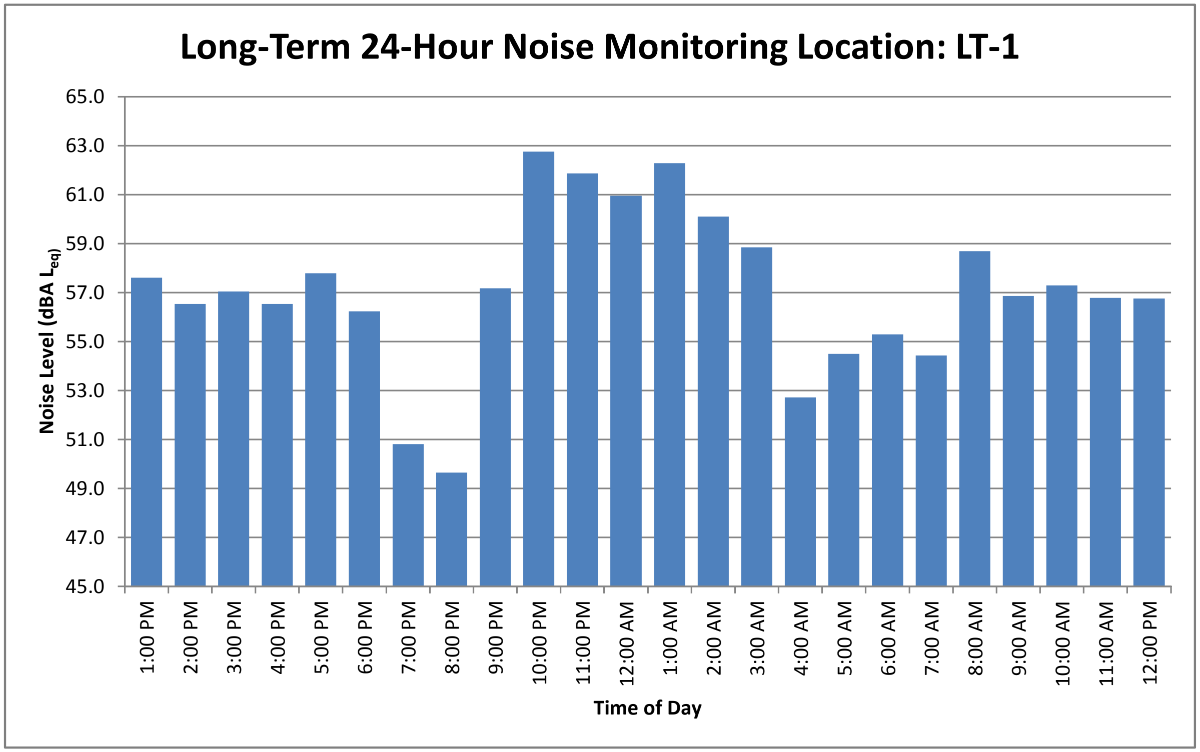


February 14 – March 8 (8:00 a.m. to 6:00 p.m.)

		Hourly Leq	
13	1:00 PM	57.6	576523.5099
14	2:00 PM	56.5	450279.5676
15	3:00 PM	57.0	506093.024
16	4:00 PM	56.5	450592.1204
17	5:00 PM	57.8	601933.1147
18	6:00 PM	56.2	420694.9714
19	7:00 PM	50.8	120490.7595
20	8:00 PM	49.6	92175.27782
21	9:00 PM	57.2	521779.6948
22	10:00 PM	62.8	18853934.24
23	11:00 PM	61.9	15377313.72
0	12:00 AM	61.0	12453308.98
1	1:00 AM	62.3	16918564.86
2	2:00 AM	60.1	10244968.27
3	3:00 AM	58.8	7667986.679
4	4:00 AM	52.7	1869901.29
5	5:00 AM	54.5	2819734.918
6	6:00 AM	55.3	3388649.901
7	7:00 AM	54.4	277243.0564
8	8:00 AM	58.7	738902.4298
9	9:00 AM	56.9	485599.5603
10	10:00 AM	57.3	536091.0985
11	11:00 AM	56.8	476890.0995
12	12:00 PM	56.8	473916.3656

Ldn	66.0
Peak Leq	62.8

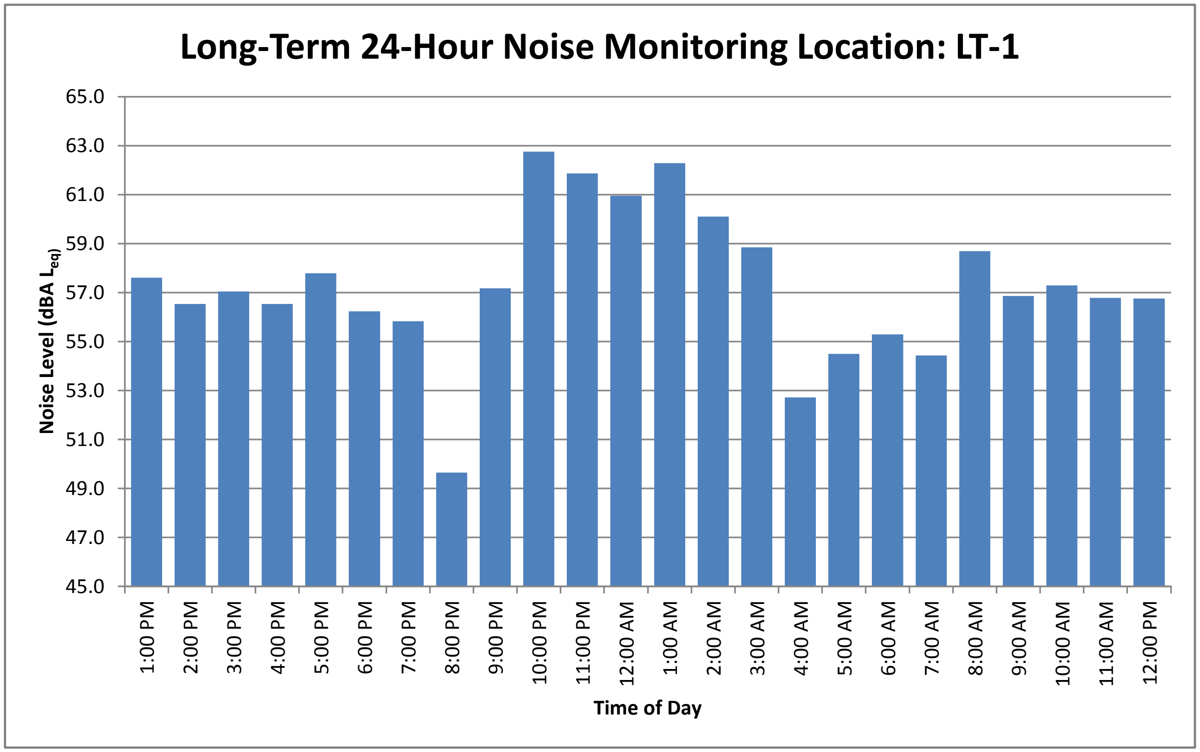
Daytime	
Min	49.6
Max	58.7
Evening	
Min	
Max	
Night	
Min	52.7
Max	62.8



March 8 – May 20 and September 4 – November 1 (8:00 a.m. to 7:00 p.m.)

		Hourly Leq	
13	1:00 PM	57.6	576523.5099
14	2:00 PM	56.5	450279.5676
15	3:00 PM	57.0	506093.024
16	4:00 PM	56.5	450592.1204
17	5:00 PM	57.8	601933.1147
18	6:00 PM	56.2	420694.9714
19	7:00 PM	55.8	383221.0615
20	8:00 PM	49.6	92175.27782
21	9:00 PM	57.2	521779.6948
22	10:00 PM	62.8	18853934.24
23	11:00 PM	61.9	15377313.72
0	12:00 AM	61.0	12453308.98
1	1:00 AM	62.3	16918564.86
2	2:00 AM	60.1	10244968.27
3	3:00 AM	58.8	7667986.679
4	4:00 AM	52.7	1869901.29
5	5:00 AM	54.5	2819734.918
6	6:00 AM	55.3	3388649.901
7	7:00 AM	54.4	277243.0564
8	8:00 AM	58.7	738902.4298
9	9:00 AM	56.9	485599.5603
10	10:00 AM	57.3	536091.0985
11	11:00 AM	56.8	476890.0995
12	12:00 PM	56.8	473916.3656
		Ldn	66.0
		Peak Leq	62.8

Daytime	
Min	49.6
Max	58.7
Evening	
Min	
Max	
Night	
Min	52.7
Max	62.8

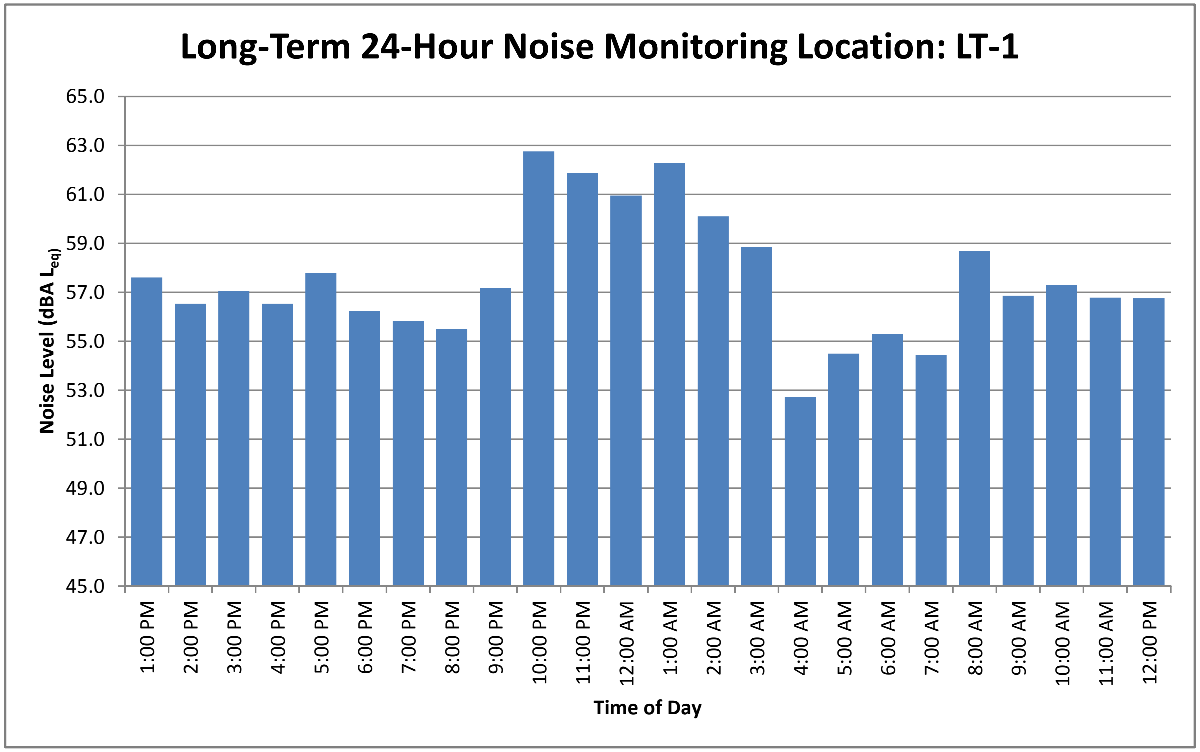


May 21 – September 3 (8:00 a.m. to 8:00 p.m.)

		Hourly Leq	
13	1:00 PM	57.6	576523.5099
14	2:00 PM	56.5	450279.5676
15	3:00 PM	57.0	506093.024
16	4:00 PM	56.5	450592.1204
17	5:00 PM	57.8	601933.1147
18	6:00 PM	56.2	420694.9714
19	7:00 PM	55.8	383221.0615
20	8:00 PM	55.5	355116.75
21	9:00 PM	57.2	521779.6948
22	10:00 PM	62.8	18853934.24
23	11:00 PM	61.9	15377313.72
0	12:00 AM	61.0	12453308.98
1	1:00 AM	62.3	16918564.86
2	2:00 AM	60.1	10244968.27
3	3:00 AM	58.8	7667986.679
4	4:00 AM	52.7	1869901.29
5	5:00 AM	54.5	2819734.918
6	6:00 AM	55.3	3388649.901
7	7:00 AM	54.4	277243.0564
8	8:00 AM	58.7	738902.4298
9	9:00 AM	56.9	485599.5603
10	10:00 AM	57.3	536091.0985
11	11:00 AM	56.8	476890.0995
12	12:00 PM	56.8	473916.3656

Ldn	66.1
Peak Leq	62.8

Daytime	
Min	54.4
Max	58.7
Evening	
Min	
Max	
Night	
Min	52.7
Max	62.8



APPENDIX C

CIRCULATION ASSESSMENT

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SCREENCHECK DRAFT

CIRCULATION ASSESSMENT

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT

EAST BAY REGIONAL PARK DISTRICT, CALIFORNIA

This Circulation Assessment has been prepared under the supervision of
Donson H. Liu, T.E.

Signed______________________

LSA

October 2018

SCREENCHECK DRAFT

CIRCULATION ASSESSMENT

SOUTHERN LAS TRAMPAS LAND USE PLAN AMENDMENT

EAST BAY REGIONAL PARK DISTRICT, CALIFORNIA

Submitted to:

East Bay Regional Park District
2950 Peralta Oaks Court
Oakland, California 94605

Prepared by:

LSA
20 Executive Park, Suite 200
Irvine, California 92614
(949) 553-0666

Project No. EBR1702

LSA

October 2018

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FIGURES AND TABLES

FIGURES

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LIST OF ABBREVIATIONS AND ACRONYMS

BART	Bay Area Rapid Transit
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CCTA	Contra Costa County Transportation Authority
CEQA	California Environmental Quality Act
County	County of Contra Costa
EBRPD	East Bay Regional Park District
EVMA	emergency vehicle and medical access
Faria project	Faria Preserve Community Project
HCM	Highway Capacity Manual
HDM	Caltrans *Highway Design Manual*
I-680	Interstate 680
ICU	Intersection Capacity Utilization
IMBA	International Mountain Biking Association
LOS	level of service
LUPA	Land Use Plan Amendment
mph	miles per hour
OPR	Governor’s Office of Planning and Research
Preserve	Las Trampas Wilderness Regional Preserve
project	Las Trampas Wilderness Regional Preserve Land Use Plan Amendment
RTP	Regional Transportation Plan
TIMS	Transportation Injury Mapping System
VMT	vehicle miles traveled

INTRODUCTION

Statement of Purpose

This Circulation Assessment has been prepared to identify the effects and impacts, if any, that may result from the implementation of the Southern Las Trampas Wilderness Regional Preserve (preserve) Land Use Plan Amendment (LUPA) (project) on vehicular, bicyclist, and pedestrian access and safety. The project's trip generation potential was developed based on existing preserve usage and planned project improvements. Designs were reviewed for safety considerations and recommendations are provided where appropriate.

Project Description

Project Goals and Objectives

The 2018 LUPA would serve as an amendment to the 1993 Las Trampas Land Use Development Plan. The main purposes of the 2018 LUPA are to:

- Formally append and open approximately 760 acres within five parcels into Las Trampas: Chen, Elworthy, Peter's Ranch, Faria, Podva;

- Evaluate one new staging area off of Bollinger Canyon Road located on the Chen parcel. The District is considering two locations for the staging area; however the Chen parcel is the District's preferred location. Therefore, this analysis focuses on the Chen parcel location for the proposed staging area;

- Evaluate two six-car trailhead lots off of Bollinger Canyon Road located on the Faria parcel; and

- Evaluate approximately 4.5 miles of proposed trail connections including defining final trail alignments, appropriate trail use and routine maintenance requirements.

The LUPA would be consistent with the District's guiding policy document, the 2013 Master Plan[1], which provides for the preparation of land use plans to: direct the long-term development and management of individual parks; identify major facility development; and establish appropriate land use designations in accordance with the vision of the Park District.

The LUPA would serve as a supplement to the Las Trampas Regional Wilderness Land Use Development Plan (LUDP) adopted in November 1993, and the Las Trampas Regional Wilderness Resource Analysis adopted in August 1991. The Resource Analysis described and analyzed important natural and man-made resources in the parklands and identified resource and land planning issues for the LUDP. The LUDP provided policies and implementation measures for Las Trampas Regional Wilderness, Little Hills Regional Recreation Area, and the western end of the Las Trampas to Mount Diablo Regional Trail. The Peter's Ranch parcel acquired prior to the 1993 LUDP was briefly mentioned in the LUDP as the southern non-contiguous parcel.

---

[1] East Bay Regional Park District, 2013. *2013 Master Plan*. July 16.

Project Background

The project area is known for its steep topography and diverse natural resources. The steep and rugged hills with their many side ridges and valleys create a complex habitat for native species and provide a challenging experience for park visitors. The geographical center of the project area is Las Trampas Ridge, which rises 700 feet above Bollinger Canyon Road. In addition to the rugged topography, the project area includes numerous rock outcrops.

The project area consists of five parcels that would be appended to Las Trampas and includes three that the District currently owns: Peter's Ranch, Chen, and Elworthy. The Elworthy parcel is currently open to the public, and park visitors can access the Elworthy parcel from a 0.5-mile trail connector through a 182-acre Elworthy private property scenic easement. A 12-car staging area on the Elworthy scenic easement was constructed by the developer prior to District acceptance of the Elworthy parcel, and was opened to the public in 2015. The Peter's Ranch and Chen parcels are currently landbanked and are not open to the public.

Two additional parcels, Podva and Faria, would be dedicated to the District as mitigation for residential development projects. Thirty acres of the 96-acre Podva parcel would be under a conservation easement. The developer is providing to the District an approximately one-mile trail through the Podva parcel that connects to trails within Las Trampas, as well as a trailhead with on-street parking.

The entire 144-acre Faria dedication would be under conservation easement, with the exception of a trail connector to the Calaveras Ridge Trail, a trail loop on the western portion, and carve-outs for two six-car trailhead parking areas, which would be set aside for the District to develop additional public access points in the future. The long-term management plans associated with the conservation easements placed on these properties would be incorporated and referenced in the LUPA.

A project overview map is included in Figure 1 and the Chen Staging Area is shown in Figure 2.

Proposed Project

The project proposes to open to the public approximately two miles of narrow (single-track) trails and 2.5 miles of emergency vehicle and maintenance access (EVMA) roads for a total of approximately 4.5 miles of new trails. New trail construction would involve the use of mechanized equipment, such as a mini excavators and manual labor using hand tools.

The proposed project would divide the project area into natural and recreation/staging units, as defined by the District's 2013 Master Plan. The proposed project would designate the vast majority of the project area as a natural unit in which the land would remain undeveloped with the exception of recreational trails. Public infrastructure would be concentrated in the remaining land comprising of one staging area and two small trailhead lots. Proposed project elements would include the following actions:

- Develop a staging area on the Chen property to serve as the southern gateway to Las Trampas, with all-weather, compacted gravel parking to accommodate up to 25 vehicles, benches, restroom, trail connections, information signs and landscaping. The District is considering two locations for the staging area; however this location is preferred. Therefore, this analysis focuses on this location for the proposed staging area;

- Develop one 1.1-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from existing roads and trails and connecting to Bollinger Canyon Road via the Chen property;
- Develop one 0.5-mile access road to allow pedestrian, bicycle, equestrian and maintenance and emergency vehicle access into Las Trampas from the Podva property;
- Develop one 0.8-mile narrow trail segment of the Calaveras Ridge Trail on the Peter's Ranch property, connecting future City of San Ramon public trails on an adjacent property to existing trails on the Elworthy property;
- Develop two small parking trailhead areas to accommodate up to six cars on the Faria parcel with fencing, gates, and signs stating park regulations and hours; and
- Develop two trails to allow pedestrian, bicycle and equestrian access into Las Trampas from the six-car trailhead lots.

Summary of Findings

This Circulation Assessment found that the implementation of the project is not anticipated to result in any significant transportation or safety impacts.

METHODOLOGY

Data Collection

The analysis of all modes of travel is based on vehicular, bicycle, and pedestrian data collected along Bollinger Canyon Road north of Crow Canyon Road. Existing vehicular, bicycle, and pedestrian demand was assessed against the ability of existing roadway facilities to accommodate all users. As conflict points occur almost exclusively at roadway intersections, four intersections along Bollinger Canyon Road were chosen as locations where conflicts between the various types of users would occur. Figure 3 shows the geometrics of these study area intersections.

As this analysis seeks to assess vehicular, bicyclist, and pedestrian access and safety, the data collection effort focused on the peak usage period of Bollinger Canyon Road and the surrounding preserve. For the purposes of traffic engineering analysis, 1 hour serves as the measure of a peak usage period.

