

**Quail Cove Subdivision
Project**

**Initial Study/Mitigated
Negative Declaration**

PDP-15-02



Lead Agency:

City of Antioch
Community Development
Department
200 H Street
Antioch, California 94531-5007

Technical Assistance:

Stantec Consulting Services Inc.
1340 Treat Boulevard, Suite 300
Walnut Creek, California 94597

August 17, 2018

List of Figures.....iii

Initial Study/Mitigated Negative Declaration..... ix

1.1 Introduction 1-11

 1.2 Project Title 1-11

 1.3 Lead Agency 1-11

 1.4 Lead Agency Contact..... 1-11

 1.5 Project Sponsor(s) Name and Address 1-11

 1.6 Purpose and Need 1-11

 1.7 Project Location 1-12

 1.8 Land Use Designations..... 1-12

 1.9 Summary of Project 1-12

 1.10 Surrounding Land Uses and Setting 1-13

 1.11 CEQA and Public and Agency Review 1-13

 1.12 Required Permits and Approvals 1-14

 1.13 Scope of this Initial Study 1-14

 1.14 Document organization 1-15

2.1 Project Description 2-1

 2.2 Proposed Project 2-1

 2.3 Project Location 2-1

 2.4 Description of Project 2-10

3.1 Environmental Checklist and Environmental Evaluation 3-1

 3.2 Aesthetics 3-3

 3.3 Agriculture And Forestry Resources 3-23

 3.4 Air Quality 3-29

 3.5 Biological Resources..... 3-49

 3.6 Cultural Resources 3-65

 3.7 Geology and Soils 3-81

 3.8 Greenhouse Gases. 3-89

 3.9 Hazards and Hazardous Materials 3-95

 3.10 Hydrology and Water Quality..... 3-103

 3.11 Land Use and Planning 3-115

 3.12 Mineral Resources 3-119

 3.12 Noise 3-123

 3.13 Population and Housing 3-139

 3.14 Public Services 3-143

 3.15 Recreation..... 3-149

 3.16 Transportation and Traffic 3-153

 3.17 Utilities and Service Systems 3-163

 3.18 Mandatory Findings of Significance..... 3-171

4.0 References 4-1

5.0 List of Preparers..... 5-1

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LIST OF TABLES

Table 2.2-1: R-6 Zoning Setback
Table 3.3-1: California and National Ambient Air Quality Standards
Table 3.3-2: Contra Costa County Area Designations for State and National Ambient Air Quality
Table 3.3-3: 2010 BAAQMD Proposed Project-Level Air Quality CEQA Thresholds of Significance
Table 3.3-4: Project Construction Emissions Estimates
Table 3.3-5: Project Operational Emissions Estimates
Table 3.5-1: Cultural Resources Studies Conducted in the Last Five Years in 0.50 Mile of the Project Site
Table 3.5-2: Cultural Resources Studies Conducted Prior to Five Years ago in 0.50 Mile of the Project Site
Table 3.5-3: Known Cultural Resources Located within 0.50 Mile of the Project Site
Table 3.7-1: Construction Greenhouse Gas Emissions
Table 3.7-2: Operational Greenhouse Gas Emissions
Table 3.12-1: Noise and Land Use Compatibility Matrix
Table 3.12-2: Guideline Vibration Annoyance Potential Criteria
Table 3.12-3: Guideline Vibration Damage Potential Criteria
Table 3.12-4: Community Noise survey Results
Table 3.12-5: Summary of Federal Highway Administration Roadway Construction Noise Model
Table 3.12-6: Vibration Source Levels for Construction Equipment
Table 3.16-1: Existing Volume and Levels of Service
Table 3.16-2: Trip Generation Summary

LIST OF FIGURES

Figure 2.0-1: Regional Project Location
Figure 2.0-2: Project Site Vicinity
Figure 2.0-3: Vesting Tentative Map
Figure 3.1-1: KOP Locations
Figure 3.1-2: KOP Location 1
Figure 3.1-3: KOP Location 2
Figure 3.1-4: KOP Location 3
Figure 3.1-5: KOP Location 4
Figure 3.4-1: Known Occurrences of Special Status Species

Figure 3.5-1: Cultural Resources Records Search Area

Figure 3.12-1: Community Noise Survey Location Points

LIST OF APPENDICIES

Appendix A: City's Preliminary Development Staff Report

Appendix B: Air Quality Modeling Outputs

Appendix C: Biological Resources Memo

Appendix D: Cultural Resources Memo

Appendix E: Stormwater Control Plan

Appendix F: Geotechnical Investigation Report

Appendix G: Phase I

Appendix H: Noise Modeling Outputs

Appendix I: Traffic Impact Study

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
AC	asphalt concrete
ACM	asbestos-containing material
ADL	aerially deposited lead
ADT	Average Daily Traffic
AF	Acre feet
AFY	Acre Feet per Year
ALUC	Airport Land Use Commission
APD	Antioch Police Department
APN	Assessor's Parcel Number
AQAP	Air Quality Attainment Plans
AUSD	Antioch Unified School District
AWWTP	Antioch Wastewater Treatment Plant
BAAQMD	Bay Area Quality Management District
BART	Bay Area Rapid Transit
BAU	Business-As-Usual
BMP	best management practice
BP	Before Present
BSA	Biological Study Area
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CC&Rs	Covenants, Codes, and Restrictions
CCTS	Central California Taxonomic System
CCCFFPD	Contra Costa County Fire Prevention Department
CCCTA	Contra Costa County Transit Authority
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFD	Community Facilities Department
CGS	California Geological Survey

Abbreviations

CH ₄	Methane
CIMIS	California Irrigation Management Information System
City	City of Antioch
CMP	Congestion Management Plan
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
CRPR	California Rare Plant Ranking
dB	Decibel
dBA	A-weighted sound level
DBH	diameter breast height
DDSD	Delta Diablo Sanitation District
DOC	Department of Conservation
DPM	Diesel Particulate Matter
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
du/ac	Dwelling unit per acre
du	Dwelling unit
EBRPD	East Bay Regional Park District
ECCC	East Contra Costa County
ECCRFFA	East Contra Costa Regional Fee and Financing Authority
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
G	Gravity
GCP	General Construction Permit
General Plan	City of Antioch General Plan
General Plan EIR	City of Antioch General Plan Environmental Impact Report
GHG	greenhouse gas
gpd	gallons per day