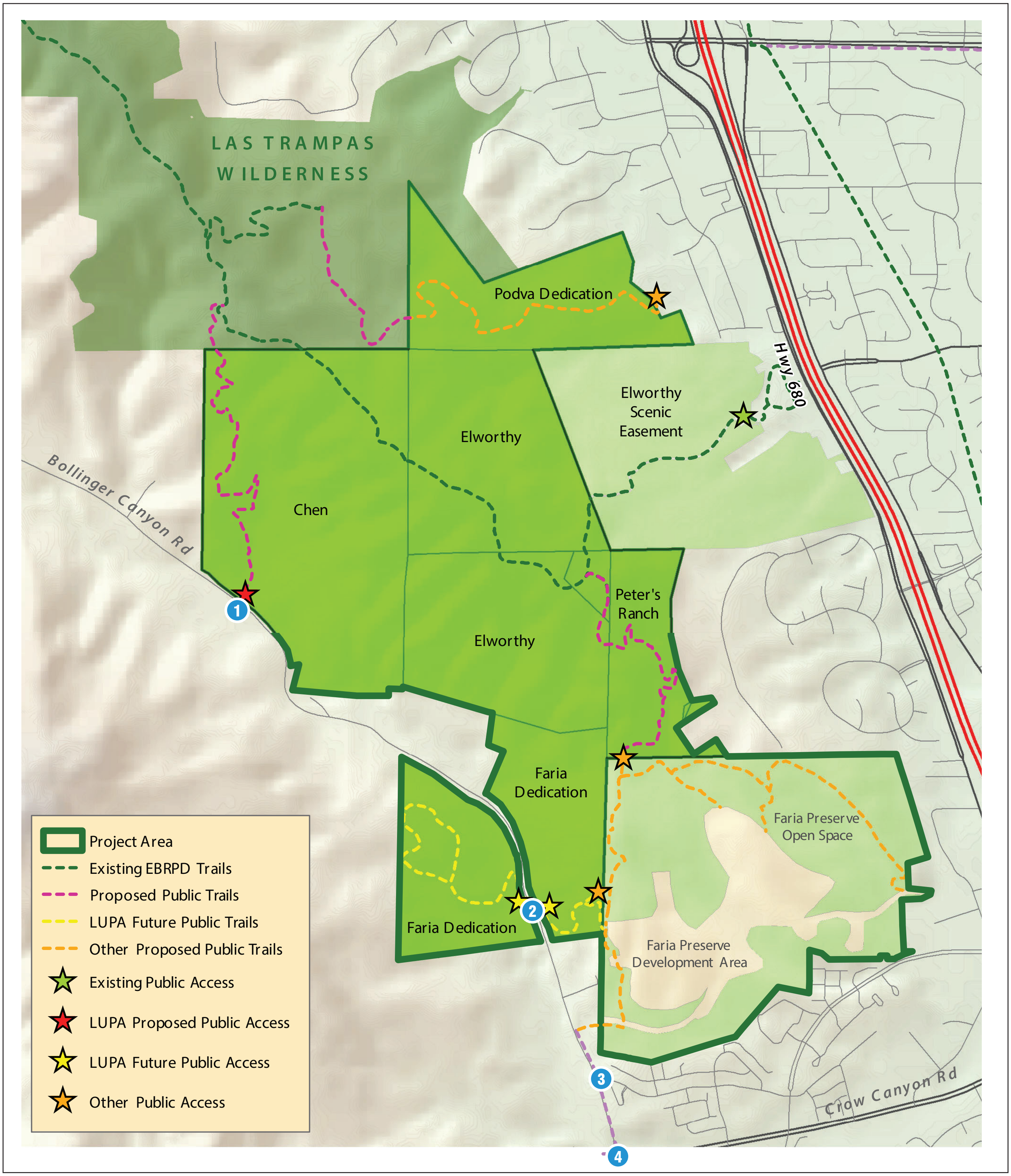
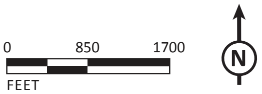


FIGURE 1



LEGEND

● - Study Area Intersections

Las Trampas LUPA Tech Studies
Project Location

SOURCE: EBRPD, AUGUST 2018.

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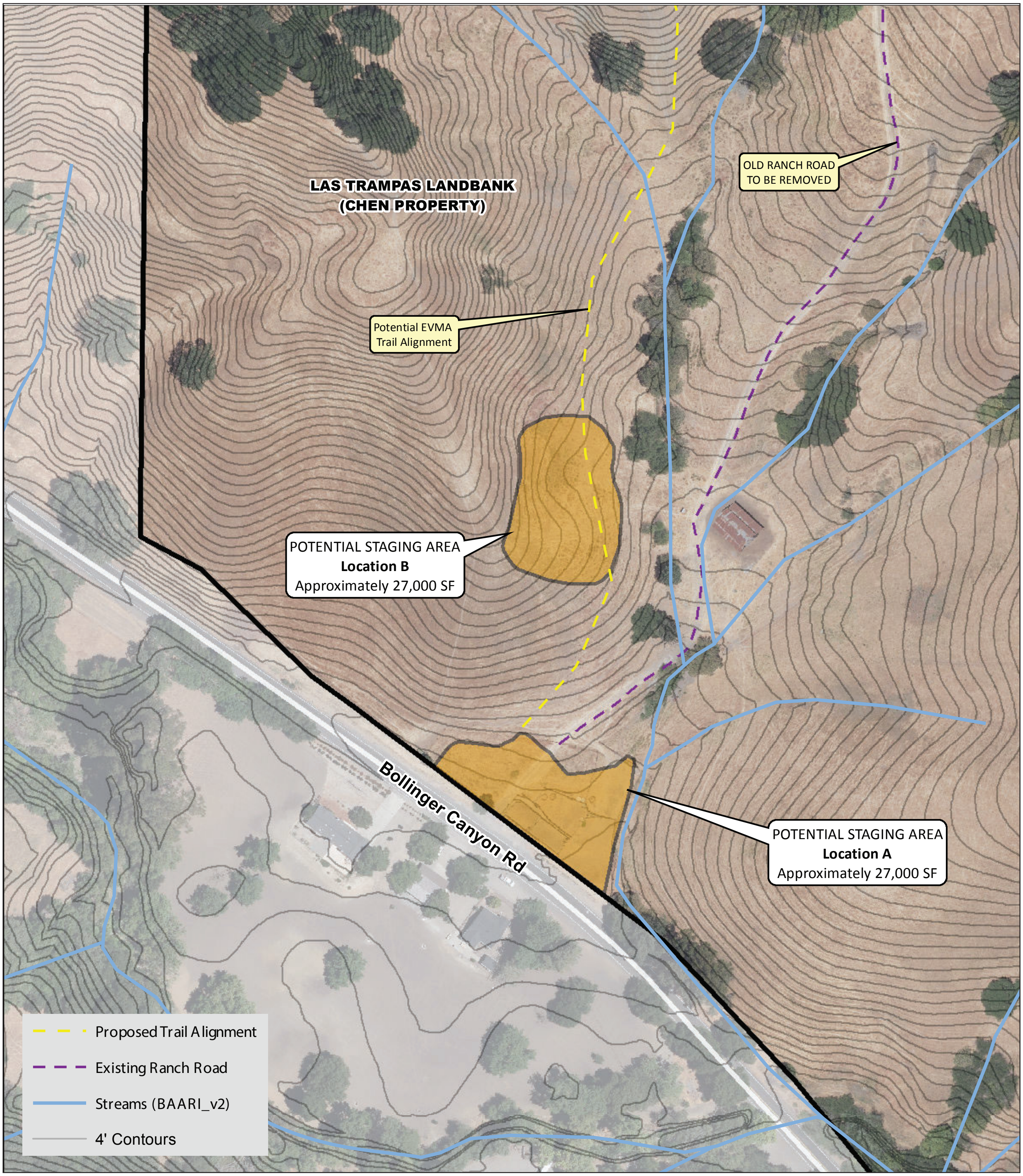

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FIGURE 2

Las Trampas LUPA Tech Studies

Chen Staging Area

SOURCE: EBRPD, AUGUST 2018.

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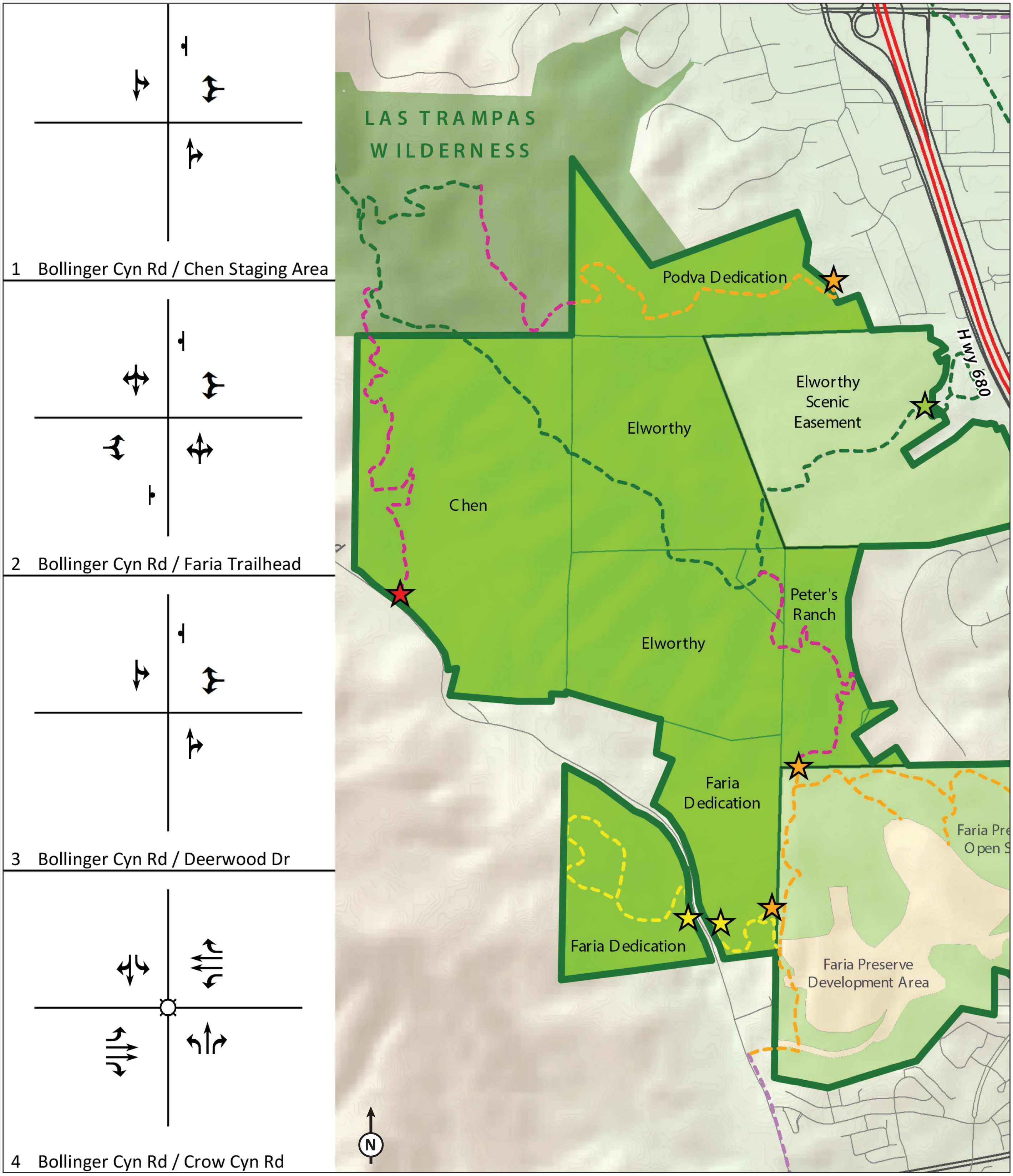

FIGURE 3

Legend

Signal

Stop Sign

NOT TO SCALE

Las Trampas LUPA Tech Studies

Existing Roadway Geometrics

SOURCE: EBRPD, 2018.

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The peak usage period and subsequent peak hour was identified through on-site observations and coordination with the East Bay Regional Park District (EBRPD) staff and empirical traffic data collection. EBRPD and LSA staff identified a peak usage period of Friday through Sunday, capturing the busiest recreational visitation days of the week. In order to identify the busiest peak hour within this time frame, a 24-hour road segment count was collected along Bollinger Canyon Road just north of Deerwood Drive from Friday, September 22, 2017, to Sunday, September 24, 2017. The 4-hour period with the highest number of automobiles counted was identified for a more detailed traffic count that was conducted on Saturday, October 7, 2017, between 11:00 a.m. and 3:00 p.m. The peak hour used for analysis was found to be from 11:30 a.m. to 12:30 p.m. Count data have been included in Appendix A and illustrated on Figure 4.

In addition to empirical analysis data, LSA staff visited the preserve on Sunday, November 5, 2017, to confirm existing roadway conditions and to interview on-site EBRPD staff members about their observations of visitor behavior, traffic, and safety.

ANALYSIS TECHNIQUES

Vehicular Mobility – Intersection Level of Service

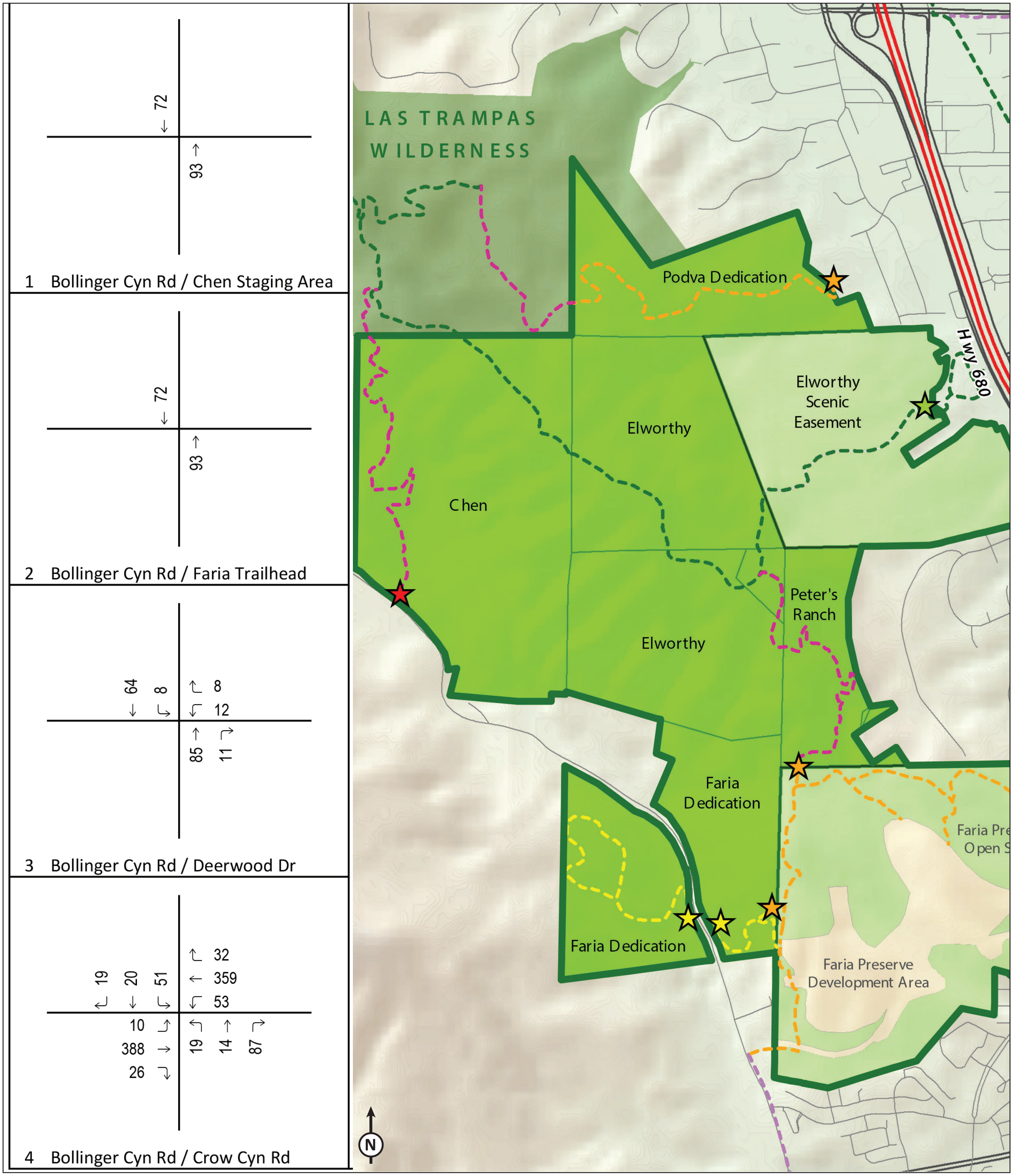
Evaluation of intersections along Bollinger Canyon Road utilized methodologies consistent with City of San Ramon, Town of Danville, and Contra Costa County Transportation Authority (CCTA) traffic analysis guidelines.

Evaluation of the signalized intersection of Bollinger Canyon Road and Crow Canyon Road within the San Ramon uses the City of San Ramon's prescribed Intersection Capacity Utilization (ICU) peak-hour intersection capacity methodology. This methodology is a capacity-based methodology that derives a capacity utilization ratio from demand inputs in the form of vehicular peak-hour volumes and capacity inputs from intersection controls and geometrics. The Traffix software package has been used to analyze ICU based vehicular peak-hour level of service (LOS) at the intersection of Bollinger Canyon Road and Crow Canyon Road.

LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations where LOS A represents free-flow activity and LOS F represents overcapacity operation.

Evaluation of vehicular operations at unsignalized intersections along Bollinger Canyon Road will use the CCTA-prescribed 2010 Highway Capacity Manual (HCM) peak-hour intersection operations methodology. This methodology is a delay-based analysis methodology that relies on inputs such as intersection controls and geometrics and vehicular peak-hour volumes and ultimately produces an LOS grade. Peak hour intersection operations will be assessed at the following locations:

1. Bollinger Canyon Road/Chen Staging Area
2. Bollinger Canyon Road/Faria Trailhead West-East
3. Bollinger Canyon Road/Deerwood Drive
4. Bollinger Canyon Road/Crow Canyon Road



LSA

FIGURE 4

NOT TO SCALE

XX Saturday Peak-Hour Volume

Las Trampas LUPA Tech Studies

Existing Volumes

SOURCE: EBRPD, 2018.

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The Synchro 9 software package has been used to analyze vehicular peak-hour LOS at unsignalized locations. Synchro 9 is a widely recognized and accepted macroscopic traffic analysis software that supports 2010 HCM methodology. The following table shows the relationship between LOS, ICU value (i.e., volume-to-capacity ratio), and delay:

LOS	Signalized Intersection Capacity Utilization (ICU)	Unsignalized Intersection Delay (seconds)
A	≤ 0.60	≤10.0
B	0.61–0.70	>10.0 and ≤15.0
C	0.71–0.80	>15.0 and ≤25.0
D	0.81–0.90	>25.0 and ≤35.0
E	0.91–1.00	>35.0 and ≤50.0
F	> 1.00	>50.0

LOS = Level of Service

THRESHOLDS AND CRITERIA

Vehicular peak-hour analysis criteria for each study area facility depend on the jurisdiction where they are located. All study locations are located in the City of San Ramon and Town of Danville's General Plans; both consider LOS "D" to be the limit of acceptability. The CCTA Congestion Management Program (CMP) considers LOS "E" to be the limit of acceptability for CMP facilities.

Although some of the study area locations are located in unincorporated Contra Costa County, this study uses LOS "D" as the limit of acceptability at these locations in keeping with the standards of the City of San Ramon and Town of Danville.

EXISTING SETTING

Access

The preserve and the adjacent parcels can be accessed from major freeways such as Interstate 680 (I-680) to the east and Interstate 580 to the south. Bollinger Canyon Road is the only local access route to the preserve. Bollinger Canyon Road can be reached via Crow Canyon Road via a signalized intersection.

Bollinger Canyon Road is a major arterial that runs through San Ramon and varies from two to six lanes. In the vicinity of the preserve, the segment of Bollinger Canyon Road north of Crow Canyon Road is a two-lane rural collector and serves as a route for bicyclists to travel to and from the Bollinger Canyon Staging Area. The Bollinger Canyon Staging area is 4.5 miles north of Crow Canyon Road.

Vehicle Parking

The existing Bollinger Canyon Staging Area at the northern terminus of Bollinger Canyon Road provides 45 parking spaces. Other all-weather gravel staging areas along Bollinger Canyon Road that provide parking for trail users include the Elderberry Trailhead, Bollinger Canyon Road Equestrian Parking, and the Chamise Trailhead. The equestrian parking area is a gated, all-weather gravel lot that can accommodate equestrian trailers and can be used as overflow passenger vehicle parking during special events. The Chamise Trailhead provides an all-weather gravel area that can accommodate up to seven passenger vehicles. A gated all-weather gravel lot next to the Chamise Trailhead that previously served as a construction staging area for the Bollinger Canyon Staging Area currently serves as an overflow lot that EBRPD staff can make available during busy days and can accommodate approximately 70 passenger vehicles. The Elderberry Trailhead provides space for approximately 30 passenger vehicles. LSA staff interviewed EBRPD staff on usage patterns and found that passenger vehicles also park along both sides of Bollinger Canyon Road from the Bollinger Canyon Road Staging Area entrance south for approximately 500 feet. Although this segment along with various other segments all along Bollinger Canyon Road is available for on-street parking, the remote nature, limited trail access, and availability of overflow parking areas for special events make it unreasonable to consider parking along the road further south than this segment. According to EBRPD staff observations, on-street parked visitors rarely reach south past the preserve gate near the Elderberry Trailhead.

With the exception of the Elderberry Trailhead staging area, all preserve trailheads along Bollinger Canyon Road are currently behind a gate that restricts use of these areas to hours coinciding with roughly dawn until dusk, depending on the time of year.

Transit

San Ramon is served by bus via the CCTA's County Connection bus service. County Connection Route 36 has bus stops at the corner of Bollinger Canyon Road and Crow Canyon Road. Route 36 runs every hour from 6:00 a.m. to 9:00 p.m., Monday through Friday, and connects the San Ramon Transit Center to the West Dublin/Pleasanton Bay Area Rapid Transit (BART) station.