GWP	global warming potential
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
I	Interstate
IS/MND	Initial Study/Mitigated Negative Declaration
IMP	Integrated Management Practices
in/sec	Inches per second
ITE	Institute of Transportation Engineers
km/hr	kilometer per hour
KOP	key observation point
LBP	lead-based paint
lb/yr	pounds per year
LCFS	Low Carbon Fuel Standard
Ldn	Day/night sound level
Leq	Equivalent Continuous Sound Level
LLD	Streetlight and Landscape District
LOS	level of service
MBTA	Migratory Bird Treaty Act
MEI	maximally exposed individual
mgd	Million gallons per day
MLD	most likely descendant
MM	Modified Mercalli
MRZ	Mineral Resource Zone
MT	Metric Ton
MTCO _{2e}	Metric Tons of Carbon Dioxide Equivalent
MUTCD	Manual of Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Association
NOI	Notice of Intent
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NVC	National Vegetation Classification
NWIC	Northwest Information Center
N ₂ O	Nitrous Oxide
P-D	Planned Development
PDP	Preliminary Development Plan

Abbreviations

PFC	perfluorinated chemical
PGA	peak ground acceleration
PG&E	Pacific Gas and Electric
PI	Plasticity Index
PM	Particulate Matter
PPV	Peak Particle Velocities
PRC	Public Resources Code
PSHA	Probabilistic Seismic Hazard Assessment
RCEM	Roadway Construction Emissions Model
RCEM	Road Construction Emissions Model
RCNM	Roadway Construction Noise Model
RPS	Renewable Portfolio Standard
ROG	reactive organic gas
RV	Recreational vehicles
RWQCB	Regional Water Quality Control Board
Scoping Plan	Climate Change Scoping Plan
sf	square feet
SFBAAB	San Francisco Bay Area Basin
SIP	State Implementation Plan
SMARA	California Surface Mining and Reclamation Act of 1975
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TMDL	Total Maximum Daily Load
Tpy	Trips per year
UBC	Universal Building Code
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
WPCF	Water Pollution Control Facility

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

PROJECT TITLE: Quail Cove Subdivision Project

PROJECT DESCRIPTION: The proposed project would involve developing the 5.59-acre vacant parcel as a 30 lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The General Plan land use designation is Medium Low Density Residential which allows for a maximum gross density of six dwelling units per acre (du/ac). The zoning for the proposed project is Planned Development (P-D), which is intended to accommodate a wide range of residential, commercial and industrial land uses which are mutually supportive and compatible with existing and proposed development on surrounding properties. The proposed project would consist of 30 single-family residential lots ranging in size from 4,006 square feet (sf) to 12,937 sf. with an average lot size of 5,332 sf and a density of 5.37 du per gross acre.

PROJECT LOCATION: The Quail Cove Subdivision Project-PDP-12-01 (proposed project) is located in the City of Antioch, Contra Costa County, California (Figure 2.0-1). The 5.59-acre project site is located on the west side of Heidorn Ranch Road at the eastern terminus of Prewett Ranch Drive, on the undeveloped parcel identified as Contra Costa County Assessor's Parcel Number (APN) 056-130-012 (Figure 2.0-2). Additionally the proposed Vesting Tentative Map is shown on Figure 2.0-3.

NAME OF LEAD AGENCY APPROVING PROJECT:

City of Antioch
Community Development Department
200 H Street
Antioch, California 94531- 5007

AGENCY CONTACT INFORMATION:

Forrest Ebbs, AICP, Community Development Director
200 H Street
Antioch, California 94531-5007
Email: febbs@ci.antioch.ca.us
Phone Number: (925) 779-7035

REQUIRED FINDINGS: The City of Antioch has determined that a) all potentially significant or significant impacts required to be identified in the Initial Study/Mitigated Negative Declaration (IS/MND) have been identified and analyzed; and b) with respect to each significant impact on the environment either of the following apply: 1) changes or alterations have been required in or incorporated into the proposed project that avoid or mitigate the significant impacts to a level of insignificance; or 2) those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.

The attached Environmental Checklist has been prepared by the City of Antioch in support of this IS/MND. The IS/MND and supporting documents are available at the City of Antioch Community Development Department, Planning Division, located at 200 H Street Antioch, California 94531-5007; online at the City of Antioch at <http://www.ci.antioch.ca.us/>.

Forrest Ebbs, AICP
Community Development Director
City of Antioch, California

By: _____

Date: _____

1.1 INTRODUCTION

1.2 PROJECT TITLE

Quail Cove Subdivision Project

1.3 LEAD AGENCY

City of Antioch
Community Development Department
200 H Street
Antioch, California 94531-5007

1.4 LEAD AGENCY CONTACT

Forrest Ebbs, Community Development Director
Community Development Department
200 H Street
Antioch, California 94531
Email: febbs@ci.antioch.ca.us
Phone Number: (925) 779-7035

1.5 PROJECT SPONSOR(S) NAME AND ADDRESS

Applicant

West Coast Home Builders.
4061 Port Chicago Highway, Suite H
Concord, California 94520

1.6 PURPOSE AND NEED

The purpose of this Initial Study/Mitigated Negative Declaration (IS/MND) is to identify any potential environmental impacts from implementation of the Quail Cove Subdivision Project-PDP-12-01 (proposed project) in Antioch, California. This Initial Study identified potentially significant effects on the environment and revisions to the project site plans, presented as mitigation measures, were identified to mitigate the effects to a point where clearly no significant effect on the environment would occur. Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15367, the City of Antioch (City) is the Lead Agency in the preparation of this IS/MND and any additional environmental documentation required for the proposed project. The City has discretionary authority over the proposed project. The intended use of this document is to provide the basis for input from public agencies, organizations, and interested members of the public.

The City of Antioch has reviewed the proposed Quail Cove Subdivision Project and determined that, with the mitigation measures identified in this Initial Study, the proposed project would not have a significant effect on the environment. Thus, an EIR is not required pursuant to the CEQA of 1970 (Sections 21000, et seq., Public Resources Code of the State of California), and the MND is the proposed CEQA document for the Quail Cove Subdivision Project.

1.7 PROJECT LOCATION

The proposed project is located in the City of Antioch, Contra Costa County, California (Figure 2.0-1). The 5.59-acre project site is located on the west side of Heidorn Ranch Road at the eastern terminus of Prewett Ranch Drive, on the undeveloped parcel identified as Contra Costa County Assessor's Parcel Number (APN) 056-130-012 (Figure 2.0-2). The proposed Vesting Tentative Map is shown on Figure 2.0-3. The proposed project would be accessed via the Prewett Ranch Drive extension, which would extend from the current eastern terminus of Prewett Ranch Drive, east to Heidorn Ranch Road. As part of the approved Heidorn Village Subdivision Project, directly north of the project site, the Prewett Ranch Drive extension was previously surveyed for biological and cultural resources in 2015. Therefore, in addition to potential impacts found during these previously performed biological and cultural surveys, the proposed project considered potential air quality, greenhouse gases, noise, and transportation and traffic impacts associated with the Prewett Ranch Drive extension in this IS/MND.