The closest BART station is the West Dublin/ Pleasanton station in Dublin near the intersection of Dublin Boulevard and Golden Gate Drive, approximately 7 miles south of the preserve via I-680.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities, such as class II bike lanes, class III bike route designations, and sidewalks do not exist along Bollinger Canyon Road in the vicinity of the preserve. According to publicly available global positioning system (GPS) based qualitative data from Strava.com and the 24-hour traffic counts collected, recreational cyclists use Bollinger Canyon Road to reach the Bollinger Canyon Staging Area. The shoulders of Bollinger Canyon Road are unpaved and do not provide continuous pedestrian connectivity. Pedestrian users of the preserve, such as hikers and dog walkers, arrive at the preserve primarily via passenger car.

Existing Intersection Level of Service Analysis

The Saturday peak-hour counts (11:30 a.m. to 12:30 p.m.) were assessed against the existing vehicular roadway facilities to determine current vehicular operational levels. Peak-hour intersection operations at study area intersections are based on ICU methodology at signalized intersections and HCM 2010 methodology at unsignalized intersections. As shown in Table A, the two existing study intersections currently operate at acceptable LOS A.

Appendix B includes all intersection LOS worksheets.

Table A: Existing Intersection Level of Service Summary

Intersection	**Existing Weekend Peak Hour**	
	ICU/Delay	**LOS**
1. Bollinger Canyon Road/Chen Staging Area[1]	--	--
2. Bollinger Canyon Road/Faria Trailhead West-East[1]	--	--
3. Bollinger Canyon Road/Deerwood Drive[1]	9.4 sec	A
4. Bollinger Canyon Road/Crow Canyon Road	0.233	A

Source: LSA (June 2017).

[1] Unsignalized intersection

ICU = intersection capacity utilization
sec = seconds
LOS = level of service
-- = location does not exist under this scenario

Existing Plus Future Projects Baseline Conditions

To forecast future traffic conditions along Bollinger Canyon Road upon project completion, nearby traffic generating developments have been identified and included in an existing plus future projects baseline.

EBRPD staff provided information on the following nearby projects:

- Podva Property Residential Development
- Elworthy Ranch
- Faria Preserve Community Project (Faria project)

Both the Podva Property Residential Development and Elworthy Ranch projects are in Danville. A review of the environmental impact reports and associated traffic studies for both of these two projects revealed that they are located such that they are not anticipated to contribute traffic to either Bollinger Canyon Road or Crow Canyon Road. As such, potential traffic contributions from these two projects were not pursued further.

The Faria project is located partially within the San Ramon city limit and unincorporated Contra Costa County, west of I-680 and south of the Danville town limit. The Faria project would access the regional roadway network through Bollinger Canyon Road and Deerwood Road. The Faria project includes 740 residential units, a 1.5-acre house of worship site, a 2.6-acre educational facility site, a 12.9-acre community park, and a 0.7-acre rose garden. This project is currently under construction and is anticipated to contribute traffic to the study area. To include traffic from the Faria project in this analysis, assumptions about the Faria project's trip generation potential were obtained from the its traffic impact analysis (TIA) and adjusted for Saturday peak-hour conditions.[1] This was achieved by applying current industry standard Saturday peak-hour trip generation rates against the Faria project's land uses.[2] Table B provides a Saturday trip generation summary table.

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[1] AECOM, 2013. *Faria Preserve Final Transportation Impact Analysis.*

[2] Institute of Transportation Engineers, 2017. *Trip Generation,* 10th Edition.

Table B: Faria Project Saturday Trip Generation

Land Use (Land Use Code)	Size	Units	ADT	Saturday Peak Hour		
				In	Out	Total
Trip Rates[1]						
Single Family Detached Residential (210)		DU	9.54	0.50	0.43	0.93
Multifamily Housing (Low-Rise) (220)		DU	8.14	0.35	0.35	0.70
Senior Adult Housing (Attached) (252)		DU	3.23	0.20	0.13	0.33
Church (560)		TSF	5.99	1.64	1.14	2.78
Daycare Center (565)		Student	0.39	0.07	0.04	0.11
Public Park (411)		AC	1.96	0.15	0.13	0.28
Museum (580)		TSF	--	0.47	0.19	0.66
Faria Project Trip Generation						
Single-Family Detached Homes	256	DU	2442	129	110	238
Townhomes/Apartments	398	DU	3240	139	139	279
Senior Attached Residential	86	DU	278	18	11	28
Church	15.000	TSF	90	25	17	42
Daycare	120	Student	47	8	5	13
Community Park	13.2	AC	26	2	2	4
Educational Facility	25.000	TSF	0	12	5	17
			Total **6,122**	**332**	**288**	**620**

[1] Trip rates obtained from Institute of Transportation Engineers *Trip Generation Manual* 10th Edition, 2017

ADT = average daily traffic
DU = dwelling units
AC = acres
TSF = thousand square feet

The resulting Saturday Faria project peak-hour trips were distributed throughout the study area according to the same trip distribution pattern used for weekday trips in the Faria TIA, and added to existing Saturday traffic counts in order to arrive at an existing plus future projects baseline. Figure 5 shows the resulting volumes. These volumes were then used to assess existing plus future projects peak hour vehicular operations at the four study intersections.

As shown on Table C, the two existing study intersections are anticipated to operate at LOS B or better during the weekend peak hour after the inclusion of traffic from the Faria project. All intersection LOS worksheets are included in Appendix B.

Table C: Existing Plus Future Projects Intersection Level of Service Summary

Intersection	Existing + Future Projects Weekend Peak Hour	
	ICU/Delay	LOS
1. Bollinger Canyon Road/Chen Staging Area[1]	--	--
2. Bollinger Canyon Road/Faria Trailhead West-East[1]	--	--
3. Bollinger Canyon Road/Deerwood Drive[1]	10.0 sec	B
4. Bollinger Canyon Road/Crow Canyon Road	0.245	A

Source: LSA (June 2017).

[1] Unsignalized intersection

ICU = intersection capacity utilization
sec = seconds
LOS = level of service
-- = location does not exist under this scenario

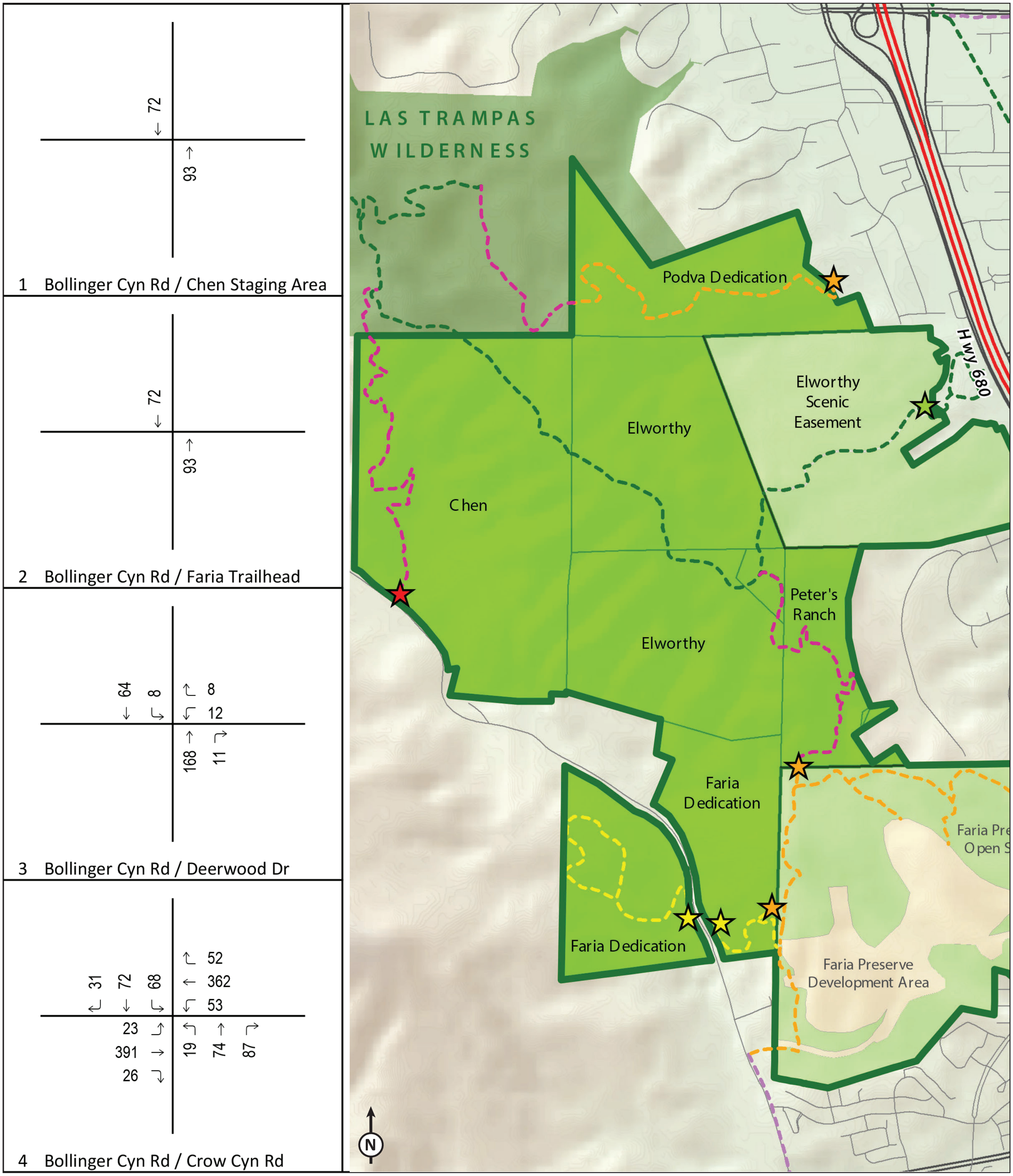

FIGURE 5

NOT TO SCALE

XX Saturday Peak-Hour Volume

Las Trampas LUPA Tech Studies

Existing Plus Future Projects Volumes

SOURCE: EBRPD, 2018.

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PROJECT IMPACTS

This section details the process by which project traffic was forecasted, and its resulting effects on vehicular mobility on Bollinger Canyon Road.

Trip Generation

The daily and peak-hour trips for the project were generated using the data collected along Bollinger Canyon Road, north of Deerwood Drive. While nationally used trip generation rates such as those published by the ITE may be applicable for nationally comparable uses such as a typical single-family household, church, or small community park, nationally surveyed rates were not used to forecast project traffic. These rates were not used to forecast project traffic because large recreational parks often wildly differ from each other in popularity, level of usage, and general interest due to characteristics that are specific to each individual large park environment and level of amenity.

To forecast new project trips from existing data, quantifiable changes such as trail mileage, acreage, and parking spaces resulting from the project were considered against existing preserve trip generation. Existing weekend peak hour preserve traffic was counted as 165 (93 inbound and 72 outbound) trips during the peak hour from 11:30 a.m. to 12:30 p.m. on Saturday, October 7, 2017. This existing trip number includes congregate care, residential, and commercial uses along Bollinger Canyon Road north of Deerwood Drive that may have been active during this peak hour and therefore provide a conservative estimate of the preserve's existing Saturday peak-hour traffic generation. The use of this traffic count as an estimate of preserve traffic is considered applicable because information provided by EBRPD staff regarding Saturday activity at the non-preserve uses along Bollinger Canyon Road such as The Ranch at Little Hills event center, the Corrie Companies, the Las Trampas Stables, the Child Day School preschool, and Brookdale senior living facility would have generated nominal vehicular traffic during the data collection period.

Based on existing preserve trail mileage, acreage, and parking spaces, trip generation rates were developed for each park unit type, as shown in Table D.

Table D: Southern Las Trampas Preserve Saturday Trip Generation Rates

Unit Type	Units	ADT	Saturday Peak Hour		
			In	Out	Total
Existing Trail Mileage	29.92	39.44	3.11	2.41	5.52
Existing Total Acreage	4,116	0.29	0.02	0.02	0.04
Existing Parking Spaces[1]	95	0.98	0.98	0.76	1.74
Existing Las Trampas Preserve Trips		1,180	93	72	165

Source: LSA (June 2017).

Note: Existing trail mileage, total acreage, and number of parking spaces were based on the existing Las Trampas Regional Wilderness Trail Map, the Las Trampas LUPA project description, and an LSA staff field visit, respectively.

[1] Parking supply total includes the stalls of the Bollinger Canyon Staging Area, the Elderberry Trailhead, Chamise Trailhead, and the 500-foot-long roadside parking area on Bollinger Canyon Road adjacent to the Bollinger Canyon Staging Area.

ADT = average daily traffic
LUPA = Land Use Plan Amendment

The project's trip generation potential, based on its associated increases to mileage, acreage, and parking spaces, were developed and shown below in Table E.

Table E: Las Trampas LUPA Trip Generation Potential

Unit Type	Units	ADT	Saturday Peak Hour		
			In	Out	Total
Additional Las Trampas LUPA and Other Public Trail Mileage	8.5	335	26	21	47
Additional Las Trampas LUPA Acreage	760	218	17	13	30
Additional Parking Spaces (Chen Staging Area and Faria Trailheads)	37	460	37	27	64

ADT = average daily traffic
LUPA = Land Use Plan Amendment

In an effort to provide a worst-case, most-conservative analysis, the vehicular operations analysis will use the trip generation potential of the project based on additional parking spaces.

Trip Distribution

Project trips were distributed based on existing travel patterns and the location of the proposed parking facilities.

Existing and Existing Plus Future Projects With Project Conditions

New project trips were then added to existing and existing plus future project baseline conditions to determine the project's potential impact on vehicular operations. Figures 6 and 7 show the resulting volumes.

As shown on Table F, the addition of project traffic to both existing and existing plus future projects conditions will not result in any unacceptable vehicular operational levels for any of the study intersections. Appendix B includes all intersection LOS worksheets.

Table F: Plus Project Saturday Peak Hour Intersection Level of Service Summary

Intersection	Existing		Existing + Project		Existing + Future Projects		Existing + Future Projects + Project	
	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS	ICU/ Delay	LOS
1. Bollinger Canyon Road/Chen Staging Area[1]	--	--	9.6	A	--	--	9.6	A
2. Bollinger Canyon Road/Faria Trailhead West-East[1]	--	--	10.2	B	--	--	10.2	B
3. Bollinger Canyon Road/ Deerwood Drive[1]	9.4	A	9.8	A	10.0	B	10.5	B
4. Bollinger Canyon Road/Crow Canyon Road	0.233	A	0.243	A	0.245	A	0.252	A

Source: LSA (June 2017).

[1] Unsignalized intersection. Delay values are presented in seconds per vehicle.

ICU = intersection capacity utilization
LOS = level of service
sec = seconds
-- = location does not exist under this scenario

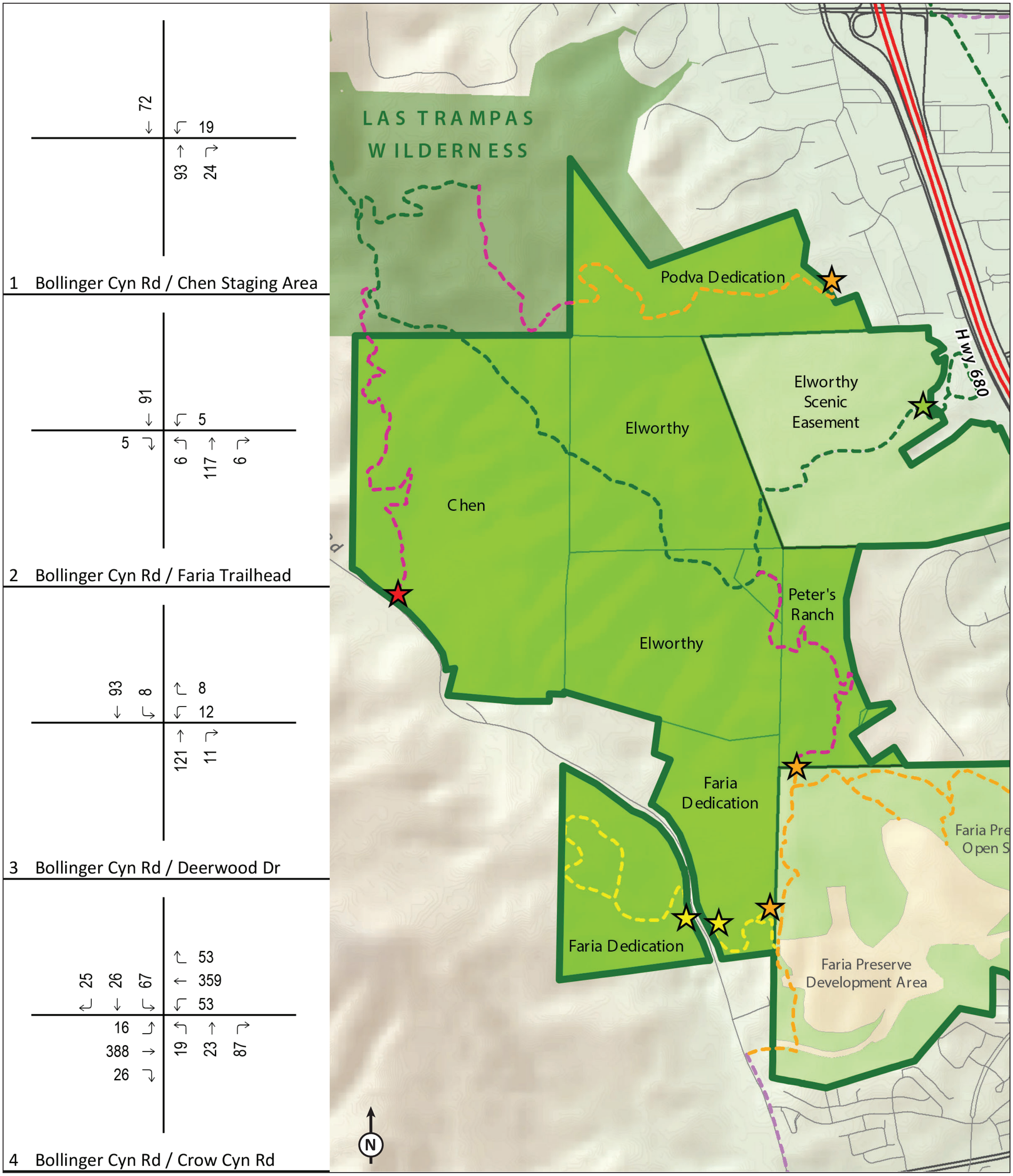

FIGURE 6

NOT TO SCALE

XX Saturday Peak-Hour Volume

Las Trampas LUPA Tech Studies

Existing Plus Project Volumes

SOURCE: EBRPD, 2018.

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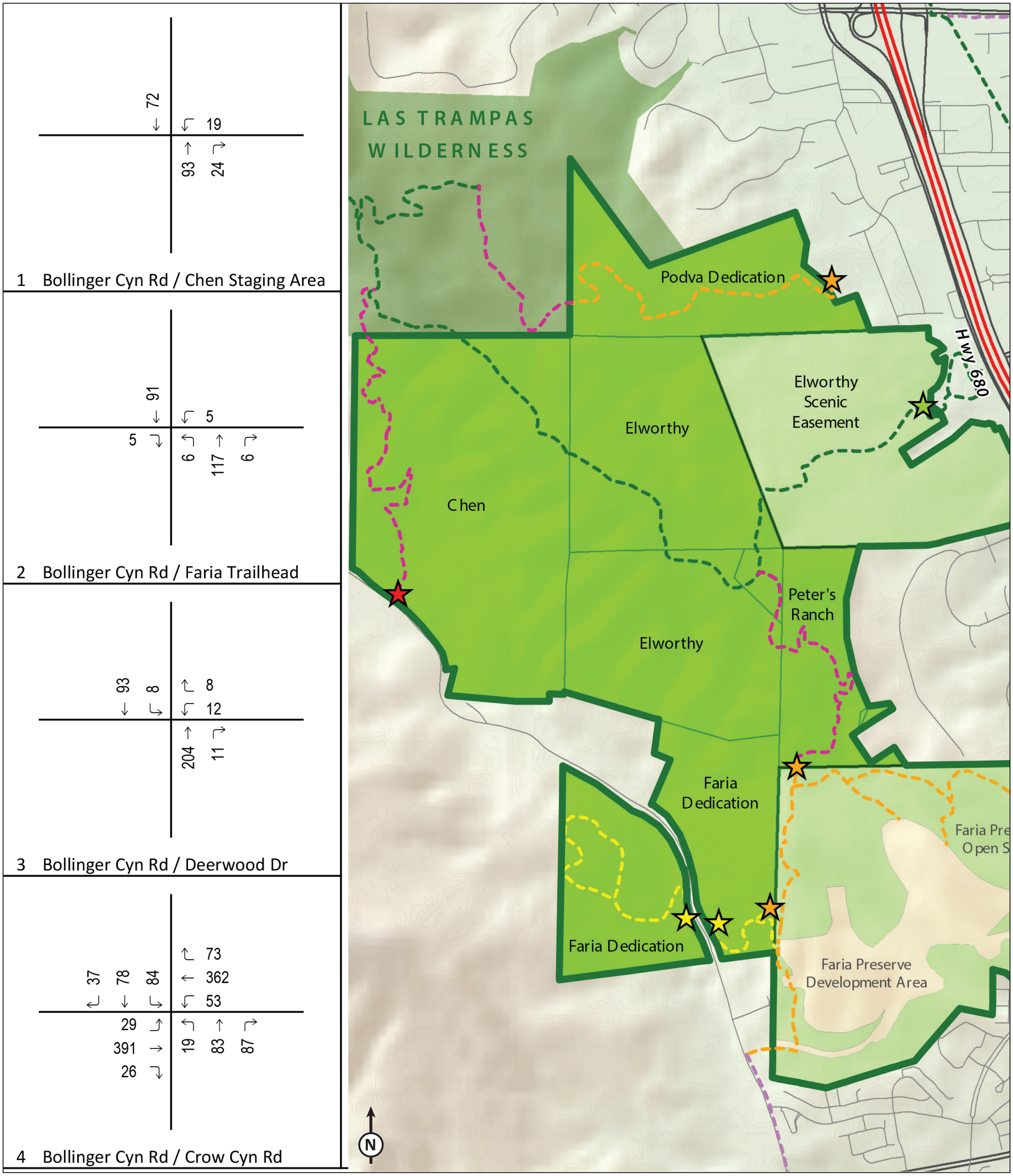

1 Bollinger Cyn Rd / Chen Staging Area

2 Bollinger Cyn Rd / Faria Trailhead

3 Bollinger Cyn Rd / Deerwood Dr

4 Bollinger Cyn Rd / Crow Cyn Rd

FIGURE 7

NOT TO SCALE

XX Saturday Peak-Hour Volume

Las Trampas LUPA Tech Studies

Existing Plus Future Projects Plus Project Volumes

SOURCE: EBRPD, 2018.

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TRAILHEAD ACCESS ANALYSIS

This section looks at the safety of the study area and proposed trailheads for vehicles, bicyclists, and pedestrians. This analysis included input from EBRPD staff familiar with the Las Trampas Preserve area. EBRPD staff has made the observation that the accidents that occur on Bollinger Canyon Road tend to be speed related and result in vehicles running off the road. In addition to this local input, LSA conducted a review of reported accidents in the study area, as described below.

Accident History

LSA collected accident data for Bollinger Canyon Road from Crow Canyon Road to its northern terminus at the Bollinger Canyon Staging Area from the Safe Transportation Research and Education Center's online Transportation Injury Mapping System (TIMS). A total of nine accidents were reported for the 5-year period from January 1, 2012, to December 31, 2016. This period represents the most recent 5-year period for which TIMS can provide a complete accident history. Of these nine accidents, the following three occurred on Bollinger Canyon Road in the vicinity of the preserve:

- **Accident 1:** At 9:40 a.m. on July 25, 2015, a passenger car traveling north rear-ended another passenger car that was making a left turn from the northbound lane. The collision report cited unsafe speed as the primary collision factor. The accident resulted in one injury.
- **Accident 2:** At 2:08 p.m. on September 25, 2012, a passenger car traveling southbound ran off the road and hit a fixed object. The collision report cited improper turning as the primary collision factor. The accident resulted in one injury.
- **Accident 3:** At 5:45 p.m. on May 25, 2012, a passenger car traveling southbound ran off the road and hit a fixed object. The collision report cited improper turning as the primary collision factor. The accident resulted in one injury.

These three accidents did not involve pedestrians or cyclists. The remaining six accidents occurred in or adjacent to the intersection of Bollinger Canyon Road and Crow Canyon Road:

- **Accident 4:** At 8:14 p.m. on March 24, 2013, a passenger car traveling westbound broadsided a northbound passenger car. The collision report cited driving under the influence as the primary collision factor. The accident resulted in one injury.
- **Accident 5:** At 1:44 a.m. on July 21, 2012, a passenger car traveling northbound ran off the road and hit a fixed object. The collision report cited driving under the influence as the primary collision factor. The accident resulted in two injuries.
- **Accident 6:** At 1:59 p.m. on June 2, 2016, a bicyclist was injured after hitting an object while making a northbound right turn. The collision report did not cite a collision factor. The accident resulted in an injury.
- **Accident 7:** At 12:38 p.m. on November 22, 2014, an eastbound passenger car rear-ended a stopped passenger car. The collision report cited driving under the influence as the primary collision factor. The accident resulted in an injury.

- **Accident 8:** At 8:29 a.m. on November 16, 2012, an eastbound passenger car rear-ended two stopped passenger cars. The collision report cited unsafe speed as the primary collision factor. The accident resulted in two injuries.
- **Accident 9:** At 3:03 p.m. on March 10, 2015, an eastbound passenger car rear-ended a stopped passenger car. The collision report cited unsafe speed as the primary collision factor. The accident resulted in an injury.

Figure 8 shows the locations of these accidents. Only three of the nine reported accidents occurred along Bollinger Canyon Road, with the six remaining accidents a result of unsafe behavior along Crow Canyon Road. The three accidents on Bollinger Canyon Road were caused by unsafe speeds or improper turning and are consistent with EBRPD staff observations. The six remaining accidents at the intersection of Bollinger Canyon Road and Crow Canyon Road were also attributed to unsafe behavior, with all of the passenger car involved accidents caused by either unsafe speeds or drug and alcohol influence.

There is no consistent cause other than unsafe behavior for either the three accidents on Bollinger Canyon or the six accidents at the intersection. This indicates that the causes of these accidents are not a result of pronounced hazard in the roadway's geometry or structure. Additionally, the number of reported accidents along Bollinger Canyon Road, three over the course of 5 years, is considered low. Detailed collision reports are included in Appendix C.

Chen Staging Area Safety Review

The proposed staging area on the current Chen parcel was previously illustrated on Figure 2. The California Department of Transportation (Caltrans) *Highway Design Manual,* Sixth Edition[1] recommends an unobstructed corner sight distance on a 60 mph road of 660 feet. Even though Bollinger Canyon Road has a posted speed limit of 45 mph, a 60 mph sight line distance was taken into consideration in preliminary engineering plans for the staging area from the engineering firm of Carlson, Barbee & Gibson. The latest speed counts along Bollinger Canyon Road conducted by the Contra Costa County Public Works Department reveals 85th percentile speeds of 46 to 50 mph, which are in line with the posted speed limit of 45 mph. Specifically, this count was collected along Bollinger Canyon Road 4,500 feet north of Deerwood Drive from March 25, 2014, to March 26, 2014. Given the flat and straight roadway geometric of Bollinger Canyon Road adjacent to this staging area, a sight distance design speed of 60 mph is not unreasonable. Figure 9 shows the sight distance lines from the Chen staging area driveway. As shown in Figure 9, the Chen Staging Area driveway is located in a manner that provides unobstructed sight lines to detect vehicles 660 feet to both the north and the south. Appendix D provides the County of Contra Costa (County) speed counts.

The Chen staging area is set back behind the County right-of-way for Bollinger Canyon Road, approximately 35 feet from the traveled roadway. This setback between the edge of the roadway and the County right-of-way is currently unpaved, level, all-weather compacted gravel and can provide adequate space for wider-turning vehicles. Additionally, this setback provides the opportunity to pave a deceleration lane for inbound vehicles if determined necessary by the County.

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[1] California Department of Transportation, 2017. *Highway Design Manual,* Sixth ed. November 20.

LSA

FIGURE 8

LEGEND

- Accident Locations

SOURCE: Google Earth

Southern Las Trampas LUPA
Circulation Assessment

Accident Locations (2012 - 2016)

FIGURE 9

N

0 100 200

FEET

SOURCE: Carlson, Barbee & Gibson, Inc. (August 2017), Google Earth

Southern Las Trampas LUPA
Circulation Assessment

Chen Staging Area Sight Distance

I:\EBR1702\G\Chen Staging Area Sight Distance.cdr (5/11/2018)

The parking lot meets County requirements for off-street parking lots of 18-foot long parking stalls accessed from a 25-foot-wide drive aisle.

Advance signage may be provided approximately where the sight distance lines end to inform passing drivers of the upcoming staging area.

Faria Trailhead Safety Review

The proposed trailhead areas on either side of Bollinger Canyon Road on the current Faria parcel, previously shown on Figure 1, are proposed to be unpaved all-weather gravel turnouts directly opposite each other that would provide six parking spaces each. These proposed trailheads would be located just south of a combination of horizontal curves and neighboring driveways, including private residences, the Child Day Schools preschool, and the future Faria project.

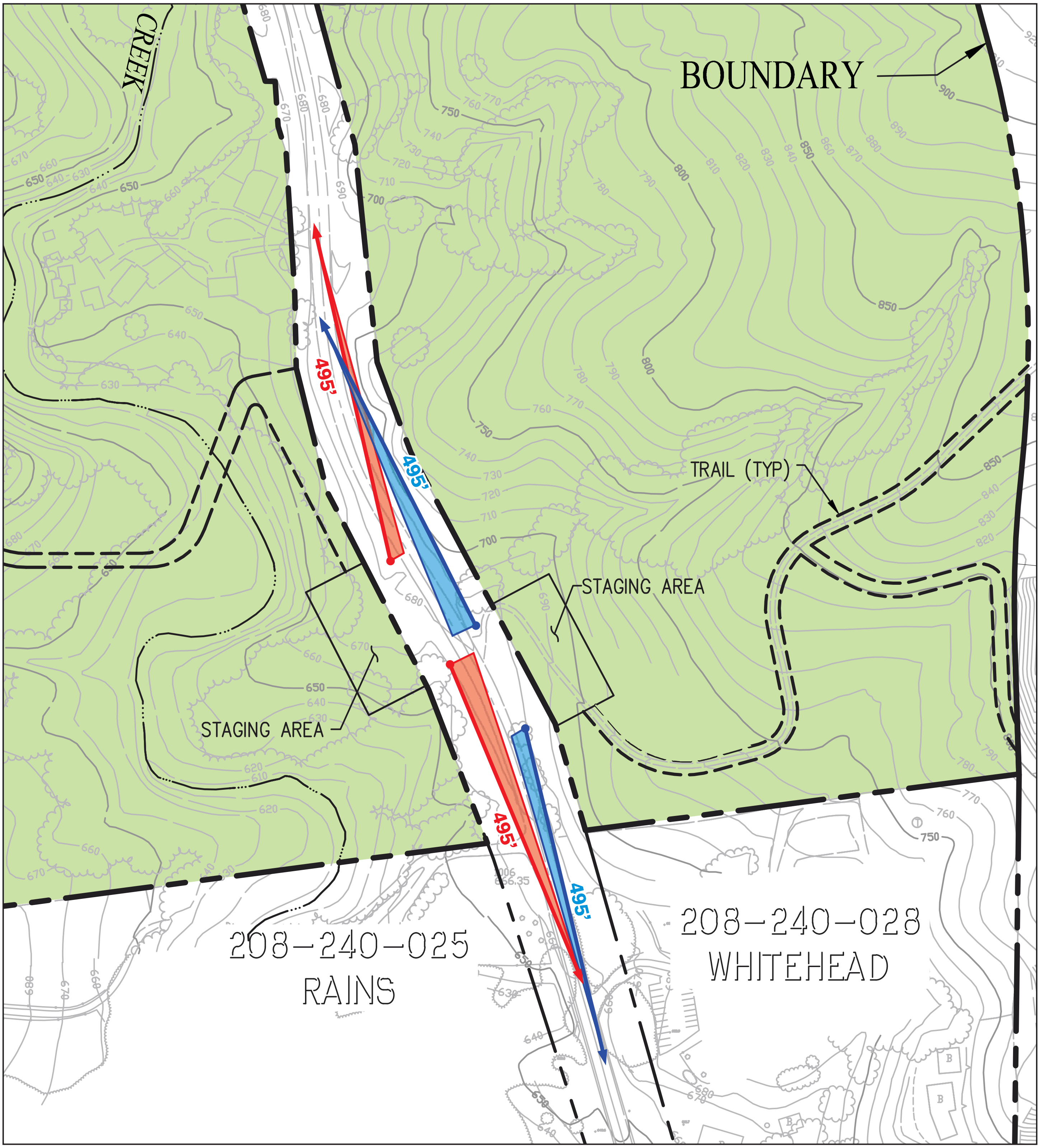
Due to the location of this pair of trailheads, a corner sight distance from the Caltrans HDM consistent with the posted speed limit of 45 mph was selected. A corner sight distance of 60 mph, such as the one used for the Chen Staging Area, was not used because the segment of Bollinger Canyon Road next to the Faria Trailheads features more driveway access points and horizontal curves that discourage high-speed operating behavior. This design speed selection is consistent with Caltrans HDM guidance on design speed selection in light of existing topography, operating speed, and facility type. From Caltrans HDM Index 101.1 (2)(a):

> “For existing lower-speed conventional highways in urban areas and rural highways that are Main Streets with observed or proposed operating speeds of 45 mph or less, the design speed should be selected to be consistent with the highway context which may discourage high-speed operating behavior. Select a design speed that is logical with respect to topography, operating speed…
>
> …adjacent land use, design volumes for all users, collision history, access control, and facility type.”

This speed is in line with the reported travel speeds along the straighter section of Bollinger Canyon Road to the north where the County conducted the count report. The corner sight distance for a roadway with a posted speed limit of 45 mph is 495 ft. Figure 10 illustrates the sight distance lines from the two Faria trailhead parking areas. As shown on Figure 10, there is a curve in Bollinger Canyon Road to the north of the trailheads. Landscaping within this curve should be modified if necessary to provide unobstructed sight lines from each trailhead.

The Faria trailheads would consist of unpaved, all-weather gravel parking areas that would not have marked parking stalls or drive aisles. Adequate space should be provided at these trailheads to allow for vehicles to pull into or out of the parking area and to make the requisite maneuvers to get back onto Bollinger Canyon Road without interfering with adjacent through traffic. As the County does not currently provide guidance on roadside dirt/gravel parking area design, the County requirements for typical off-street parking space sizing should be followed. Consistent with County requirements for off-street parking, the Faria Trailhead parking areas should provide 25 feet between the parking area and the edge of the roadway to provide adequate maneuvering space.

FIGURE 10



Southern Las Trampas LUPA
Circulation Assessment
Faria Trailhead Sight Distance

SOURCE: Carlson, Barbee & Gibson, Inc. (August 2017)

I:\EBR1702\G\Faria Trailhead Sight Distance.cdr (5/11/2018)

Advance signage may be provided approximately where the sight distance lines end to inform passing drivers of the upcoming trailhead. As pedestrians do not travel along Bollinger Canyon Road to get to the preserve, but rather travel to preserve trailheads via passenger vehicle, additional pedestrian-related roadway improvements are not recommended at this time.

Trail Assessment

Mobility safety of different types of trail users does not end in the vehicular parking areas. This section addresses mobility-related safety concerns between different types of trail users on the trails in the proposed project. Table G summarizes all trails, both existing and proposed, that could be affected by users of either the Chen staging area or Faria trailheads.

Table G: Las Trampas LUPA Trails

Name	Property	Description	Type	Width	Mileage
Proposed Trails					
Chen_1proposed	Chen	Calaveras Ridge Trail(CRT) connector	EVMA/Rec Trail	up to 12'	1.1
Faria_1proposed[1]	Faria	Western Loop	narrow trail	up to 6'	0.9
Faria_2proposed[1]	Faria	CRT connector	narrow trail	up to 6'	0.3
Podva_1proposed	Podva	CRT connector	EVMA trail	up to 12'	0.9
PetersRanch_1proposed	Peter's Ranch	CRT connector	narrow trail	up to 6'	0.8
Podva_2proposed	EBRPD	Podva trail connector to CRT	EVMA/Rec Trail	up to 12'	0.5
Total Proposed Trails					**4.5**
Existing Trails (and Already Open)					
Chen_1existing	Chen	CRT connector	ranch road[2]	up to 12'	0.4
Elworthy_1existing	Elworthy	CRT	ranch road[2]	up to 12'	0.7
Elworthy_2existing	Elworthy	CRT connector	ranch road[2]	up to 12'	0.2
Elworthy_3existing	Elworthy (private)	Trail through scenic easement on private property	EVMA/Rec Trail	up to 12'	0.5
Total Existing Trails					**1.8**
Other Public Trails					
GHAD_1[3]	Faria Preserve GHAD	CRT	unknown	unknown	0.8
GHAD_2[3]	Faria Preserve GHAD	Faria GHAD trails	narrow trail	unknown	1.4
Total Other Trails					**2.2**
Total Las Trampas LUPA Trail Mileage					**6.3**
Total Las Trampas and Other Public Trail Mileage					**8.5**

Source: EBRPD Staff

[1] Faria_1proposed and Faria_2proposed are approximate alignments— not yet finalized.

[2] Drivable.

[3] Other Public Trails will be managed and maintained by the City of San Ramon and not part of this project; however, they have been referenced as part of the trails that can be impacted by the project.

EBRPD = East Bay Regional Park District
EVMA = emergency vehicle and medical access
GHAD = Geologic Hazard Abatement District
LUPA = Land Use Plan Amendment
Rec = recreational

Mobility issues that can affect the safety of various users include the potential speed differential and user conflict points between bicyclists, equestrians, and pedestrians (e.g., runners, hikers, dog walkers) at staging areas, access points, and other locations where motorized vehicles may be present. Existing trail usage observations reveal that pedestrians exclusively use the majority of trails in the preserve. Mountain biking and equestrian users make up a nominal percentage of preserve users. The proposed trails shown in Table G would not be anticipated to result in a deviation from the existing mode of preserve usage. As such, potential conflicts between different types of trail users are anticipated to be minimal on these trails, as they are restricted to pedestrians.

In the event that future trails open to equestrian and mountain bike use, trail design should account for features conducive to the International Mountain Biking Association's (IMBA) guidance on trail etiquette and safety for equestrians, hikers, and mountain bikers.[1] If desired, the EBRPD can investigate the possible implementation of IMBA multiuse trail signs to better promote safe trail usage.

SENATE BILL 743 VEHICLE MILES TRAVELED ANALYSIS

California Senate Bill 743 (SB 743) was signed in 2013 and required a move away from vehicle delay and LOS within California Environmental Quality Act (CEQA) transportation analysis. This bill required the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts. OPR identified vehicle miles traveled (VMT) per capita and VMT per employee as the new metrics for transportation analysis. The goal of this bill is to bring State transportation analysis in line with promoting State goals of reducing greenhouse gas emissions through the reduction of VMT.

The draft SB 743 guidelines provide direction for VMT thresholds for select land use types: residential, office and retail. The current recommendations do not identify other uses, such as parks and passive open space. The current schedule would indicate Administrative Law rulemaking completed in 2018. The OPR currently states that agencies may opt in after this time, and that all agencies must adopt the SB 743 VMT CEQA approach by 2019. Therefore, the EBRPD is not required to conduct a VMT CEQA analysis for this project at this time.

However, in an effort to provide information on the project's potential VMT, the project traffic's potential total VMT has been calculated based the countywide average trip length for uses similar to the project. The total VMT is estimated by multiplying the number of daily vehicle trips, previously described in the Trip Generation section of this analysis, by the average trip length. According to the California Emissions Estimator Model (CalEEMod), the average trip length of nonresidential service uses in rural Contra Costa County is 6.6 miles. CalEEMod is a statewide land use emissions computer model that was developed for the California Air Pollution Officers Association that quantifies emissions from land use projects based on input such as trip lengths from local air districts. The project area is considered rural as it is outside of the boundaries for what is considered urban in Contra Costa County in the CalEEMod model.

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[1] "Rules of the Trail". *International Mountain Biking Association*, Accessed May 11, 2018, https://www.imba.com/sites/default/files/Team_IMBA/RulesOfTheTrail.pdf.

Based on this information from CalEEMod and project trip generation data from this report, a total project VMT can be calculated. The potential daily trips associated with the project, shown previously in Tables D and E, is 1,640 trips (1,180 existing and 460 proposed). Those 1,640 daily trips at an average trip length of 6.6 miles per trip results in a total weekend project VMT of 10,824.

CONCLUSION

Based on this analysis of transportation operations, accident history, and compliance with applicable safety guidance at access points, the development of the project is not anticipated to result in any significant transportation or safety impacts.