1.8 LAND USE DESIGNATIONS

The City of Antioch General Plan (General Plan) designates the proposed project site as Medium Low Density Residential, which allows six du/ac. The zoning classification for the project site is Planned Development District (P-D) in accordance to the adopting zoning Code in Title 9, Planning and Zoning, Chapter 5, Zoning, Article 38 Land Use Regulations, Planned Development District.

1.9 SUMMARY OF PROJECT

The applicant is proposing to develop the 5.59-acre vacant parcel as a 30 lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The proposed project Vesting Tentative Map is presented on Figure 2.0-3.

The proposed project would consist of 30 single-family residential dwelling units ranging in size from 4,006 sf to 12,937 sf with an average lot size of 5,332 sf and a density of 5.59 du/ac. One lot of 17,639 sf called out as Parcel A (Figure 2.0-3) has been designated as a stormwater detention area. The proposed project would be accessed via the Prewett Ranch Drive extension, which would extend from the eastern terminus of Prewett Ranch Drive, east to Heidorn Ranch Road. As part of the approved Heidorn Village Subdivision Project, directly north of the project site, the Prewett Ranch Drive extension was previously surveyed for biological and cultural resources in 2015. Therefore, in addition to potential impacts found during these previously performed biological and cultural surveys, the proposed project considered potential air quality, greenhouse gases, noise, and transportation and traffic impacts associated with the Prewett Ranch Drive extension in this IS/MND. The interior of the project would be accessible from a new street (Colchico Road), which would terminate into a new street (Chamberlain Street). Chamberlain Street would terminate in a cul-de-sac on both the east and west ends. Public utilities are proposed for extension in the roadways to be built. A retaining wall would be constructed along the southeastern portion of the project site from lots

13 to 23.

1.10 SURROUNDING LAND USES AND SETTING

The currently vacant project site is bordered by vacant land to the north and south. To the east, the project site is bordered by a single-family residence and Heidorn Ranch Road. To the west, the project site is bordered by single-family residential subdivision known as "Meadow Creek Village".

1.11 CEQA AND PUBLIC AND AGENCY REVIEW

CEQA is the State environmental law that requires project proponents to disclose the significant impacts to the environment from proposed development projects. The intent of CEQA is to foster good planning and to consider environmental issues during the planning process. The City is the Lead Agency under CEQA for the preparation of this IS/MND. CEQA Guidelines (Section 21067) define the Lead Agency as "the public agency which has the principal responsibility for carrying out or approving a proposed project which may have a significant effect upon the environment." The approval of the proposed project is considered a public agency discretionary action, and therefore the proposed project is subject to compliance with CEQA. The City has directed the preparation of an analysis that complies with CEQA. At the direction of the City, Stantec has prepared this document. The purpose of this document is to present to decision-makers and the public the environmental consequences of implementing the proposed project. This disclosure document is being made available to the public for review and comment. The public, City residents, and other local and State resource agencies would be given the opportunity to review and comment on this document during the 20-day public review period. Comments received during the 20-day review period would be considered by the City prior to the adopted CEQA disclosure document and proposed project approval. This IS/MND was prepared for the proposed project in January 2016. The City, as Lead Agency, released the IS/MND for public review beginning on August 23, 2018 and ending on September 12, 2018, pursuant to CEQA Guidelines Section 15105.

If you wish to send written comments (including via e-mail), they must be postmarked by September 12, 2018. Written comments should be addressed to:

Forrest Ebbs, Community Development Director
Community Development Department
200 H Street
Antioch, California 94531
Email: febbs@ci.antioch.ca.us
Phone Number: (925) 779-7035

If you have questions regarding the IS/MND, please call Forrest Ebbs, AICP, Community Development Director, at (925) 779-7038.

After comments are received from the public and reviewing agencies, the City may (1) adopt the IS/MND and approve the proposed project, (2) undertake additional environmental studies, or (3) abandon the proposed project. If the proposed project is approved and funded, the City could proceed with all or part of the proposed project, depending on agency permits.

The IS/MND and supporting documents are available at the City of Antioch, Community Development Department, located at 200 H Street Antioch, California 94531; online at the City of Antioch at <http://www.ci.antioch.ca.us/>; and at the Antioch Public Library, located at 501 West 18th Street Antioch, California 94509.

1.12 REQUIRED PERMITS AND APPROVALS

This IS/MND would be used by the City, as the Lead Agency, in evaluating the potential environmental impacts of the proposed project. In order for the proposed project to be implemented, a series of actions and approvals would be required from several agencies. Anticipated project approvals/actions would include, but are not limited to, the following:

- Adoption of the IS/MND: City of Antioch.
- Vesting Tentative Subdivision Map Approval: City of Antioch.
- Annexation into the Streetlight and Landscaping District.
- Annexation into the Police Services Community Facilities District.
- City of Antioch, Building Permits and Right of Way Encroachment Permit.
- Regional Water Quality Control Board, General Construction Permit.

1.13 SCOPE OF THIS INITIAL STUDY

As the Lead Agency under CEQA, the City is responsible for compliance with the environmental review process prescribed by the CEQA guidelines. This initial study focuses on the environmental issues identified as potentially significant in the CEQA checklist and by CEQA guidelines. This Initial Study identified potentially significant effects on the environment and revisions in the project site plans, presented as mitigation measures, were identified to mitigate the effects to a point where clearly no significant effect on the environment would occur. A complete Project Description is included in Section 2.0. Proposed project elements and environmental resources are analyzed in Section 3.0 and references are included in Section 4.0. The following technical studies were conducted and/or reviewed in preparing this IS/MND: air quality modeling outputs, biological resources technical memorandum, cultural resources technical memorandum, geotechnical investigation report, phase I, stormwater control plan, noise modeling, and a transportation study. These studies are included as appendices to this IS/MND and referred to where appropriate throughout this document.

1.14 DOCUMENT ORGANIZATION

This IS/MND is organized as follows:

Section 1.0: Introduction. This section provides an introduction and describes the purpose and organization of this document.

Section 2.0: Project Description. This section describes the purpose of and need for the proposed project, identifies project objectives, and provides a detailed description of the proposed project.

Section 3.0: Environmental Checklist and Environmental Evaluation. This section presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if the proposed project would result in no impact, a less than significant impact, a less than significant impact with mitigation incorporated, or a potentially significant impact for each topic. If impacts are determined to be potentially significant after incorporation of applicable mitigation measures, an Environmental Impact Report (EIR) would be required. For this proposed project, however, mitigation measures have been incorporated where needed, that would reduce all potentially significant impacts to a less than significant level.

Section 4.0: References. This section lists the references used in preparation of this IS/MND.

Section 5.0: List of Preparers. This section identifies report preparers.

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2.1 PROJECT DESCRIPTION

2.2 PROPOSED PROJECT

The proposed project involves the construction of a 30 lot single-family residential subdivision on 5.59 acres with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system.