APPENDIX A

EXISTING COUNTS

Prepared by NDS/ATD

VOLUME

18501 Bollinger Canyon Rd N/O Crow Canyon Rd

Day: Friday
Date: 9/22/2017

City: San Ramon
Project #: CA17_7780_001

DAILY TOTALS	NB	SB	EB	WB	Total
	478	499	0	0	977

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	1		0				1		**12:00**	14		7				21	
00:15	0		0				0		**12:15**	10		8				18	
00:30	1		0				1		**12:30**	14		10				24	
00:45	0	2	1	1			1	3	**12:45**	10	48	10	35			20	83
01:00	0		0				0		**13:00**	8		7				15	
01:15	0		0				0		**13:15**	5		6				11	
01:30	0		0				0		**13:30**	8		5				13	
01:45	0		1	1			1	1	**13:45**	7	28	13	31			20	59
02:00	0		2				2		**14:00**	8		18				26	
02:15	0		0				0		**14:15**	8		12				20	
02:30	1		0				1		**14:30**	5		12				17	
02:45	3	4	1	3			4	7	**14:45**	9	30	8	50			17	80
03:00	0		2				2		**15:00**	11		11				22	
03:15	0		0				0		**15:15**	9		6				15	
03:30	0		0				0		**15:30**	4		10				14	
03:45	0		0	2			0	2	**15:45**	12	36	13	40			25	76
04:00	0		0				0		**16:00**	9		13				22	
04:15	1		0				1		**16:15**	5		7				12	
04:30	0		0				0		**16:30**	8		6				14	
04:45	0	1	1	1			1	2	**16:45**	10	32	12	38			22	70
05:00	0		1				1		**17:00**	9		9				18	
05:15	0		2				2		**17:15**	9		8				17	
05:30	2		0				2		**17:30**	5		8				13	
05:45	1	3	0	3			1	6	**17:45**	13	36	4	29			17	65
06:00	3		1				4		**18:00**	3		12				15	
06:15	4		4				8		**18:15**	8		13				21	
06:30	3		3				6		**18:30**	13		8				21	
06:45	12	22	2	10			14	32	**18:45**	8	32	10	43			18	75
07:00	10		6				16		**19:00**	4		5				9	
07:15	3		9				12		**19:15**	3		7				10	
07:30	3		13				16		**19:30**	1		12				13	
07:45	6	22	11	39			17	61	**19:45**	2	10	4	28			6	38
08:00	3		7				10		**20:00**	2		2				4	
08:15	6		4				10		**20:15**	2		3				5	
08:30	18		6				24		**20:30**	3		2				5	
08:45	10	37	4	21			14	58	**20:45**	6	13	3	10			9	23
09:00	10		6				16		**21:00**	0		4				4	
09:15	12		8				20		**21:15**	2		2				4	
09:30	7		6				13		**21:30**	0		1				1	
09:45	8	37	7	27			15	64	**21:45**	0	2	1	8			1	10
10:00	10		7				17		**22:00**	2		1				3	
10:15	14		4				18		**22:15**	1		1				2	
10:30	12		6				18		**22:30**	3		0				3	
10:45	10	46	10	27			20	73	**22:45**	1	7	1	3			2	10
11:00	7		7				14		**23:00**	1		1				2	
11:15	4		11				15		**23:15**	1		0				1	
11:30	7		14				21		**23:30**	1		1				2	
11:45	8	26	14	46			22	72	**23:45**	1	4	1	3			2	7
TOTALS		200		181				**381**	**TOTALS**		278		318				**596**
SPLIT %		52.5%		47.5%				**39.0%**	**SPLIT %**		46.6%		53.4%				**61.0%**

DAILY TOTALS	NB	SB	EB	WB	Total
	478	499	0	0	977

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	08:30	11:00			**11:45**	**PM Peak Hour**	12:00	13:45			**12:00**
AM Pk Volume	50	46			**85**	**PM Pk Volume**	48	55			**83**
Pk Hr Factor	0.694	0.821			**0.885**	**Pk Hr Factor**	0.857	0.764			**0.865**
7 - 9 Volume	59	60	0	0	**119**	**4 - 6 Volume**	68	67	0	0	**135**
7 - 9 Peak Hour	08:00	07:15			**07:00**	**4 - 6 Peak Hour**	16:30	16:00			**16:30**
7 - 9 Pk Volume	37	40	0	0	**61**	**4 - 6 Pk Volume**	36	38	0	0	**71**
Pk Hr Factor	0.514	0.769	0.000	0.000	**0.897**	**Pk Hr Factor**	0.900	0.731	0.000	0.000	**0.807**

Prepared by NDS/ATD

VOLUME

18501 Bollinger Canyon Rd N/O Crow Canyon Rd

Day: Saturday
Date: 9/23/2017

City: San Ramon
Project #: CA17_7780_001

DAILY TOTALS	NB	SB	EB	WB	Total
	581	599	0	0	1,180

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		1				1		12:00	24		15				39	
00:15	0		0				0		12:15	14		16				30	
00:30	0		0				0		12:30	16		8				24	
00:45	1	1	0	1			1	2	12:45	22	76	11	50			33	126
01:00	0		0				0		13:00	18		14				32	
01:15	1		0				1		13:15	9		11				20	
01:30	0		0				0		13:30	8		11				19	
01:45	0	1	1	1			1	2	13:45	6	41	13	49			19	90
02:00	0		0				0		14:00	4		17				21	
02:15	1		0				1		14:15	11		14				25	
02:30	0		1				1		14:30	8		18				26	
02:45	0	1	0	1			0	2	14:45	12	35	16	65			28	100
03:00	0		0				0		15:00	13		24				37	
03:15	0		1				1		15:15	8		20				28	
03:30	1		0				1		15:30	8		16				24	
03:45	1	2	1	2			2	4	15:45	10	39	20	80			30	119
04:00	0		0				0		16:00	10		20				30	
04:15	0		0				0		16:15	9		20				29	
04:30	1		0				1		16:30	7		11				18	
04:45	0	1	3	3			3	4	16:45	11	37	13	64			24	101
05:00	0		0				0		17:00	13		12				25	
05:15	0		1				1		17:15	8		8				16	
05:30	0		0				0		17:30	6		13				19	
05:45	1	1	0	1			1	2	17:45	6	33	8	41			14	74
06:00	2		1				3		18:00	7		9				16	
06:15	6		1				7		18:15	3		4				7	
06:30	4		3				7		18:30	3		8				11	
06:45	4	16	1	6			5	22	18:45	6	19	6	27			12	46
07:00	3		1				4		19:00	5		5				10	
07:15	8		3				11		19:15	2		2				4	
07:30	5		1				6		19:30	3		6				9	
07:45	9	25	3	8			12	33	19:45	0	10	5	18			5	28
08:00	5		9				14		20:00	2		5				7	
08:15	6		6				12		20:15	4		3				7	
08:30	12		3				15		20:30	1		2				3	
08:45	16	39	6	24			22	63	20:45	4	11	2	12			6	23
09:00	9		15				24		21:00	4		1				5	
09:15	7		11				18		21:15	1		3				4	
09:30	12		6				18		21:30	1		2				3	
09:45	12	40	7	39			19	79	21:45	1	7	0	6			1	13
10:00	6		16				22		22:00	3		3				6	
10:15	14		9				23		22:15	2		5				7	
10:30	19		10				29		22:30	0		0				0	
10:45	20	59	8	43			28	102	22:45	0	5	1	9			1	14
11:00	19		11				30		23:00	0		1				1	
11:15	19		12				31		23:15	0		0				0	
11:30	29		9				38		23:30	2		1				3	
11:45	13	80	15	47			28	127	23:45	0	2	0	2			0	4
TOTALS		266		176				442	TOTALS		315		423				738
SPLIT %		60.2%		39.8%				37.5%	SPLIT %		42.7%		57.3%				62.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	581	599	0	0	1,180

AM Peak Hour	10:45	11:30			11:15	PM Peak Hour	12:00	15:00			12:00
AM Pk Volume	87	55			136	PM Pk Volume	76	80			126
Pk Hr Factor	0.750	0.859			0.872	Pk Hr Factor	0.792	0.833			0.808
7 - 9 Volume	64	32	0	0	96	4 - 6 Volume	70	105	0	0	175
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:15	16:00			16:00
7 - 9 Pk Volume	39	24	0	0	63	4 - 6 Pk Volume	40	64	0	0	101
Pk Hr Factor	0.609	0.667	0.000	0.000	0.716	Pk Hr Factor	0.769	0.800	0.000	0.000	0.842

Prepared by NDS/ATD

VOLUME

18501 Bollinger Canyon Rd N/O Crow Canyon Rd

Day: Sunday
Date: 9/24/2017

City: San Ramon
Project #: CA17_7780_001

DAILY TOTALS	NB	SB	EB	WB	Total
	538	528	0	0	1,066

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0		**12:00**	15		11				26	
00:15	0		0				0		**12:15**	14		17				31	
00:30	0		0				0		**12:30**	19		10				29	
00:45	0		0				0		**12:45**	12	60	7	45			19	105
01:00	0		0				0		**13:00**	15		17				32	
01:15	0		0				0		**13:15**	18		19				37	
01:30	2		0				2		**13:30**	13		11				24	
01:45	0	2	0				0	2	**13:45**	16	62	10	57			26	119
02:00	0		0				0		**14:00**	13		13				26	
02:15	0		0				0		**14:15**	7		18				25	
02:30	0		0				0		**14:30**	9		26				35	
02:45	0		0				0		**14:45**	10	39	21	78			31	117
03:00	0		0				0		**15:00**	12		15				27	
03:15	0		0				0		**15:15**	10		16				26	
03:30	0		0				0		**15:30**	9		14				23	
03:45	0		0				0		**15:45**	5	36	11	56			16	92
04:00	0		0				0		**16:00**	10		9				19	
04:15	0		0				0		**16:15**	6		17				23	
04:30	0		0				0		**16:30**	6		14				20	
04:45	0		2	2			2	2	**16:45**	14	36	13	53			27	89
05:00	0		3				3		**17:00**	2		19				21	
05:15	0		0				0		**17:15**	7		8				15	
05:30	0		0				0		**17:30**	4		10				14	
05:45	0		0	3			0	3	**17:45**	6	19	6	43			12	62
06:00	0		0				0		**18:00**	5		6				11	
06:15	0		0				0		**18:15**	5		8				13	
06:30	5		2				7		**18:30**	1		5				6	
06:45	4	9	4	6			8	15	**18:45**	3	14	1	20			4	34
07:00	3		1				4		**19:00**	1		3				4	
07:15	4		1				5		**19:15**	2		1				3	
07:30	7		3				10		**19:30**	1		3				4	
07:45	11	25	5	10			16	35	**19:45**	4	8	3	10			7	18
08:00	6		1				7		**20:00**	2		5				7	
08:15	3		2				5		**20:15**	4		1				5	
08:30	12		5				17		**20:30**	4		2				6	
08:45	17	38	10	18			27	56	**20:45**	3	13	2	10			5	23
09:00	10		6				16		**21:00**	0		1				1	
09:15	8		3				11		**21:15**	2		2				4	
09:30	12		8				20		**21:30**	2		0				2	
09:45	15	45	14	31			29	76	**21:45**	0	4	1	4			1	8
10:00	20		5				25		**22:00**	1		0				1	
10:15	13		9				22		**22:15**	0		0				0	
10:30	12		12				24		**22:30**	1		0				1	
10:45	17	62	9	35			26	97	**22:45**	0	2	2	2			2	4
11:00	21		5				26		**23:00**	1		0				1	
11:15	11		13				24		**23:15**	0		1				1	
11:30	11		15				26		**23:30**	0		0				0	
11:45	20	63	10	43			30	106	**23:45**	0	1	1	2			1	3
TOTALS		244		148				**392**	**TOTALS**		294		380				**674**
SPLIT %		62.2%		37.8%				**36.8%**	**SPLIT %**		43.6%		56.4%				**63.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	538	528	0	0	1,066

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	11:45	11:30			**11:45**	**PM Peak Hour**	12:30	14:15			**13:00**
AM Pk Volume	68	53			**116**	**PM Pk Volume**	64	80			**119**
Pk Hr Factor	0.850	0.779			**0.935**	**Pk Hr Factor**	0.842	0.769			**0.804**
7 - 9 Volume	63	28	0	0	**91**	**4 - 6 Volume**	55	96	0	0	**151**
7 - 9 Peak Hour	08:00	08:00			**08:00**	**4 - 6 Peak Hour**	16:00	16:15			**16:15**
7 - 9 Pk Volume	38	18	0	0	**56**	**4 - 6 Pk Volume**	36	63	0	0	**91**
Pk Hr Factor	0.559	0.450	0.000	0.000	**0.519**	**Pk Hr Factor**	0.643	0.829	0.000	0.000	**0.843**

Prepared by National Data & Surveying Services

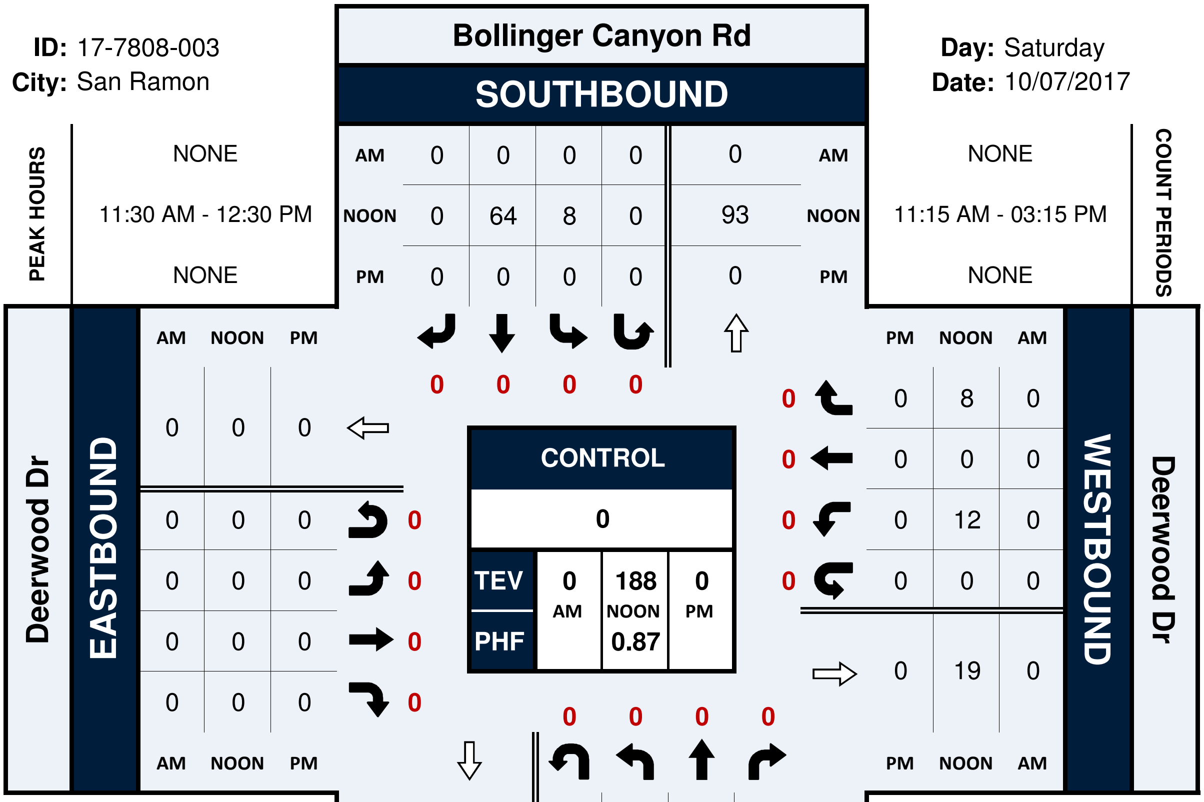
Bollinger Canyon Rd & Deerwood Dr

Peak Hour Turning Movement Count

ID: 17-7808-003
City: San Ramon

Day: Saturday
Date: 10/07/2017

PEAK HOURS	COUNT PERIODS
AM: NONE	AM: NONE
NOON: 11:30 AM - 12:30 PM	NOON: 11:15 AM - 03:15 PM
PM: NONE	PM: NONE



Bollinger Canyon Rd SOUTHBOUND

	↲	↓	↳	U	⇧
AM	0	0	0	0	0
NOON	0	64	8	0	93
PM	0	0	0	0	0
	0	0	0	0	

Deerwood Dr EASTBOUND

	AM	NOON	PM	
⇦	0	0	0	
U	0	0	0	0
↱	0	0	0	0
→	0	0	0	0
↴	0	0	0	0

Deerwood Dr WESTBOUND

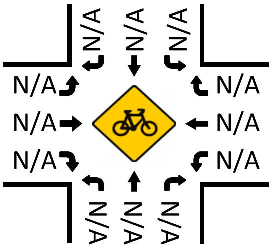
		PM	NOON	AM
↰	0	0	8	0
←	0	0	0	0
↲	0	0	12	0
U	0	0	0	0
⇨		0	19	0

Bollinger Canyon Rd NORTHBOUND

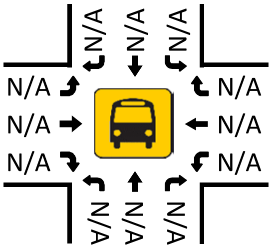
	⇩	U	↰	↑	↱
		0	0	0	0
PM	0	0	0	0	0
NOON	76	0	0	85	11
AM	0	0	0	0	0

CONTROL			
	0		
TEV	0 (AM)	188 (NOON)	0 (PM)
PHF		0.87	

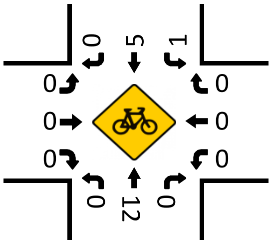
Bikes (AM)



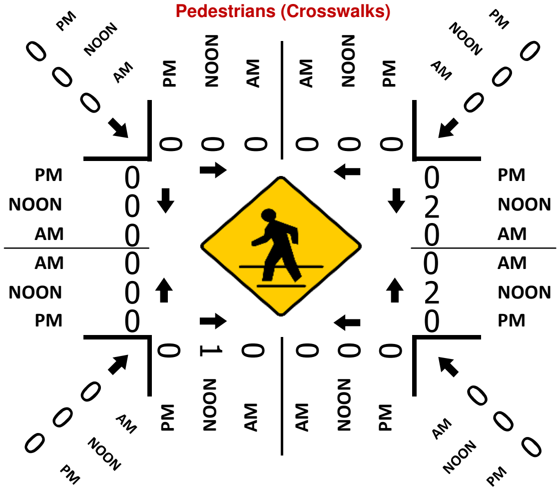
Total Vehicles (AM)



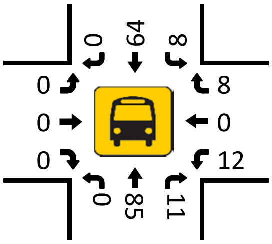
Bikes (NOON)



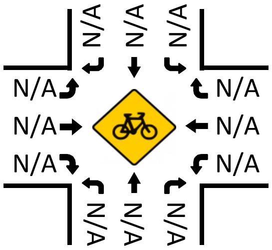
Pedestrians (Crosswalks)



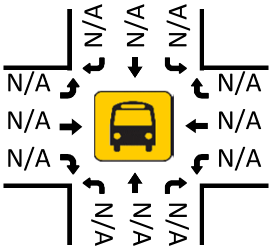
Total Vehicles (NOON)



Bikes (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Deerwood Dr
City: San Ramon
Control:

Project ID: 17-7808-003
Date: 10/7/2017

Total

NS/EW Streets:	Bollinger Canyon Rd				Bollinger Canyon Rd				Deerwood Dr				Deerwood Dr				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:15 AM	0	17	2	0	1	16	0	0	0	0	0	0	4	0	1	0	41
11:30 AM	0	24	4	0	2	18	0	0	0	0	0	0	5	0	1	0	54
11:45 AM	0	21	2	0	1	13	0	0	0	0	0	0	2	0	1	0	40
12:00 PM	0	25	3	0	1	16	0	0	0	0	0	0	1	0	2	0	48
12:15 PM	0	15	2	0	4	17	0	0	0	0	0	0	4	0	4	0	46
12:30 PM	0	28	1	0	1	10	0	0	0	0	0	0	2	0	0	1	43
12:45 PM	0	16	4	0	3	13	0	0	0	0	0	0	7	0	1	0	44
1:00 PM	0	9	2	0	3	15	0	0	0	0	0	0	8	0	0	0	37
1:15 PM	0	13	6	0	0	12	0	0	0	0	0	0	3	0	0	0	34
1:30 PM	0	17	7	0	3	22	0	0	0	0	0	0	4	0	4	0	57
1:45 PM	0	14	2	0	0	15	0	0	0	0	0	0	3	0	1	0	35
2:00 PM	0	8	3	0	2	17	0	0	0	0	0	0	4	0	0	0	34
2:15 PM	0	7	3	0	0	18	0	0	0	0	0	0	2	0	1	0	31
2:30 PM	0	13	2	0	2	16	0	0	0	0	0	0	1	0	1	2	37
2:45 PM	0	7	3	0	0	23	0	0	0	0	0	0	6	0	2	0	41
3:00 PM	0	14	4	0	0	20	0	0	0	0	0	0	6	0	6	0	50
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	248	50	0	23	261	0	0	0	0	0	0	62	0	25	3	672
APPROACH %'s :	0.00%	83.22%	16.78%	0.00%	8.10%	91.90%	0.00%	0.00%					68.89%	0.00%	27.78%	3.33%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	85	11	0	8	64	0	0	0	0	0	0	12	0	8	0	188
PEAK HR FACTOR :	0.000	0.850	0.688	0.000	0.500	0.889	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.000	0.500	0.000	
	0.857				0.857								0.625				0.870

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Deerwood Dr
City: San Ramon
Control: 0

Project ID: 17-7808-003
Date: 10/7/2017

Bikes

NS/EW Streets:	Bollinger Canyon Rd				Bollinger Canyon Rd				Deerwood Dr				Deerwood Dr				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
11:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
12:15 PM	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	0	8
12:30 PM	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7
12:45 PM	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7
1:00 PM	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	8
1:15 PM	0	9	0	0	1	2	0	0	0	0	0	0	0	0	0	0	12
1:30 PM	0	9	0	0	0	8	0	0	0	0	0	0	0	0	0	0	17
1:45 PM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2:00 PM	0	7	0	0	1	4	0	0	0	0	0	0	0	0	0	0	12
2:15 PM	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
2:30 PM	0	4	1	0	0	4	0	0	0	0	0	0	0	0	0	0	9
2:45 PM	0	1	0	0	0	14	0	0	0	0	0	0	0	0	0	0	15
3:00 PM	0	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	64	1	0	4	55	0	0	0	0	0	0	0	0	0	0	124
APPROACH %'s :	0.00%	98.46%	1.54%	0.00%	6.78%	93.22%	0.00%	0.00%									
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	0	12	0	0	1	5	0	0	0	0	0	0	0	0	0	0	18
PEAK HR FACTOR :	0.00	0.600	0.000	0.000	0.250	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.563
	0.600				0.500												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Deerwood Dr
City: San Ramon
Project ID: 17-7808-003
Date: 10/7/2017