2.2 PROJECT LOCATION

The proposed project is located in the City of Antioch, Contra Costa County, California (Figure 2.0-1). The 5.59-acre project site is located on the west side of Heidorn Ranch Road at the eastern terminus of Prewett Ranch Drive, on the undeveloped parcel identified as APN 056-130-012 (Figure 2.0-2). The parcel is designated Medium Low Density Residential in the City's General Plan. The zoning for the proposed project is P-D, which is intended to accommodate a wide range of residential, commercial and industrial land uses which are mutually supportive and compatible with existing and proposed development on surrounding properties. The proposed project Vesting Tentative Map is show on Figure 2.0-3.

2.2.1 Land Use Designation

The project site designated for Medium Low Density Residential in the City's General Plan and zoned P-D. In addition, the City has recommended setbacks be met according to the R-6 zoning designation, which is the comparable zoning designation to the Medium Low Density Residential General Plan designation (City of Antioch 2014). The proposed project's setback information in relation to the R-6 zoning setbacks is discussed further below in Section 2.2, Description of Project.

General Plan

The General Plan land use designation for the project site is Medium Low Density Residential, which is defined as follows:

"This land use designation pertains to areas that are generally characterized by single-family homes in typical subdivision development, as well as other detached housing such as zero lot line units and patio homes. Duplex development would also fall into this development density. Areas designated as Medium Low Density are typically located on level terrain with no or relatively few geological or environmental constraints. Older subdivisions within this northern portion of Antioch reflect this residential density. The maximum allowable density for Medium Low Density Residential is six du/ac. The anticipated population per acre is 14 to 18 persons per acre. The appropriate land use types are single-family detached, open space, religious assembly, schools; public and private."

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 Project Site

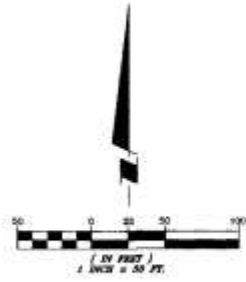
Project: 185750377; Sources: Stantec 2015. Created By: K. Johnson 2/1/2016. Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet; Projection: Lambert Conformal Conic; Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Commu



Figure 2.0-2
Project Site Vicinity
 Quail Cove Subdivision Project

VESTING TENTATIVE MAP & PRELIMINARY GRADING PLAN "QUAIL COVE" SUBDIVISION NO. 7938

RESUBDIVISION OF A POR. OF PARCEL 'B'
(48 PM 45)
A PORTION OF APN NO. 056-130-012
CITY OF ANTIPOCH
CONTRA COSTA COUNTY, CALIFORNIA
SCALE: 1"=40' AUGUST, 2018



GENERAL NOTES:

OWNER/DEVELOPER: WEST COAST HOME BUILDERS, INC
4021 PORT CHICAGO HWY
CONCORD, CA 94520
PHONE (925) 871-7711

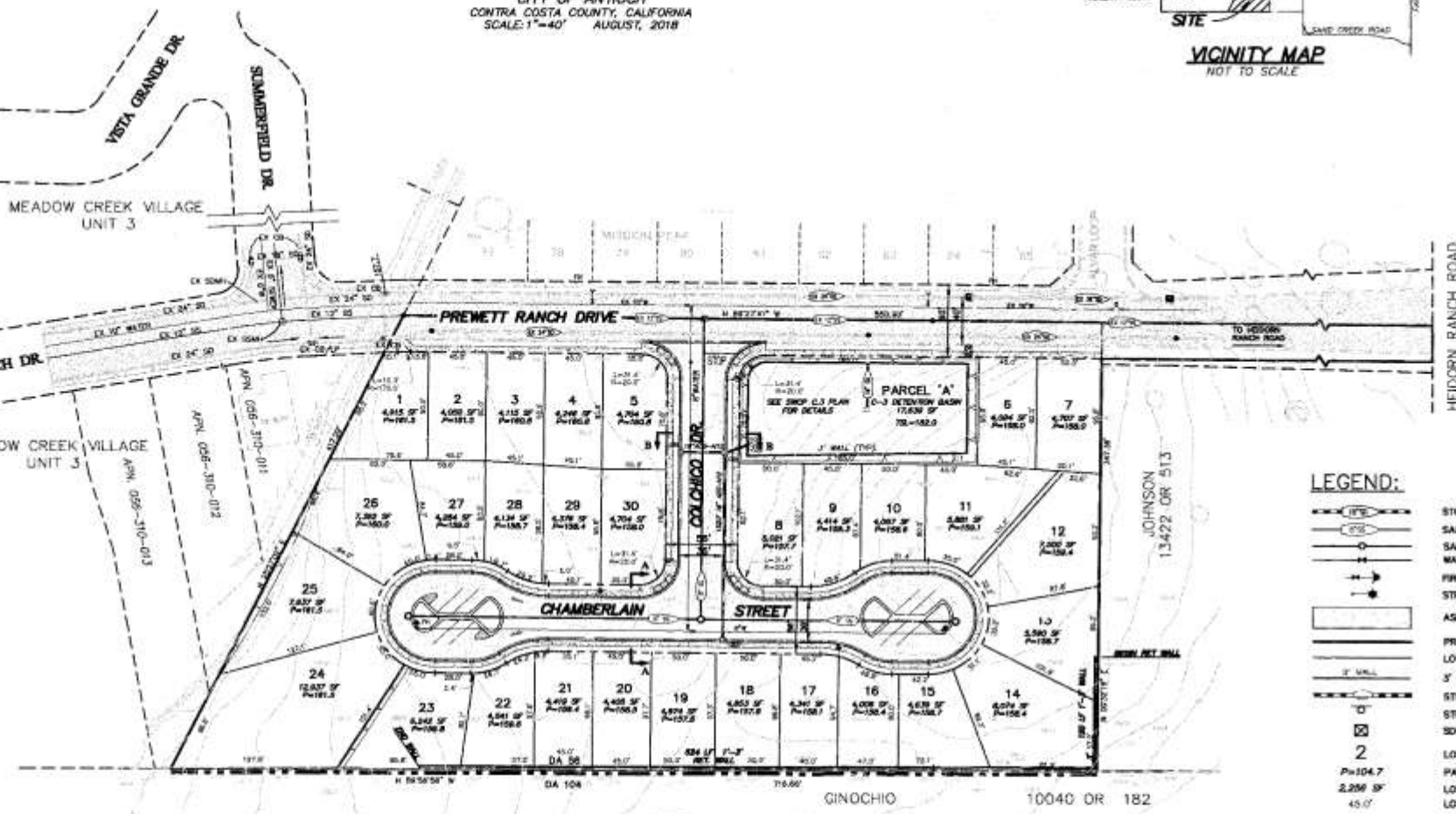
CIVIL ENGINEER: ISAKSON & ASSOCIATES, INC.
2 MIRANGO COURT
CLAYTON, CA 94517
PHONE (925) 876-0889