Pedestrians (Crosswalks)

NS/EW Streets:	Bollinger Canyon Rd		Bollinger Canyon Rd		Deerwood Dr		Deerwood Dr		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	2	2	0	0	4
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	1	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	2	0	0	2
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	0	2	4	0	0	7
APPROACH %'s :			100.00%	0.00%	33.33%	66.67%			
PEAK HR :	**11:30 AM - 12:30 PM**								TOTAL
PEAK HR VOL :	0	0	1	0	2	2	0	0	5
PEAK HR FACTOR :			0.250		0.250	0.250			0.313
			0.250		0.250				

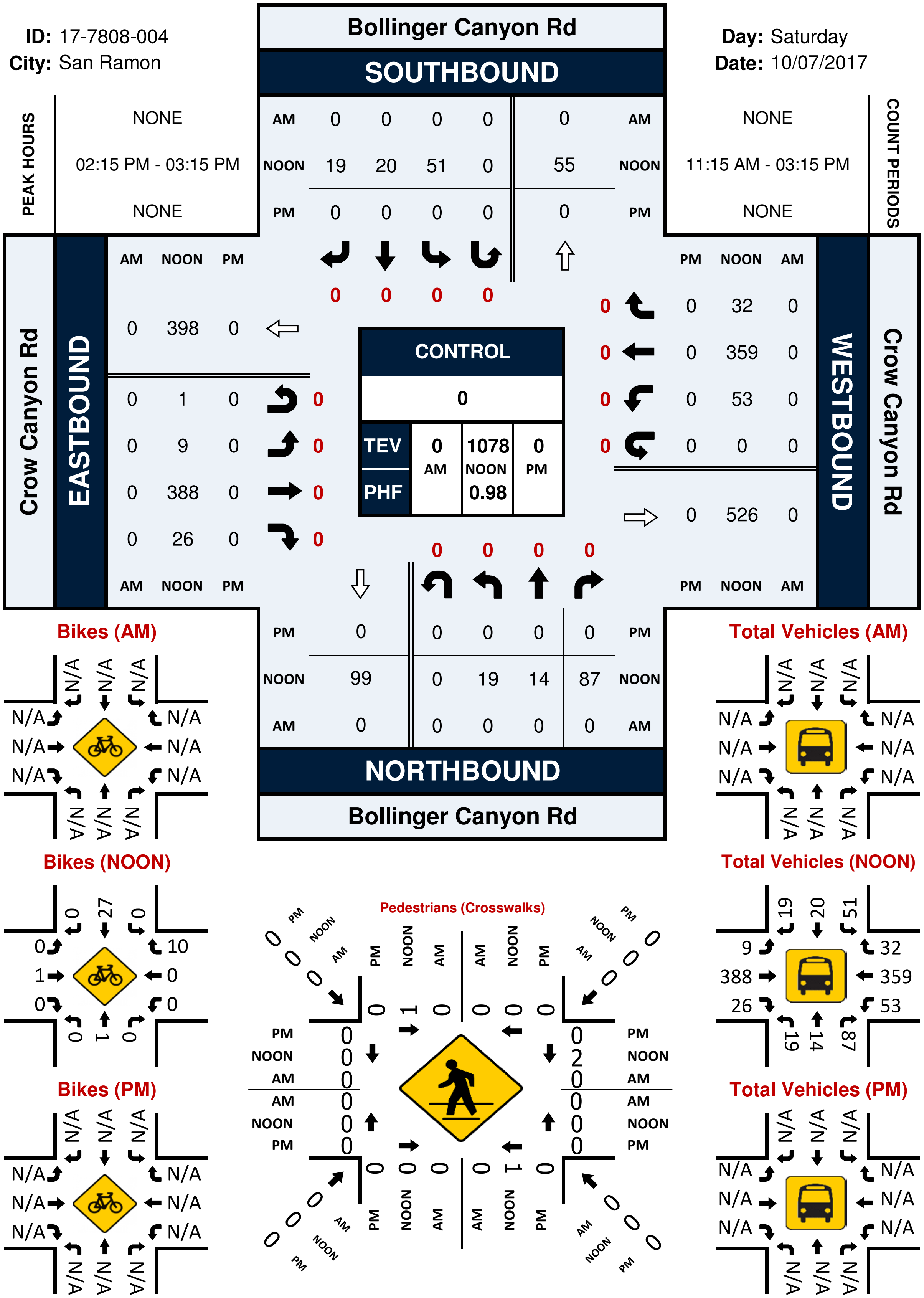
Prepared by National Data & Surveying Services

Bollinger Canyon Rd & Crow Canyon Rd

Peak Hour Turning Movement Count

ID: 17-7808-004
City: San Ramon

Day: Saturday
Date: 10/07/2017



National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Crow Canyon Rd
City: San Ramon
Control:

Project ID: 17-7808-004
Date: 10/7/2017

Total

NS/EW Streets:	Bollinger Canyon Rd				Bollinger Canyon Rd				Crow Canyon Rd				Crow Canyon Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:15 AM	6	4	15	0	13	5	6	0	1	74	5	0	9	54	14	1	207
11:30 AM	6	4	21	0	12	5	5	0	6	87	2	0	15	70	18	2	253
11:45 AM	5	5	17	0	11	4	3	0	4	79	6	1	16	83	15	0	249
12:00 PM	5	10	13	0	8	7	2	0	0	71	3	0	27	94	18	0	258
12:15 PM	8	2	24	0	10	4	4	0	3	82	2	0	26	73	12	0	250
12:30 PM	3	9	23	0	6	5	4	0	3	101	3	0	19	81	17	0	274
12:45 PM	5	4	19	0	11	2	3	0	1	104	8	0	12	68	15	1	253
1:00 PM	5	4	20	0	7	11	8	0	2	87	8	0	19	94	5	0	270
1:15 PM	15	6	18	0	11	1	2	0	2	88	3	0	16	73	11	0	246
1:30 PM	7	8	15	2	9	11	4	0	4	111	6	0	12	79	11	0	279
1:45 PM	5	4	11	1	16	2	3	0	0	92	10	0	13	87	12	0	256
2:00 PM	8	3	18	1	13	5	4	0	3	89	4	0	14	98	5	1	266
2:15 PM	2	2	22	0	14	0	2	0	2	109	9	0	18	83	6	0	269
2:30 PM	10	5	18	0	12	6	3	0	1	89	5	0	13	93	9	0	264
2:45 PM	3	4	27	0	14	7	5	0	2	99	5	0	9	91	5	0	271
3:00 PM	4	3	20	0	11	7	9	0	4	91	7	1	13	92	12	0	274
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	97	77	301	4	178	82	67	0	38	1453	86	2	251	1313	185	5	4139
APPROACH %'s :	20.25%	16.08%	62.84%	0.84%	54.43%	25.08%	20.49%	0.00%	2.41%	92.02%	5.45%	0.13%	14.31%	74.86%	10.55%	0.29%	
PEAK HR :	**02:15 PM - 03:15 PM**																TOTAL
PEAK HR VOL :	19	14	87	0	51	20	19	0	9	388	26	1	53	359	32	0	1078
PEAK HR FACTOR :	0.475	0.700	0.806	0.000	0.911	0.714	0.528	0.000	0.563	0.890	0.722	0.250	0.736	0.965	0.667	0.000	0.984
		0.882				0.833				0.883				0.949			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Crow Canyon Rd
City: San Ramon
Control: 0

Project ID: 17-7808-004
Date: 10/7/2017

Bikes

NS/EW Streets:	Bollinger Canyon Rd				Bollinger Canyon Rd				Crow Canyon Rd				Crow Canyon Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
11:30 AM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
11:45 AM	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
12:15 PM	0	1	1	0	1	3	0	0	0	0	0	0	0	0	4	0	10
12:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	7	0	9
12:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	5
1:00 PM	0	1	0	0	0	3	0	0	0	2	0	0	0	0	2	0	8
1:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	8	0	13
1:30 PM	0	0	0	0	2	6	0	0	0	0	0	0	0	0	9	0	17
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
2:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	7	0	10
2:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	5	0	7
2:30 PM	0	1	0	0	0	5	0	0	0	0	0	0	0	0	3	0	9
2:45 PM	0	0	0	0	0	14	0	0	0	1	0	0	0	0	1	0	16
3:00 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	1	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	2	0	3	53	0	0	0	4	0	0	0	0	60	0	127
APPROACH %'s :	0.00%	71.43%	28.57%	0.00%	5.36%	94.64%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	27	0	0	0	1	0	0	0	0	10	0	39
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.482	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.609
	0.250				0.482				0.250				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bollinger Canyon Rd & Crow Canyon Rd **Project ID:** 17-7808-004
City: San Ramon **Date:** 10/7/2017

Pedestrians (Crosswalks)

NS/EW Streets:	Bollinger Canyon Rd		Bollinger Canyon Rd		Crow Canyon Rd		Crow Canyon Rd		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	3	0	0	3
12:15 PM	0	0	0	1	0	1	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	0	0	1
1:00 PM	0	0	3	0	1	0	0	0	4
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	1	2	0	1	0	0	0	4
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	1	0	0	0	0	1	0	0	2
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	1	0	1	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	6	2	3	6	0	0	19
APPROACH %'s :	50.00%	50.00%	75.00%	25.00%	33.33%	66.67%			
PEAK HR :	**02:15 PM - 03:15 PM**								TOTAL
PEAK HR VOL :	1	0	0	1	0	2	0	0	4
PEAK HR FACTOR :	0.250			0.250		0.500			0.500
	0.250		0.250		0.500				

APPENDIX B

LOS WORKSHEETS

1: Bollinger Canyon Road & Chen Staging Area

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Traffic Vol, veh/h	0	0	93	0	0	72
Future Vol, veh/h	0	0	93	0	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	101	0	0	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	179	101	0	0	101	0
Stage 1	101	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	811	954	-	-	1491	-
Stage 1	923	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	811	954	-	-	1491	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1491	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

2: Bollinger Canyon Road & Faria Trailhead East

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	0	0	0	0	0	93	0	0	72	0
Future Vol, veh/h	0	0	0	0	0	0	0	93	0	0	72	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	101	0	0	78	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	179	78	179	179	101	78	0	0	101	0	0
Stage 1	78	78	-	101	101	-	-	-	-	-	-	-
Stage 2	101	101	-	78	78	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	715	983	783	715	954	1520	-	-	1491	-	-
Stage 1	931	830	-	905	811	-	-	-	-	-	-	-
Stage 2	905	811	-	931	830	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	783	715	983	783	715	954	1520	-	-	1491	-	-
Mov Cap-2 Maneuver	783	715	-	783	715	-	-	-	-	-	-	-
Stage 1	931	830	-	905	811	-	-	-	-	-	-	-
Stage 2	905	811	-	931	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1520	-	-	-	-	1491	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	12	8	85	11	8	64
Future Vol, veh/h	12	8	85	11	8	64
Conflicting Peds, #/hr	1	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	9	98	13	9	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	201	108	0	0	114	0
Stage 1	108	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	788	946	-	-	1475	-
Stage 1	916	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	780	942	-	-	1475	-
Mov Cap-2 Maneuver	780	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	925	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	838	1475	-
HCM Lane V/C Ratio	-	-	0.027	0.006	-
HCM Control Delay (s)	-	-	9.4	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

1: Bollinger Canyon Road & Chen Staging Area

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	0	0	93	0	0	72
Future Vol, veh/h	0	0	93	0	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	101	0	0	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	179	101	0	0	101	0
Stage 1	101	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	811	954	-	-	1491	-
Stage 1	923	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	811	954	-	-	1491	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	0		0		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1491	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

2: Bollinger Canyon Road & Faria Trailhead /Faria Trailhead

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	0	0	0	0	0	93	0	0	72	0
Future Vol, veh/h	0	0	0	0	0	0	0	93	0	0	72	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	101	0	0	78	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	179	78	179	179	101	78	0	0	101	0	0
Stage 1	78	78	-	101	101	-	-	-	-	-	-	-
Stage 2	101	101	-	78	78	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	715	983	783	715	954	1520	-	-	1491	-	-
Stage 1	931	830	-	905	811	-	-	-	-	-	-	-
Stage 2	905	811	-	931	830	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	783	715	983	783	715	954	1520	-	-	1491	-	-
Mov Cap-2 Maneuver	783	715	-	783	715	-	-	-	-	-	-	-
Stage 1	931	830	-	905	811	-	-	-	-	-	-	-
Stage 2	905	811	-	931	830	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			0		
HCM LOS	A			A								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1520	-	-	-	-	1491	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Traffic Vol, veh/h	12	8	168	11	8	64
Future Vol, veh/h	12	8	168	11	8	64
Conflicting Peds, #/hr	1	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	9	193	13	9	74

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	296	203	0	0	210	0
Stage 1	203	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	695	838	-	-	1361	-
Stage 1	831	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	687	835	-	-	1361	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	739	1361	-
HCM Lane V/C Ratio	-	-	0.031	0.007	-
HCM Control Delay (s)	-	-	10	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

1: Bollinger Canyon Road & Chen Staging Area

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	19	0	93	24	0	72
Future Vol, veh/h	19	0	93	24	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	0	101	26	0	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	192	114	0	0	127	0
Stage 1	114	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	797	939	-	-	1459	-
Stage 1	911	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	797	939	-	-	1459	-
Mov Cap-2 Maneuver	797	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	9.6		0		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	797	1459	-
HCM Lane V/C Ratio	-	-	0.026	-	-
HCM Control Delay (s)	-	-	9.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2: Bollinger Canyon Road & Faria Trailhead /Faria Trailhead

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	5	5	0	0	6	117	6	0	91	0
Future Vol, veh/h	0	0	5	5	0	0	6	117	6	0	91	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	5	0	0	7	127	7	0	99	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	242	246	99	245	242	130	99	0	0	134	0	0
Stage 1	99	99	-	143	143	-	-	-	-	-	-	-
Stage 2	143	147	-	102	99	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	712	656	957	709	660	920	1494	-	-	1451	-	-
Stage 1	907	813	-	860	779	-	-	-	-	-	-	-
Stage 2	860	775	-	904	813	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	709	653	957	702	657	920	1494	-	-	1451	-	-
Mov Cap-2 Maneuver	709	653	-	702	657	-	-	-	-	-	-	-
Stage 1	902	813	-	856	775	-	-	-	-	-	-	-
Stage 2	856	771	-	899	813	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.8			10.2			0.3			0		
HCM LOS	A			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	957	702	1451	-	-
HCM Lane V/C Ratio	0.004	-	-	0.006	0.008	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	10.2	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Traffic Vol, veh/h	12	8	121	11	8	93
Future Vol, veh/h	12	8	121	11	8	93
Conflicting Peds, #/hr	1	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	9	139	13	9	107

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	275	149	0	0	156	0
Stage 1	149	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	715	898	-	-	1424	-
Stage 1	879	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	707	895	-	-	1424	-
Mov Cap-2 Maneuver	707	-	-	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	772	1424	-
HCM Lane V/C Ratio	-	-	0.03	0.006	-
HCM Control Delay (s)	-	-	9.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

1: Bollinger Canyon Road & Chen Staging Area

Intersection						
Int Delay, s/veh	0.9					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↑↱			↰↑
Traffic Vol, veh/h	19	0	93	24	0	72
Future Vol, veh/h	19	0	93	24	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	0	101	26	0	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	192	114	0	0	127	0
Stage 1	114	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	797	939	-	-	1459	-
Stage 1	911	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	797	939	-	-	1459	-
Mov Cap-2 Maneuver	797	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	797	1459	-
HCM Lane V/C Ratio	-	-	0.026	-	-
HCM Control Delay (s)	-	-	9.6	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2: Bollinger Canyon Road & Faria Trailhead /Faria Trailhead

Intersection												
Int Delay, s/veh	0.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	5	5	0	0	6	117	6	0	91	0
Future Vol, veh/h	0	0	5	5	0	0	6	117	6	0	91	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	5	0	0	7	127	7	0	99	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	242	246	99	245	242	130	99	0	0	134	0	0
Stage 1	99	99	-	143	143	-	-	-	-	-	-	-
Stage 2	143	147	-	102	99	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	712	656	957	709	660	920	1494	-	-	1451	-	-
Stage 1	907	813	-	860	779	-	-	-	-	-	-	-
Stage 2	860	775	-	904	813	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	709	653	957	702	657	920	1494	-	-	1451	-	-
Mov Cap-2 Maneuver	709	653	-	702	657	-	-	-	-	-	-	-
Stage 1	902	813	-	856	775	-	-	-	-	-	-	-
Stage 2	856	771	-	899	813	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	10.2	0.3	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	957	702	1451	-	-
HCM Lane V/C Ratio	0.004	-	-	0.006	0.008	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	10.2	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↱		↱			↰
Traffic Vol, veh/h	12	8	204	11	8	93
Future Vol, veh/h	12	8	204	11	8	93
Conflicting Peds, #/hr	1	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	9	234	13	9	107

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	371	245	0	0	251	0
Stage 1	245	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	630	794	-	-	1314	-
Stage 1	796	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	623	791	-	-	1314	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	681	1314	-
HCM Lane V/C Ratio	-	-	0.034	0.007	-
HCM Control Delay (s)	-	-	10.5	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

```
Existing                  Thu Nov 2, 2017 17:28:58                Page 2-1
--------------------------------------------------------------------------------
        Las Trampas Regional Wilderness Preserve LUPA Traffic Analysis
                              Existing Conditions
                           Saturday Mid-Day Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Bollinger Canyon Road (NS) / Crow Canyon Road (EW)
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.233
Loss Time (sec):       0              Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30              Level Of Service:                  A
********************************************************************************
Street Name:      Bollinger Canyon Road             Crow Canyon Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       1  0  1  0  1   1  0  0  1  0   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     19   14    87   51   20    19   10  388    26   53  359    32
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  19   14    87   51   20    19   10  388    26   53  359    32
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   19   14    87   51   20    19   10  388    26   53  359    32
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  19   14    87   51   20    19   10  388    26   53  359    32
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  19   14    87   51   20    19   10  388    26   53  359    32
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650 1650 1650  1650 1650 1650  1650 1650 1650  1650
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 1.00  1.00 1.00 0.51  0.49 1.00 2.00  1.00 1.00 2.00  1.00
Final Sat.:  1650 1650  1650 1650  846   804 1650 3300  1650 1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.01  0.05 0.03 0.02  0.02 0.01 0.12  0.02 0.03 0.11  0.02
Crit Moves:             ****  ****                ****        ****
********************************************************************************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Existing + Related ProjectsFri Nov 10, 2017 14:54:34              Page 2-1
--------------------------------------------------------------------------------
        Las Trampas Regional Wilderness Preserve LUPA Traffic Analysis
                     Existing + Related Projects Conditions
                           Saturday Mid-Day Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Bollinger Canyon Road (NS) / Crow Canyon Road (EW)
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.245
Loss Time (sec):       0              Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30              Level Of Service:                  A
********************************************************************************
Street Name:      Bollinger Canyon Road             Crow Canyon Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       1  0  1  0  1   1  0  0  1  0   1  0  2  0  1   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     19   74    87   68   72    31   23  391    26   53  362    52
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  19   74    87   68   72    31   23  391    26   53  362    52
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Volume:   19   74    87   68   72    31   23  391    26   53  362    52
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  19   74    87   68   72    31   23  391    26   53  362    52
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  19   74    87   68   72    31   23  391    26   53  362    52
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1650 1650  1650 1650 1650  1650 1650 1650  1650 1650 1650  1650
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 1.00  1.00 1.00 0.70  0.30 1.00 2.00  1.00 1.00 2.00  1.00
Final Sat.:  1650 1650  1650 1650 1153   497 1650 3300  1650 1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.04  0.05 0.04 0.06  0.06 0.01 0.12  0.02 0.03 0.11  0.03
Crit Moves:             ****  ****                ****        ****
********************************************************************************


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Existing + Project         Fri Nov 10, 2017 14:47:50                Page 2-1
--------------------------------------------------------------------------------
        Las Trampas Regional Wilderness Preserve LUPA Traffic Analysis
                         Existing + Project Conditions
                          Saturday Mid-Day Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Bollinger Canyon Road (NS) / Crow Canyon Road (EW)
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.243
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  A
********************************************************************************
Street Name:      Bollinger Canyon Road               Crow Canyon Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Protected         Protected         Protected
Rights:            Include           Include           Include           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       19   23    87    67   26    25    16  388    26    53  359    53
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    19   23    87    67   26    25    16  388    26    53  359    53
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     19   23    87    67   26    25    16  388    26    53  359    53
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    19   23    87    67   26    25    16  388    26    53  359    53
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    19   23    87    67   26    25    16  388    26    53  359    53
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:        1.00 1.00  1.00  1.00 0.51  0.49  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:   1650 1650  1650  1650  841   809  1650 3300  1650  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.01 0.01  0.05  0.04 0.03  0.03  0.01 0.12  0.02  0.03 0.11  0.03
Crit Moves:              ****  ****                  ****        ****
********************************************************************************



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Existing + Related ProjectsFri Nov 10, 2017 14:59:31                Page 2-1
--------------------------------------------------------------------------------
        Las Trampas Regional Wilderness Preserve LUPA Traffic Analysis
                 Existing + Related Projects + Project Conditions
                          Saturday Mid-Day Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Bollinger Canyon Road (NS) / Crow Canyon Road (EW)
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.252
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  A
********************************************************************************
Street Name:      Bollinger Canyon Road               Crow Canyon Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Protected         Protected         Protected
Rights:            Include           Include           Include           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  0  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       19   83    87    84   78    37    29  391    26    53  362    73
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    19   83    87    84   78    37    29  391    26    53  362    73
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     19   83    87    84   78    37    29  391    26    53  362    73
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    19   83    87    84   78    37    29  391    26    53  362    73
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    19   83    87    84   78    37    29  391    26    53  362    73
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1650 1650  1650  1650 1650  1650  1650 1650  1650  1650 1650  1650
Adjustment:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:        1.00 1.00  1.00  1.00 0.68  0.32  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:   1650 1650  1650  1650 1119   531  1650 3300  1650  1650 3300  1650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.01 0.05  0.05  0.05 0.07  0.07  0.02 0.12  0.02  0.03 0.11  0.04
Crit Moves:        ****        ****                  ****        ****
********************************************************************************



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APPENDIX C

ACCIDENT DATA

Collision Details: Case ID **7014555**

Collision Factors

County	CONTRA COSTA	**City**	UNINCORPORATED
Date (M-D-Y)	07-25-2015	**Time**	09:40
Intersection	BOLLINGER CANYON RD & BOLLINGER ESTATES CT		
Dist. & Dir. from intersection	2112 ft South		
Coordinate Location	37.7911682, -122.0122833		

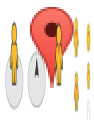
State Highway	N	**Route**	-	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Rear End
Alcohol	No	**Weather**	Clear
Primary Collision Factor	Unsafe Speed	**Involved with**	Other Motor Vehicle
Pedestrian Involved	No	**Bicycle Involved**	No

Party Factors

Number of Parties Involved			2
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	North	Proceeding Straight
Driver	No	North	Making Left Turn

Map View



Street View

18722 Bollinger Canyon Rd
San Ramon, California
View on Google Maps


Google
Map data ©2017 Google
Report a map error


Google
© 2017 Google
Report a problem

Collision Details: Case ID **5804757**

Collision Factors

County	CONTRA COSTA	**City**	UNINCORPORATED
Date (M-D-Y)	09-25-2012	**Time**	15:08
Intersection	BOLLINGER CANYON RD & DEERWOOD DR		
Dist. & Dir. from intersection	6336 ft North		
Coordinate Location	37.7876680285, -122.009345709		

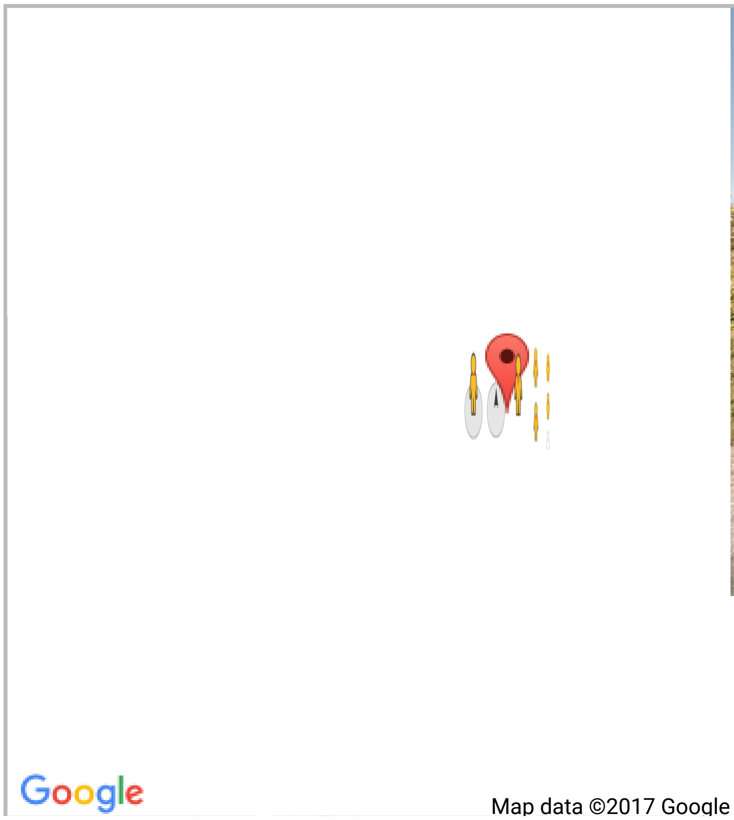
State Highway	N	**Route**	-	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Hit Object
Alcohol	No	**Weather**	Clear
Primary Collision Factor	Improper Turning	**Involved with**	Fixed Object
Pedestrian Involved	No	**Bicycle Involved**	No

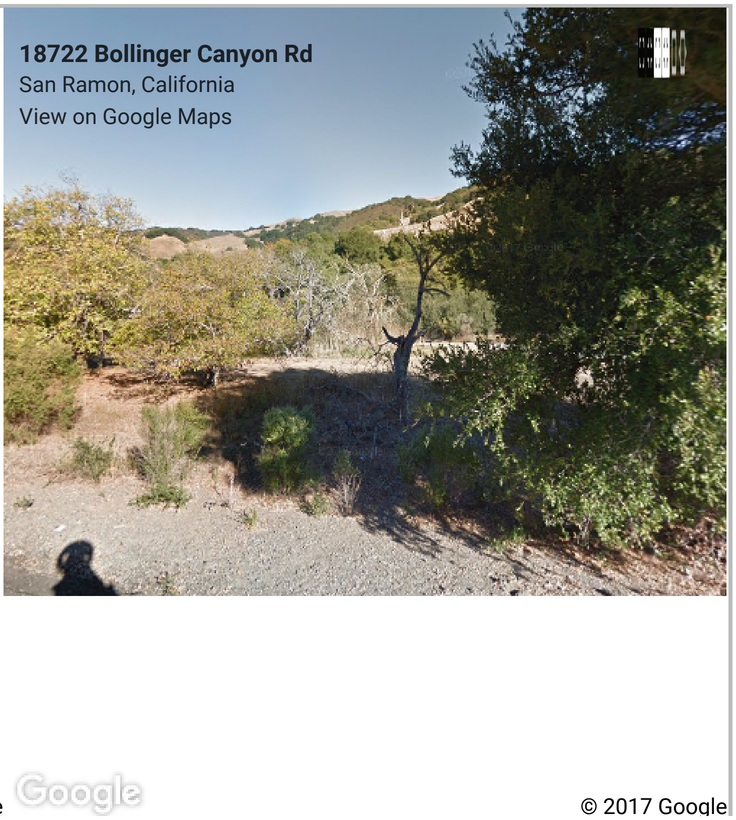
Party Factors

Number of Parties Involved	1		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	South	Ran Off Road

Map View



Street View



Collision Details: Case ID **5663280**

Collision Factors

County	CONTRA COSTA	**City**	UNINCORPORATED
Date (M-D-Y)	05-25-2012	**Time**	17:45
Intersection	BOLLINGER CANYON RD & DEERWOOD DR		
Dist. & Dir. from intersection	5808 ft North		
Coordinate Location	37.7874044028, -122.007550577		

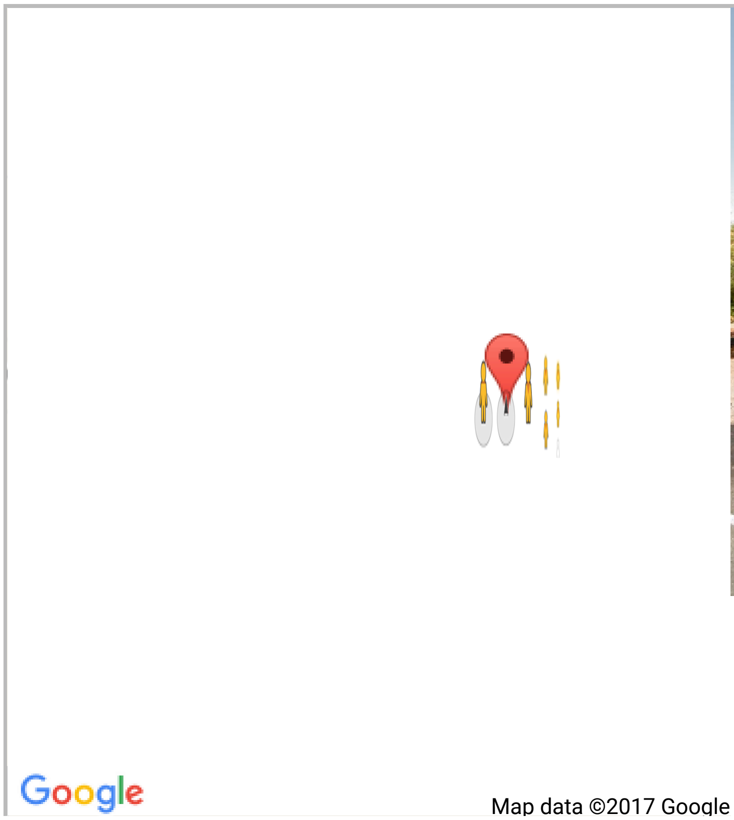
State Highway	N	**Route**	-	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Hit Object
Alcohol	No	**Weather**	Clear
Primary Collision Factor	Improper Turning	**Involved with**	Fixed Object
Pedestrian Involved	No	**Bicycle Involved**	No

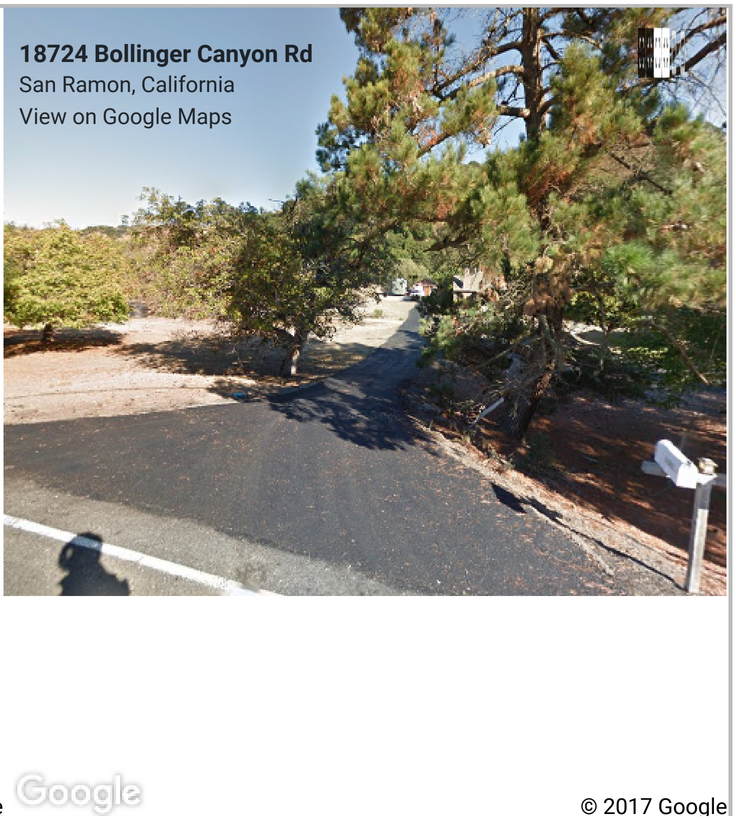
Party Factors

Number of Parties Involved	1		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	South	Other Unsafe Turning

Map View



Street View



Collision Details: Case ID **6023228**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	03-24-2013	**Time**	20:14
Intersection	CROW CANYON RD & BOLLINGER CANYON RD		
Dist. & Dir. from intersection	0 ft East		
Coordinate Location	37.7726249, -121.995973		

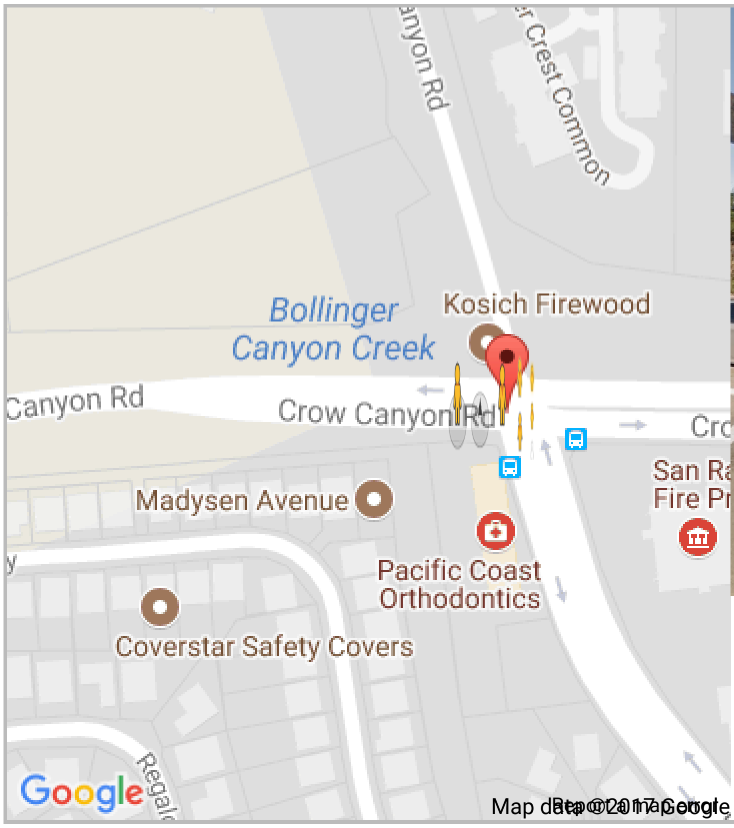
State Highway	N	**Route**	-	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Broadside
Alcohol	Yes	**Weather**	Clear
Primary Collision Factor	Driving or Bicycling Under the Influence of Alcohol or Drug	**Involved with**	Other Motor Vehicle
Pedestrian Involved	No	**Bicycle Involved**	No

Party Factors

Number of Parties Involved	2		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	West	Proceeding Straight
Driver	No	North	Proceeding Straight

Map View



Street View

Collision Details: Case ID **5745788**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	07-21-2012	**Time**	01:44
Intersection	BOLLINGER CANYON RD & CROW CANYON RD		
Dist. & Dir. from intersection	0 ft North		
Coordinate Location	37.7726249492, -121.995973034		

State Highway	N	**Route**	-	**Postmile**	-

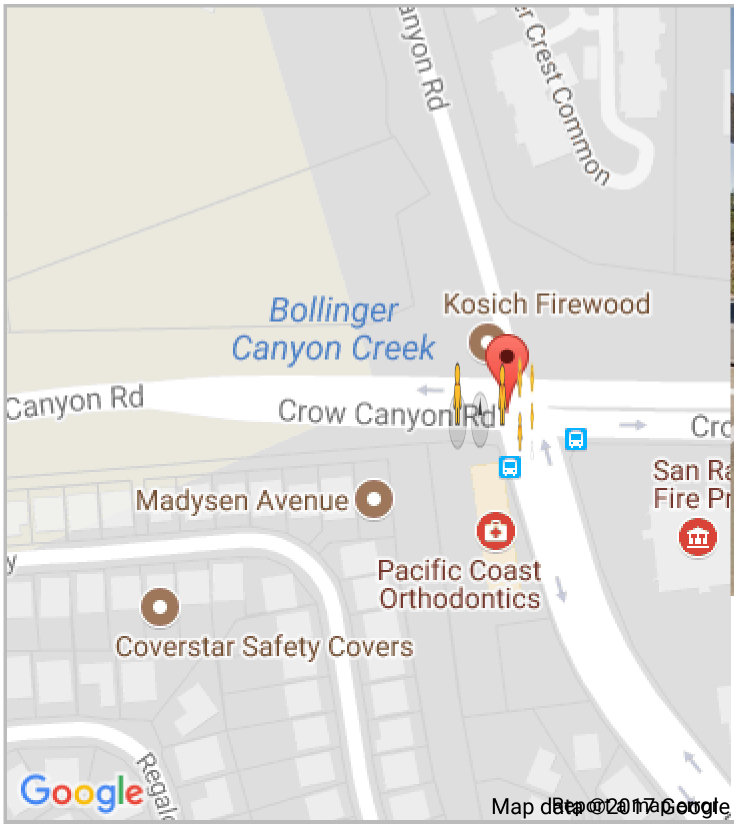
Killed & Injured	0 Killed 2 Injured	**Crash Type**	Hit Object
Alcohol	Yes	**Weather**	Clear