SOILS ENGINEER: TRC
ONE CONCORD CENTER
2300 CLAYTON ROAD, STE 810
CONCORD, CA 94520
PHONE (925) 888-1200

LANDSCAPE ARCHITECT: THOMAS BAANK & ASSOCIATES
1620 NORTH MAIN STREET, STE 4
WALNUT CREEK, CA 94596
PHONE (925) 933-2563

SHEET INDEX

SHEET No.	DESCRIPTION
1	TITLE SHEET
2	VESTING TENTATIVE MAP & PRELIM. GRADING PLAN
3	FINAL DEVELOPMENT PLAN
4	SITE PLAN
5	UTILITY PLAN
6	SIGNING, STRIPING, AND PARKING PLAN
7	CROSS SECTIONS



LEGEND:

- STORM DRAIN AND DIRECTION
- SANITARY SEWER AND DIRECTION
- SANITARY SEWER & MANHOLE
- WATER & GATE VALVE
- FIRE HYDRANT
- STREET LIGHT
- ASPHALT CONCRETE
- PROJECT BOUNDARY
- LOT LINES
- 3' HIGH RETAINING WALL
- STORM DRAIN & CATCH BASIN
- STREET SIGN
- STORM CROSS DRAIN
- LOT NUMBER
- PAD ELEVATION
- LOT AREA
- LOT DIMENSION

DATE: 08-03-18
DRAWN: RLB
CHECKED: DOJ
SCALE: 1"=40'

Isakson & Assoc. Inc.
civil engineering & land surveying
2 Mirango Court, Clayton, CA 94517 Phone: (925) 876-0889

SUBDIVISION 7938
VESTING TENTATIVE MAP
TITLE SHEET
CITY OF ANTIPOCH
CONTRA COSTA COUNTY
CALIFORNIA

SHEET 1 OF 7

QUAIL COVE- VESTING TENTATIVE MAP & PRELIMINARY GRADING PLAN (SUB. 7938) - 08-03-2018

Figure 2.0-3
Proposed Project Vesting Tentative Map
Quail Cove Subdivision Project

Zoning

The zoning for the project site is P-D, which is described as follows:

“Planned Development Districts are intended to accommodate a wide range of residential, commercial and industrial land uses which are mutually supportive and compatible with existing and proposed development on surrounding properties. P-D Districts shall encourage the use of flexible development standards designed to appropriately integrate a project into its natural and/or man-made setting and shall provide for a mix of land uses to serve identified community needs. In addition, P-D Districts shall orient pedestrian and bicycle facilities to encourage non-auto oriented circulation within the development. Furthermore, the P-D process may be used to implement the various Specific Plans adopted by the City. Once established, the P-D District becomes, in effect, the zoning code for the area within its respective boundaries.

Residential P-D Districts:

- “P-D Districts containing residential components may be established on a parcel or parcels of land having a contiguous area of at least three acres. Within a Specific Plan Area, a P-D District containing residential uses may be designated for properties totaling less than three acres in size, provided the district is in substantial conformance with the Specific Plan. Residential parcels of less than three contiguous acres which are within the “Rivertown” designation of the General Plan may also qualify for P-D status.
- Each Residential P-D District established shall include specific development standards designed for that particular district, to include minimum lot sizes, setbacks and open space requirements, architectural and landscaping guidelines, and maximum building heights and lot coverages. In establishing these standards, the requirements for existing zoning and P-D Districts may be reviewed and modifications to these standards may be made as appropriate. Varying residential densities may be established for specific areas within each district. Once approved as part of a final development plan, all standards, densities, and other requirements shall remain tied to that plan and to the property designated by that district, unless formally amended by City Council action.
- The intent of the Residential P-D is to encourage a wider variety of densities, product types and setbacks than would otherwise be possible under conventional residential zoning. Single-family lot size shall vary between and/or within the P-D Districts to accommodate a range of economic needs. Furthermore, setbacks and garage door facilities to encourage non-auto oriented circulation within the development. Furthermore, the P-D process may be used to implement the various Specific Plans adopted by the City. Once established, the P-D District becomes, in effect, the zoning code for the area within its respective boundaries.”

2.3 DESCRIPTION OF PROJECT

2.3.1 Project Characteristics

The applicant is proposing to develop the 5.59-acre vacant project site as a 30 lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The 30 lots would range in size from 4,006 sf to 12,937 sf with an average lot size of 5,332 sf and a gross density of 5.59 du/ac. The General Plan land use designation is Medium Low Density Residential which allows for a maximum residential density of six du/ ac. The zoning for the proposed project is P-D, which is intended to accommodate a wide range of residential, commercial and industrial land uses which are mutually supportive and compatible with existing and proposed development on surrounding properties.

Project Design

The General Plan establishes general policies and objectives for single-family residential development. The Citywide Design Guidelines Manual establishes specific design objectives and criteria for single-family residential development. The City Zoning Ordinance Code establishes densities of development, setbacks, screening and other improvement to be implemented and maintained by development. Together, these documents establish guidelines and development standards relating to site planning, architecture, landscaping, walls, fences, community facilities and open space areas. The proposed project would be required to meet these guidelines and development standards set forth in the General Plan, Citywide Design Guidelines Manual, and City Zoning Ordinance Code, and setback requirements according to the R-6 zoning designation.

Chapter 6.1.2 of the Citywide Design Guidelines Manual establishes objectives for the design so single-family residential development. According to the guidelines,

“These guidelines seek to promote a desired level of development quality that would:

- Recognize and fulfill the different economic, social, and physical needs of residents;
- Create a human-scaled, bicycle and pedestrian-friendly environment;
- Create visual diversity and create neighborhoods with a unique sense of place; and
- Incorporate physical and pedestrian connections between neighborhoods to help create a unified community.”

Chapter 6.1.3 of the Citywide Design Guidelines Manual establishes site planning criteria. According to the guidelines,

“Site planning is one of the most important aspects of making a residential neighborhood a desirable place to live. A mix of densities and lot sizes creates diversity in housing products. Neighborhoods should be pedestrian scaled, have a high quality streetscape, and provide access to open space and neighborhood serving commercial uses, where appropriate.”

The following sections address specific site planning design requirements that are applicable to the proposed development:

Maximum Density

The proposed project is designated as Medium Low Density Residential which is characterized as a typical subdivision, as well as other detached housing such as zero lot line units and patio homes. The maximum density allowable is six du/ac, or 32 homes on the 5.59-acre project site. The applicant is proposing to develop the 5.59-acre vacant parcel as a 30-lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The 30 lots would range in size from 4,006 sf to 12,937 sf with an average lot size of 5,332 sf and a density of 5.59 du/ac. The proposed project would comply with the density requirement of the P-D zoning classification.

Building Setbacks

The project site is zoned P-D in accordance with the City's Zoning Ordinance. Each Residential P-D District shall include specific development standards designed for that particular district, to include minimum lot sizes, setbacks and open space requirements, architectural and landscaping guidelines, and maximum building heights and lot standards may be made as appropriate. As such, P-D Districts do not have specific setback requirements outlined in the City's Zoning Ordinance.

According to the City Preliminary Development Staff Report, R-6 Zoning would be the comparable zoning designation to the Medium Low Density Residential General Plan land use designation. Therefore, in accordance with the City's Zoning Ordinance the following R-6 zoning setback regulations are recommended for the proposed project (City of Antioch 2014). Below, Table 2.2-1 outlines the R-6 Zoning Setback requirements.

Table 2.2-1: R-6 Zoning Setback

Setback	R-6 Setbacks	Project Setbacks
Front (Porch)	20' /25' for Prewett Ranch Rd.	10'
Front (House Living Area)		15'
Front(Garage)		20'
Rear	20'	15'
Side	5'	4'

Architectural Styles

Chapter 6.1.4 of the Citywide Design Guidelines Manual establishes architectural design criteria. According to the guidelines,

"These guidelines aim to promote high quality architectural designs that enhance the character of Antioch. Neighborhood developments shall utilize architectural styles that complement each other when grouped together. The architectural style and design theme of each residential development shall establish unique a neighborhood identity."

This section identifies specific architectural design objectives and criteria as it relates to:

- Building style
- Street environment and building frontage
- Building form and articulation
- Building height
- Roof and upper level details
- Building materials and finishes
- Windows
- Doors and entries
- Garages
- Compatibility with other properties

According to the City's Preliminary Development Plan Staff Report (September 23, 2014), all units shall be single story floor plans and incorporate varying facades. Corner units would be required to incorporate façade elements on all sides facing roadways. The proposed development plans would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit. The City's Preliminary Development Plan Staff Report is included in Appendix A.

Parking

The City Zoning Ordinance parking requirements for single-family residential developments are a two car garage and one guest parking space within a close proximity to the unit served. The Ordinance doesn't specify the exact placement of spaces but small lot subdivisions are typically conditioned to provide a guest parking space within 100 to 200 feet of the unit it is serving.

The Zoning Ordinance also requires unrestricted access to the rear yard for recreational vehicles (RV) for 25 percent of single-family lots. Requiring RV parking is difficult for small lot subdivisions and may not be practical for the proposed project. According to the City's Preliminary Development Plan Staff Report (September 23, 2014), this requirement could be appropriately deterred by prohibiting RV parking in the development's Covenants, Codes and Restrictions (CC&Rs). This would be consistent with other approved small lot subdivisions. The P-D zoning also allows for flexibility with this development standard. Therefore, the City Council has the ability to waive the RV parking requirement for the proposed project. Staff's recommendation is for the

development's CC&Rs to specifically prohibit any RV's, boats or jet skis to be parked within the project area.

The proposed development plans would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit.

Landscaping

Chapter 6.1.5 of the Citywide Design Guidelines Manual establishes landscaping design criteria. According to the guidelines, "Landscaping shall be used to define entrances to neighborhoods and homes, to provide a buffer between incompatible land uses, and to provide screening when necessary."

- Types of vegetation and groundcover including height, textures, and colors.
- Placement vegetation with regard to line of sight and emergency access
- Vegetation spacing
- Maintenance
- Compatibility with other properties

The City landscape general design standards promote the use of drought tolerant, California native vegetation. Along with the proposed development plans, the applicant would be required to submit a landscape plan, which meets the general design standards outline in Title 9 Section 5 of the City's Municipal Code. The landscape plans would be reviewed during the City's development review phase, prior to the issuance of a building permit.

Project Entry and Character

The City has required the development to include a project entry feature and landscaping consistent with the overall character of the development. The entry feature may incorporate: lighting, public art, large specimen trees, stone wall features, architectural monuments and water features. The entry shall include authentic materials such as brick, stone, wood, or iron work. The proposed development plans would be required to meet these criteria prior to issuance of a building permit.

Stormwater

The proposed project includes the construction of a 17,639 sq. ft. bioretention basin (Parcel A) in the northeastern portion of the proposed project, fronting Prewett Ranch Drive, between lots six and seven. According to the City's Preliminary Development Plan Staff Report (September 23, 2014), the development is required to comply with the C.3 requirements in the California Water Quality Control Boards' Municipal Regional Permit. The applicant is also required to construct storm drain facilities to adequately collect and convey storm water entering or originating within the development and convey it to the bioretention basin, per Title 9 of the Contra Costa County Ordinance Code.

Water

The proposed project requires the extension of a 10-inch water line from the eastern terminus of Prewett Ranch Drive to Heidorn Ranch Road. The southern terminus of the Heidorn Ranch Road line is then required to be extended to Prewett Ranch Drive to complete the looped water system. An eight-inch water line would branch off at the proposed intersection of Colchico Drive and Prewett Ranch Drive, extend south to Chamberlain Street, and then extend east and west to the Chamberlain Street cul-de-sacs. The City determined these improvements are adequate to serve the proposed project and maintain the looped water system.

Sewer

The proposed project requires the extension of a 12 inch sewer line from the eastern terminus of Prewett Ranch Drive to Heidorn Ranch Road. The southern terminus of the Heidorn Ranch Road line is then required to be extended to Prewett Ranch Drive to complete looped sewer system. An 8 inch sewer line would branch off at the proposed intersection of Colchico Drive and Prewett Ranch Drive, extend south to Chamberlain Street, and then extend east and west to the Chamberlain Street cul-de-sacs. The City determined these improvements are adequate to serve the proposed project and maintain the looped sewer system.

Utilities

The proposed project requires the installation of water meter boxes, backflows for fire sprinklers, sewer cleanouts, cable, phone, and power boxes. Utility boxes are required to be positioned in a manner that they do not dramatically reduce front yard landscaping. Utility lines would extend east from the terminus of Prewett Ranch Drive, to Colchico Drive, south to Chamberlain Street, then east and west down the cul-de-sacs. The proposed development plans would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit.

Circulation

The proposed project involves the construction of 30 single-family residential dwelling units that would front onto Prewett Ranch Road (collector) as well as internal access cul-de-sacs on Chamberlain Street. The subdivision has one access point via the proposed Colchico Drive which turns right onto the proposed Chamberlain Street and then terminates into the cul-de-sacs. Additionally, the proposed project includes the construction of Colchico Drive (north-south local road) extending southward from Prewett Ranch Drive to the proposed Chamberlain Street (cul-de-sacs).