Primary Collision Factor	Driving or Bicycling Under the Influence of Alcohol or Drug	**Involved with**	Fixed Object
Pedestrian Involved	No	**Bicycle Involved**	No

Party Factors

Number of Parties Involved	1

Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	North	Ran Off Road

Map View



Street View

Collision Details: Case ID **8117009**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	06-02-2016	**Time**	13:59
Intersection	CROW CANYON RD & BOLLINGER CANYON RD		
Dist. & Dir. from intersection	0 ft East		
Coordinate Location	37.772625, -121.9959717		

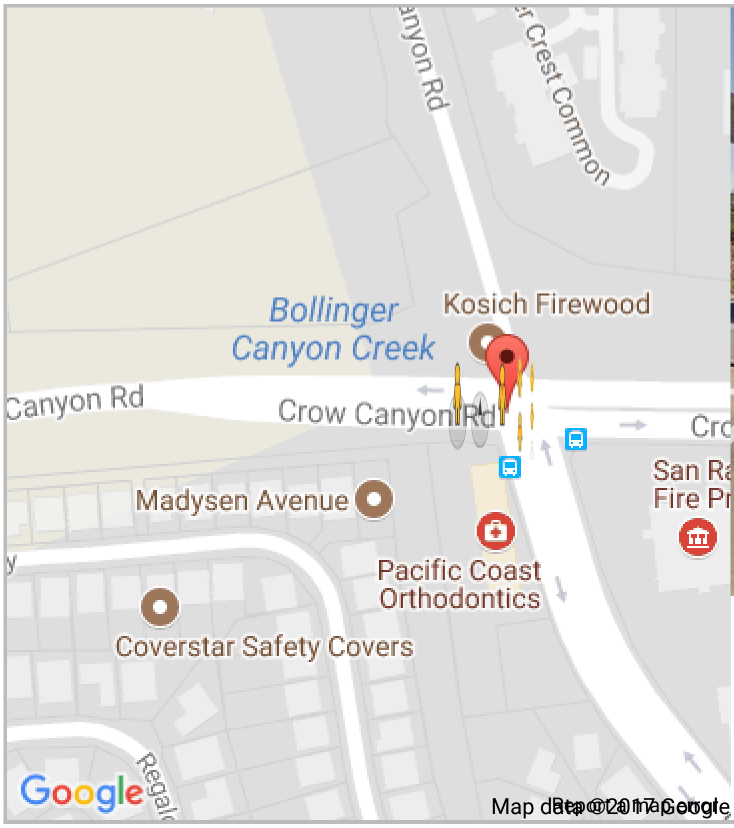
State Highway	N	**Route**	680	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Overturned
Alcohol	No	**Weather**	Clear
Primary Collision Factor	Unknown	**Involved with**	Fixed Object
Pedestrian Involved	No	**Bicycle Involved**	Yes

Party Factors

Number of Parties Involved	1		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Bicyclist	No	North	Making Right Turn

Map View



Street View

Collision Details: Case ID **6724979**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	11-22-2014	**Time**	12:38
Intersection	CROW CANYON RD & BOLLINGER CANYON RD		
Dist. & Dir. from intersection	26 ft West		
Coordinate Location	37.7726288, -121.9960632		

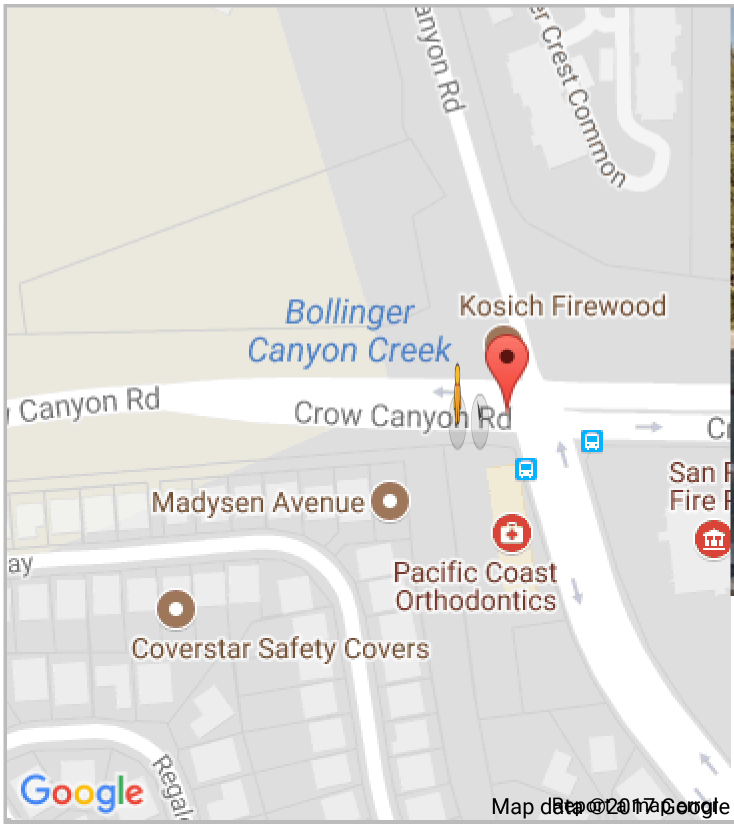
State Highway	N	**Route**	680	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Rear End
Alcohol	Yes	**Weather**	Clear
Primary Collision Factor	Driving or Bicycling Under the Influence of Alcohol or Drug	**Involved with**	Other Motor Vehicle
Pedestrian Involved	No	**Bicycle Involved**	No

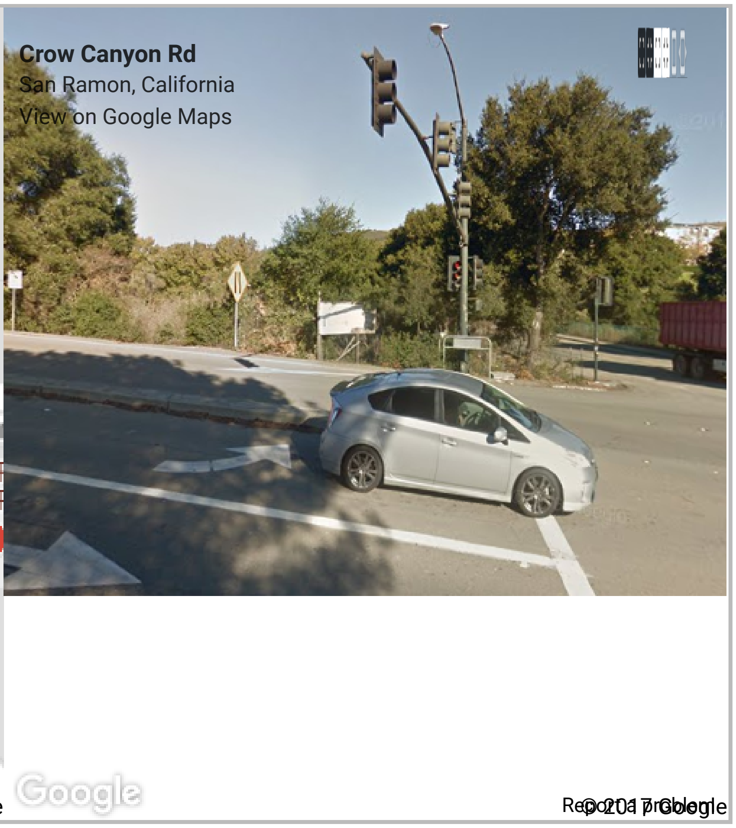
Party Factors

Number of Parties Involved	2		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	East	Slowing/Stopping
Driver	No	East	Stopped

Map View



Street View



Collision Details: Case ID **5880451**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	11-16-2012	**Time**	08:29
Intersection	CROW CANYON RD & BOLLINGER CANYON RD		
Dist. & Dir. from intersection	37 ft West		
Coordinate Location	37.7726283875, -121.996101123		

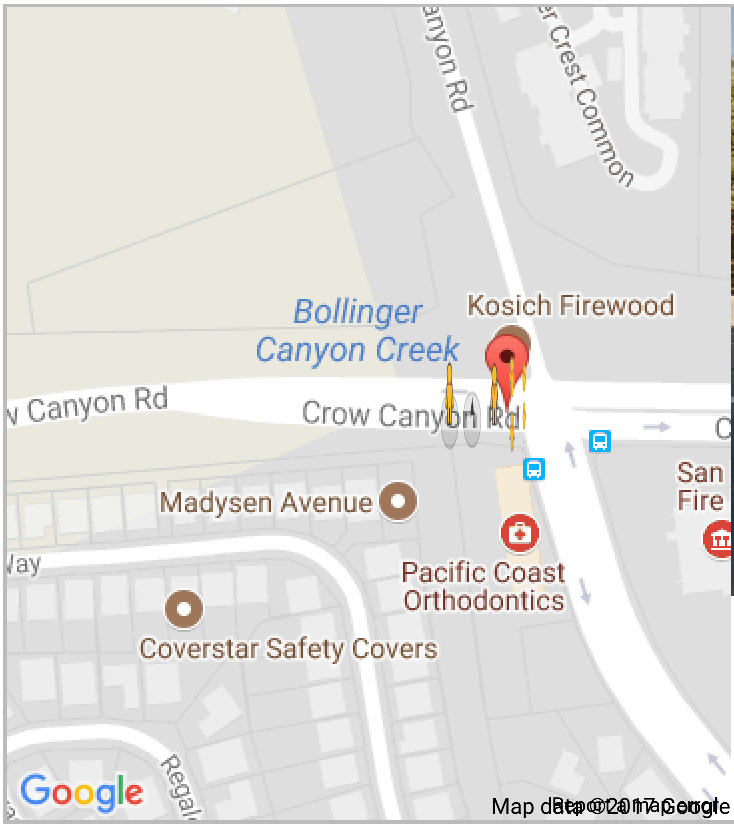
State Highway	N	**Route**	-	**Postmile**	-

Killed & Injured	0 Killed 2 Injured	**Crash Type**	Rear End
Alcohol	No	**Weather**	Raining
Primary Collision Factor	Unsafe Speed	**Involved with**	Other Motor Vehicle
Pedestrian Involved	No	**Bicycle Involved**	No

Party Factors

Number of Parties Involved	3		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	East	Slowing/Stopping
Driver	No	East	Stopped
Driver	No	East	Stopped

Map View



Street View

Collision Details: Case ID **6842231**

Collision Factors

County	CONTRA COSTA	**City**	SAN RAMON
Date (M-D-Y)	03-10-2015	**Time**	15:03
Intersection	CROW CANYON RD & BOLLINGER CANYON RD		
Dist. & Dir. from intersection	90 ft West		
Coordinate Location	37.7726326, -121.9962845		

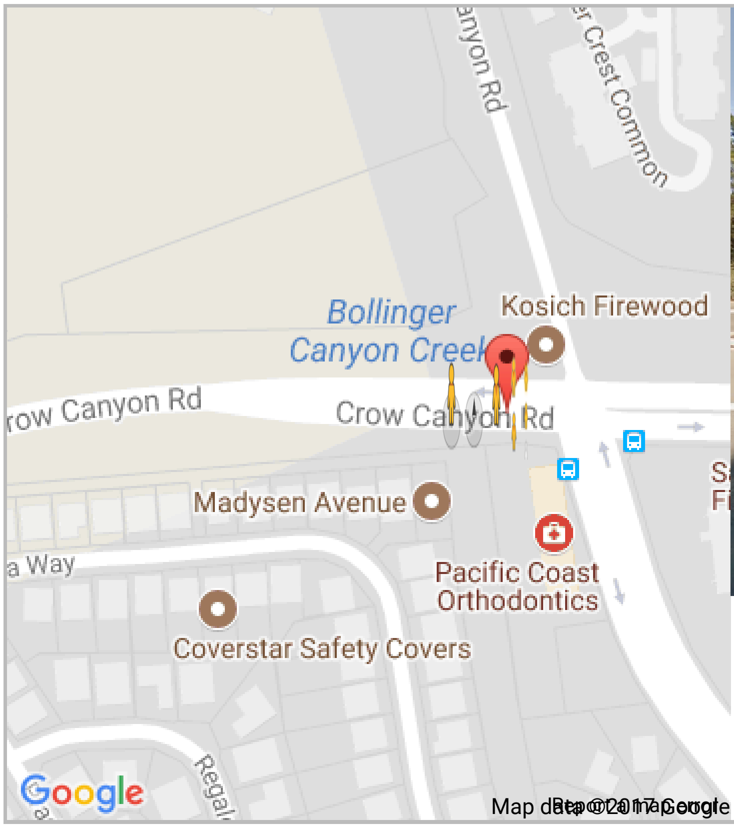
State Highway	N	**Route**	680	**Postmile**	-

Killed & Injured	0 Killed 1 Injured	**Crash Type**	Rear End
Alcohol	No	**Weather**	Cloudy
Primary Collision Factor	Unsafe Speed	**Involved with**	Other Motor Vehicle
Pedestrian Involved	No	**Bicycle Involved**	No

Party Factors

Number of Parties Involved	2		
Party Type	**At Fault**	**Party Direction**	**Movement Preceding Collision**
Driver	Yes	East	Proceeding Straight
Driver	No	East	Stopped

Map View



Street View

APPENDIX D

BOLLINGER CANYON ROAD SPEED SURVEY

HI-STAR NC-97 by Nu-Metrics
Dir Volume x Speed Program

CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
SPEED / VOLUME COUNTS

Interval 15 Minutes
Report By D. KLAPPERICH

Station **4,500' N of DEERWOOD DR.**
No. of Lanes **2**

Road No. **2842 B**
Road Name **BOLLINGER CANYON RD**
Date **25 Mar '14**
Day of Week **Tuesday**

N / B SPEED IN MILES PER HOUR

HOUR	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-99	TOTAL
00:00 - 01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:00 - 02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:00 - 04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
05:00 - 06:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
06:00 - 07:00	0	0	0	0	1	0	1	2	5	8	7	0	0	0	0	**24**
07:00 - 08:00	0	0	0	0	0	2	1	5	5	6	1	2	1	0	0	**23**
08:00 - 09:00	0	0	0	0	0	0	3	4	13	4	2	0	1	0	0	**27**
09:00 - 10:00	0	0	0	0	1	1	4	8	13	6	0	1	0	0	0	**34**
10:00 - 11:00	0	0	0	0	0	1	8	12	6	3	2	1	0	0	0	**33**
11:00 - 12:00	0	0	2	0	0	3	3	6	8	5	2	2	0	0	0	**31**
12:00 - 13:00	0	0	0	0	0	2	6	5	7	4	2	1	0	0	0	**27**
13:00 - 14:00	0	0	1	0	0	0	2	9	11	8	1	1	0	0	0	**33**
14:00 - 15:00	0	0	0	0	0	2	4	5	5	2	0	0	0	0	0	**18**
15:00 - 16:00	0	0	0	1	1	0	7	7	10	3	1	1	1	0	0	**32**
16:00 - 17:00	0	0	0	0	0	1	3	3	9	7	0	0	0	0	0	**23**
17:00 - 18:00	0	0	0	0	0	3	1	3	7	2	2	2	1	0	0	**21**
18:00 - 19:00	0	0	0	1	0	2	1	8	5	5	2	1	0	0	0	**25**
19:00 - 20:00	0	0	0	0	0	0	5	5	12	11	2	0	1	0	0	**36**
20:00 - 21:00	0	0	0	0	0	0	1	5	7	4	1	0	0	0	0	**18**
21:00 - 22:00	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	**2**
22:00 - 23:00	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	**5**
23:00 - 24:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	**2**
	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	== ===
TOTALS	**0**	**0**	**3**	**2**	**3**	**18**	**52**	**91**	**126**	**78**	**25**	**12**	**5**	**0**	**0**	**415**
%	**0.0%**	**0.0%**	**0.7%**	**0.5%**	**0.7%**	**4.3%**	**12.5%**	**21.9%**	**30.4%**	**18.8%**	**6.0%**	**2.9%**	**1.2%**	**0.0%**	**0.0%**	**100%**

N/B PEAK
A.M. = 39
08:45 - 09:45
P.M. = 44
18:30 - 19:30

S/B PEAK
A.M. = 41
11:45 - 12:45
P.M. = 51
12:30 - 13:30

>55	%>55	>60	%>60	>65	%>65	15%ile	50%ile	85%ile	Avg Spd	
17	**4.1%**	**5**	**1.2%**	**0**	**0.0%**	**31-35**	**41-45**	**46-50**	**41.7**	**M.P.H.**

POSTED
SPEED
LIMIT
45
MPH

HI-STAR NC-97 by Nu-Metrics
Dir Volume x Speed Program

CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
SPEED / VOLUME COUNTS

Interval 15 Minutes
Report By D. KLAPPERICH

Station **4,500' N of DEERWOOD DR.**
No. of Lanes **2**

Road No. **2842 B**
Road Name **BOLLINGER CANYON RD**
Date **25 Mar '14**
Day of Week **Tuesday**

S / B SPEED IN MILES PER HOUR

HOUR	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-99	TOTAL
00:00 - 01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:00 - 02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:00 - 04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 05:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
05:00 - 06:00	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	**3**
06:00 - 07:00	0	0	0	0	0	1	0	3	3	0	0	1	0	0	0	**8**
07:00 - 08:00	0	0	0	0	1	1	8	9	8	7	3	0	1	0	0	**38**
08:00 - 09:00	0	0	0	0	1	0	2	4	3	3	1	1	0	0	0	**15**
09:00 - 10:00	0	0	0	0	0	4	4	6	5	3	0	0	1	0	0	**23**
10:00 - 11:00	0	0	0	0	0	1	8	7	4	1	1	1	0	0	0	**23**
11:00 - 12:00	0	0	0	0	2	3	10	12	6	3	0	2	1	0	0	**39**
12:00 - 13:00	0	1	1	0	2	6	9	12	7	3	3	0	1	0	0	**45**
13:00 - 14:00	0	0	0	0	0	4	5	6	6	1	2	1	0	0	0	**25**
14:00 - 15:00	0	0	0	0	0	2	7	11	6	2	1	1	0	0	0	**30**
15:00 - 16:00	0	0	0	0	0	4	6	6	3	4	2	0	0	0	0	**25**
16:00 - 17:00	0	0	0	0	0	2	6	7	5	3	3	1	0	1	0	**28**
17:00 - 18:00	0	0	0	0	1	4	4	10	2	4	0	2	0	0	0	**27**
18:00 - 19:00	0	0	0	0	0	3	4	7	2	2	0	1	0	0	0	**19**
19:00 - 20:00	0	0	0	0	0	0	3	11	5	3	2	0	0	0	0	**24**
20:00 - 21:00	0	0	0	0	1	2	6	8	6	4	1	0	0	0	0	**28**
21:00 - 22:00	0	0	0	0	0	0	2	3	3	0	1	0	0	0	0	**9**
22:00 - 23:00	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	**3**
23:00 - 24:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	== ===
TOTALS	**0**	**1**	**1**	**0**	**8**	**38**	**85**	**124**	**75**	**45**	**20**	**11**	**4**	**1**	**0**	**413**
%	**0.0%**	**0.2%**	**0.2%**	**0.0%**	**1.9%**	**9.2%**	**20.6%**	**30.0%**	**18.2%**	**10.9%**	**4.8%**	**2.7%**	**1.0%**	**0.2%**	**0.0%**	**100%**

N/B PEAK
A.M. = 39
08:45 - 09:45
P.M. = 44
18:30 - 19:30

S/B PEAK
A.M. = 41
11:45 - 12:45
P.M. = 51
12:30 - 13:30

>55	%>55	>60	%>60	>65	%>65	15%ile	50%ile	85%ile	Avg Spd	
16	**3.9%**	**5**	**1.2%**	**1**	**0.2%**	**31-35**	**36-40**	**46-50**	**39.2**	**M.P.H.**

POSTED
SPEED
LIMIT
45
MPH

HI-STAR NC-97 by Nu-Metrics
Dir Volume x Speed Program

CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
SPEED / VOLUME COUNTS

Interval 15 Minutes
Report By D. KLAPPERICH

Station **4,500' N of DEERWOOD DR.**
No. of Lanes **2**

Road No. **2842 B**
Road Name **BOLLINGER CANYON RD**
Date **26 Mar '14**
Day of Week **Wednesday**

N / B SPEED IN MILES PER HOUR

HOUR	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-99	TOTAL
00:00 - 01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:00 - 02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 03:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
03:00 - 04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
05:00 - 06:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
06:00 - 07:00	0	0	0	0	0	2	1	4	13	7	1	0	0	0	0	**28**
07:00 - 08:00	0	0	0	0	0	1	2	7	6	1	2	1	0	0	0	**20**
08:00 - 09:00	0	0	0	0	0	1	4	6	3	3	0	0	1	0	0	**18**
09:00 - 10:00	0	0	0	0	0	1	5	7	5	2	0	0	0	0	0	**20**
10:00 - 11:00	0	0	0	0	2	2	1	7	10	5	0	0	0	0	0	**27**
11:00 - 12:00	0	0	0	0	0	1	6	5	11	2	4	0	0	0	0	**29**
12:00 - 13:00	0	0	0	0	0	0	5	8	2	6	1	1	0	0	0	**23**
13:00 - 14:00	0	1	1	1	1	1	3	5	6	1	1	1	0	1	0	**23**
14:00 - 15:00	0	0	0	0	0	1	1	8	7	7	1	2	0	0	0	**27**
15:00 - 16:00	0	0	0	0	0	1	4	3	10	13	4	0	1	1	0	**37**
16:00 - 17:00	0	0	0	0	0	1	2	5	12	9	3	0	0	0	0	**32**
17:00 - 18:00	0	0	0	0	0	2	2	5	5	2	1	1	0	0	0	**18**
18:00 - 19:00	0	0	0	0	0	1	3	4	5	3	1	3	0	0	0	**20**
19:00 - 20:00	0	0	0	0	0	1	3	4	9	4	1	0	0	0	0	**22**
20:00 - 21:00	0	0	0	1	1	2	2	3	4	3	0	0	1	0	0	**17**
21:00 - 22:00	0	0	0	0	0	0	1	3	1	0	0	0	0	0	0	**5**
22:00 - 23:00	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	**3**
23:00 - 24:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**
	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	== ===
TOTALS	**0**	**1**	**1**	**2**	**4**	**19**	**47**	**87**	**109**	**69**	**20**	**9**	**3**	**2**	**0**	**373**
%	**0.0%**	**0.3%**	**0.3%**	**0.5%**	**1.1%**	**5.1%**	**12.6%**	**23.3%**	**29.2%**	**18.5%**	**5.4%**	**2.4%**	**0.8%**	**0.5%**	**0.0%**	**100%**

>55	%>55	>60	%>60	>65	%>65	15%ile	50%ile	85%ile	Avg Spd	
14	**3.8%**	**5**	**1.3%**	**2**	**0.5%**	**31-35**	**41-45**	**46-50**	**41.4**	**M.P.H.**

N/B PEAK
A.M. = 35
06:30 - 07:30
P.M. = 38
16:15 - 17:15

S/B PEAK
A.M. = 34
07:00 - 08:00
P.M. = 49
16:45 - 17:45

POSTED
SPEED
LIMIT
45
MPH

HI-STAR NC-97 by Nu-Metrics
Dir Volume x Speed Program

CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
SPEED / VOLUME COUNTS

Interval 15 Minutes
Report By D. KLAPPERICH

Station **4,500' N of DEERWOOD DR.**
No. of Lanes **2**

Road No. **2842 B**
Road Name **BOLLINGER CANYON RD**
Date **26 Mar '14**
Day of Week **Wednesday**

S / B SPEED IN MILES PER HOUR

HOUR	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-99	TOTAL
00:00 - 01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:00 - 02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:00 - 04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 05:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
05:00 - 06:00	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	**3**
06:00 - 07:00	0	0	0	0	0	0	1	5	1	1	0	0	0	0	0	**8**
07:00 - 08:00	0	0	0	0	1	2	11	6	6	3	2	3	0	0	0	**34**
08:00 - 09:00	0	0	0	0	1	2	2	9	4	0	1	0	0	0	0	**19**
09:00 - 10:00	0	0	0	0	0	1	3	5	2	1	2	0	0	0	0	**14**
10:00 - 11:00	0	0	0	1	0	5	6	13	5	1	1	1	0	0	0	**33**
11:00 - 12:00	0	0	1	0	0	2	6	9	2	1	1	0	0	0	0	**22**
12:00 - 13:00	0	0	0	0	0	4	5	5	5	4	0	0	0	0	0	**23**
13:00 - 14:00	0	0	0	0	0	2	8	9	4	0	1	1	0	0	0	**25**
14:00 - 15:00	0	0	0	0	1	1	4	4	9	3	2	2	0	0	0	**26**
15:00 - 16:00	0	0	0	0	2	4	3	7	7	5	0	1	1	0	1	**31**
16:00 - 17:00	0	0	0	0	0	1	3	11	12	6	3	1	0	0	0	**37**
17:00 - 18:00	0	0	0	1	1	2	11	10	6	3	5	1	0	0	0	**40**
18:00 - 19:00	0	1	0	0	3	0	5	2	5	3	1	1	0	0	0	**21**
19:00 - 20:00	0	0	0	0	0	3	5	3	5	1	0	0	0	0	0	**17**
20:00 - 21:00	0	0	0	0	0	0	1	3	2	0	0	0	0	0	0	**6**
21:00 - 22:00	0	0	0	0	0	3	3	2	1	0	0	0	0	0	0	**9**
22:00 - 23:00	0	0	0	0	0	0	3	0	5	0	0	1	0	0	0	**9**
23:00 - 24:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	= ===	== ===
TOTALS	**0**	**1**	**1**	**2**	**9**	**32**	**81**	**103**	**83**	**34**	**19**	**12**	**1**	**0**	**1**	**379**
%	**0.0%**	**0.3%**	**0.3%**	**0.5%**	**2.4%**	**8.4%**	**21.4%**	**27.2%**	**21.9%**	**9.0%**	**5.0%**	**3.2%**	**0.3%**	**0.0%**	**0.3%**	**100%**

N/B PEAK
A.M. = 35
06:30 - 07:30
P.M. = 38
16:15 - 17:15

S/B PEAK
A.M. = 34
07:00 - 08:00
P.M. = 49
16:45 - 17:45

>55	%>55	>60	%>60	>65	%>65	15%ile	50%ile	85%ile	Avg Spd	
14	**3.7%**	**2**	**0.5%**	**1**	**0.3%**	**31-35**	**36-40**	**46-50**	**39.0**	**M.P.H.**

POSTED
SPEED
LIMIT
45
MPH