The proposed project would be accessed via the Prewett Ranch Drive extension, which would extend from the current eastern terminus of Prewett Ranch Drive, east to Heidorn Ranch Road. The Prewett Ranch Drive extension was surveyed and approved as part of the Heidorn Village Subdivision Project, directly north of the project site.

Other Services

According to the City's Preliminary Development Plan Staff Report (September 23, 2014), the proposed project would be required to mitigate its impacts on police services due to the increase in demand, which is based on the number of individuals that are expected to reside in the proposed project. Based on the California Department of Finance's ratio of 3.25 residents per unit, the proposed 30-lot single-family residential development would house approximately 104 residents. The General Plan identifies a performance ratio which is 1.2 to 1.5 police officers per 1,000 individuals. Annexation into the appropriate Community Facilities District will be required to achieve this standard.

All streets associated with the proposed project are proposed to be public. Therefore, the proposed project would require annexation into the Streetlight and Landscaping District. The proposed development plans would be required to meet these criteria during the City's development review phase, prior to issuance of a building permit.

According to the City's Preliminary Development Plan Staff Report, a Homeowner's Association would be required for the proposed project which, at a minimum, would be responsible for maintaining the bioretention basin and landscape parcels.

2.3.2 Project Construction, Phasing, and Staging

Project Phasing

Implementation of the proposed project would result in the construction of a 30-lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The proposed project is not large enough for phased development. The applicant has indicated his intention to sell lots and begin construction immediately upon recordation of the subdivision map.

2.3.3 Project Objective

The objectives for the proposed project would be to construct a 30-lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system, consistent with the General Plan, Zoning Ordinance and Citywide Design Guidelines.

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3.1 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

The environmental factors checked below would be potentially affected by this project, involving at least one impact that requires mitigation to reduce the impact from "Potentially Significant" to "Less Than Significant" as indicated by the checklist on the following pages.

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

Evaluation of Environmental Impacts

Section 3.0, Environmental Checklist and Environmental Evaluation, presents the environmental checklist form found in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures recommended as appropriate as part of the proposed project.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which mitigation has not been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) must be prepared. An IS/MND cannot be used in the case of a project for which this conclusion is reached in any impact category.

Less Than Significant with Mitigation Incorporated: This designation applies where applicable and feasible mitigation measures previously identified in prior applicable EIRs or in the General Plan EIR have reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact", and pursuant to Section 21155.2 of the Public Resources Code (PRC), those measures are incorporated into the IS/MND.

This designation also applies where the incorporation of new project-specific mitigation measures not previously identified in prior applicable EIRs or in the General Plan EIR has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".

Less Than Significant Impact: Any impact that would not be considered significant under CEQA, relative to existing standards.

No Impact: The proposed project would not have any impact.

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3.2 AESTHETICS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.1.1 Environmental Setting

Visual Setting

The project site is located on the edge of existing suburban residential development in the southeast portion of the City adjacent to vacant land south of the project site. The 5.59-acre project site is located on the west side of Heidorn Ranch Road at the eastern terminus of Prewett Ranch Drive, on the undeveloped parcel identified as APN 056-130-012 (Figure 2.0-2). The Vesting Tentative Map is shown on Figure 2.0-3. The currently vacant project site is bordered by vacant land to the north and south. Views toward the south take in Mount Diablo, foothills, grazing lands, and agricultural lands. To the east, the project site is bordered by a single-family residence and Heidorn Ranch Road. To the west, the project site is bordered by single-family residential subdivision known as "Meadow Creek Village."

For this analysis, a local visual study area has been defined that generally corresponds to those land uses and residences that currently view the project site. Based on the site reconnaissance performed, four key observation points (KOPs) were identified based on viewer exposure to the project site (Figures 3.1-1 through 3.1-5).

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Figure 3.1-1
KOP Locations
 Quail Cove Subdivision Project



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Project: 185750377, Stantec 2016, Created By: K. Johnson



Project: 185750377, Stantec 2016, Created By: K. Johnson



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Scenic Resources/Corridors

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the highways. The General Plan Resource Management Element identifies the San Joaquin River, Mount Diablo and its foothills, Black Diamond Mines Regional Preserve, and ridgelines of Horse Valley and Deer Valley as scenic resources within the City. These views contribute a feeling of community identity, as well as visual enjoyment. Mount Diablo and the San Joaquin River are also designated natural landmarks, as they are prominent visual features and focal points within the City (City of Antioch 2003).

The City has specific design standards outlined in the General Plan's Community Design Element in order to maintain views of the City's scenic resources and to protect the natural character of Antioch. Additionally, where natural features (e.g. ridgelines, natural creeks, significant habitat areas, rock outcrops, or unusual landscape features) are present, new developments are required to incorporate natural open space areas into project design (City of Antioch 2003).

There are no officially State-or county-designated scenic highways located in the City or surrounding area. However, the General Plan identifies Somersville Road, Lone Tree Way, Hillcrest Avenue, State Route (SR) 160, SR 4, James Donlon Boulevard, Deer Valley Road, and Empire Mine Road as scenic arterials because they offer views of the surrounding foothills, San Joaquin River, and Mount Diablo (City of Antioch 2003).

Light and Glare Conditions

The terms "glare" and "skyglow" are used in the following analysis to describe the visual effects of lighting. For the purposes of this impact analysis, glare is considered to be direct exposure to bright lights and skyglow is a glow that extends beyond the light source and can dominate or partially dominate views above the horizon.

In general, nighttime lighting in the project vicinity is relatively minimal and does not produce substantial glare or skyglow. Nighttime lighting is present in the surrounding area mainly as parking lot lighting, building security lighting, and street lighting for the surrounding residences, all of which are located within the immediate vicinity of the project site. Light pollution refers to all forms of unwanted light in the night sky, including glare, light trespass, skyglow, and over-lighting. Excessive light and glare can be visually disruptive to humans and nocturnal animal species, and often reflects an unnecessarily high level of energy consumption. Light pollution has the potential to become an issue of increasing concern as new development contributes additional outdoor lighting installed for safety and other reasons. The City is primarily built out and the light and glare that exists within the City is typical of an urban setting.

3.1.2 Methodology

This section provides a description of existing visual conditions in the vicinity of the proposed project and an assessment of changes to those conditions that would occur from implementation of the proposed project. Effects of the proposed project on the visual environment are generally defined in terms of a project's physical characteristics and potential visibility, the extent to which the project's presence would change the perceived visual character and quality of the environment where it would be located, and the expected level of sensitivity that the viewing public may have in areas where project facilities would alter existing views.

The aesthetic quality of a community is composed of visual resources, which are those physical features that make up the visible landscape, including land, water, vegetation, and the built environment (e.g., buildings, roadways, and structures). The descriptions of visual resources in this section are based on photographs of the project site that were taken during a site reconnaissance performed by Stantec on August 4, 2015. High-resolution photographs were taken from representative viewpoints in the surrounding vicinity.

Visual Distance Zones

The following distance zones (foreground, middle ground, and background) can be used to characterize the dominant visual character from each vantage point and describe views in terms that can be analyzed and compared. The sensitivity of views, which have been modified from the existing environment, is defined in order to establish thresholds for the analysis of potential visual impacts resulting from the implementation of the proposed project.

Foreground Views

These views include elements that can be seen at a close distance and that dominate the entire view. Impacted views at this distance are generally considered potentially adverse when viewed by a sensitive viewer group, such as surrounding residents, workers, pedestrians, or regular motorists.

Middle Ground Views

These views include elements that can be seen at a middle distance and that partially dominate the view. Impacted views at this distance are generally considered to be potentially adverse when viewed by a sensitive viewer group.

Background Views

These views include elements that are seen at a long distance and typically do not dominate the view although they are part of the overall visual composition of the view. Impacted views at this distance are generally considered not to be an adverse impact when viewed by a sensitive viewer group.

Viewer Exposure and Sensitivity

Viewer sensitivity is considered when assessing the impacts of visual change and is a function of several factors. The sensitivity of the viewer or viewer concern is based on the visibility of resources in the landscape, proximity of the viewers to the visual resource, elevation of the viewers relative to the visual resource, frequency and duration of views, numbers of viewers, and types and expectations of individuals and viewer groups.

The viewer's distance from landscape elements plays an important role in the determination of an area's visual quality. Visibility and visual dominance of landscape elements depend on their placement within a viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1988). Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer. Generally, the closer a resource is to the viewer, the more dominant, and thus the more visually important it is to the viewer. For purposes of analysis, landscapes are separated into foreground, middleground, and background views (U.S. Forest Service 1995). In general, the foreground is characterized by clear details (within 0.25 or 0.5 mile of the viewer); the middleground is characterized by the loss of clear detail in a landscape, creating a uniform appearance (from the foreground to 3–5 miles in the distance); and the background extends from the middleground to the limit of human sight (Bacon 1979).

Visual sensitivity is also affected by viewer activity, awareness, and expectations in combination with the number of viewers and the duration of the view. Visual sensitivity is generally higher for views that are observed by people who are driving for pleasure, or engaging in recreation activities such as hiking, biking, camping or by residents of an area. Sensitivity is lower for people engaged in work activities or commuting to work. Viewer response must be based on the regional context. The same landform or landscape feature may be valued differently in different settings; landscape features common in one area would not be valued as highly as the same feature in a landscape that generally lacks similar features. For example, a small hill may have little value in a mountainous area, but may be highly valued in a landscape that has little topographic variation.

Assumptions

The following visual resources impact analysis is based on a field survey of the project site and the surrounding areas on August 4, 2015, as well as interpretation and analysis of aerial photographs, photographs of the project site, and the Citywide Design Guidelines for single-family residential development.

Analysis of the proposed project's visual impacts is based on an evaluation of the changes to the existing visual resources that would result from project implementation. In determining the extent and implications of the visual changes, consideration was given to: the existing visual quality of the affected environment and specific changes in the visual character and quality of the affected environment; the visual context of the affected environment; the extent to which the affected environment contains places or features that provide unique visual experiences or that have been designated in plans and policies for protection or special consideration; and the

sensitivity of viewers, access of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the proposed project.

3.1.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AES-1 Have a substantial adverse effect on a scenic vista?

Impact Analysis

The proposed project consists of subdividing the 5.59-acre site and developing 30 single-family detached dwelling units with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The General Plan identifies the following scenic resources within the City: San Joaquin River, Mount Diablo and its foothills, Black Diamond Mines Regional Preserve, and ridgelines of Horse Valley and Deer Valley. Mount Diablo is visible when facing south of the project site. The General Plan Policy 5.4.2c "recognizes that new development would inevitably result in some loss of existing views", and prohibits "the siting of structures or landscaping that would completely block views from adjacent properties." Therefore, the proposed project would incorporate design measures that are consistent with the General Design Policies and Objectives outlined in Section 5.0: Community Image and Design of the General Plan, which ensures that future developments maintain view corridors of scenic resources and landmarks within the City.

The proposed project would be consistent with the surrounding land uses and pattern of development. The proposed project would incorporate one-story elements, with the shortest and lowest side of the du oriented toward the side street, allowing for views of Mount Diablo through the spacing of the units, and angle of the lots. Furthermore, in an effort to minimize the proposed project's aesthetic impact on surrounding neighbors, a number of design features have been incorporated to the proposed project such as:

- Elevation Design. The proposed project would be consistent with the City's Residential Design Guidelines. Dwelling units would incorporate staggered front yard setbacks and architectural facades. Corner units would be required to incorporate façade elements on all sides facing roadways. Neighbors along the western side of the project site would only be exposed to one story single-family residential dwelling units.
- Setback. In addition, the proposed project would implement R-6 setback requirements outlined in Section 9-5.601 of the City's Zoning Ordinance. The City's Zoning Ordinance requires a minimum setback of 20 feet for rear yards, 20 feet for front yards, and 5 feet for side yards along local streets (Chamberlain Street and Colchico Drive). For collector streets (Prewett Ranch Drive), the minimum setback for front yards is 25 feet, 20 feet for rear yards, and 5 feet for side yards.
- Landscaping. All residential lots and public spaces would incorporate drought-tolerant California native landscaping in accordance with the Citywide Design Guidelines. The

guidelines take into account types of vegetation and groundcover including height, textures and colors, placement/spacing of vegetation, maintenance, and compatibility with other properties.

- Entry Feature. The proposed project would include a project entry feature and associated landscaping consistent with the overall character of the development. The entry feature may incorporate: lighting, public art, large specimen trees, stone wall features, architectural monuments and water features. The entry shall include authentic materials such as brick, stone, wood, or iron work.

Given the similar scale of building height and design, landscaping, and infrastructure associated with the proposed development, the proposed project would be consistent with that of adjacent neighborhoods. Additionally, by incorporating building separation into the design, existing views would remain visible and views of scenic resources would not be obstructed. As such, impacts would be considered less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AES-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Impact Analysis

The project site is not located near a designated State Scenic Highway according to Caltrans California Scenic Highway Mapping System. However, the General Plan designates Somersville Road, Contra Loma Boulevard, Lone Tree Way, Hillcrest Avenue, SR 160, SR 4, James Donlon Boulevard, Deer Valley Road, and Empire Mine Road as scenic arterials because of the views they offer of the surrounding foothills, San Joaquin River, and Mount Diablo. The project site is not located adjacent to or along any scenic arterial roadways as identified in the General Plan.

Additionally, the project site is barren of significant rock outcroppings or historic buildings. Therefore, the proposed project would be consistent with the General Plan policies related to these resources and would have no impact on scenic resources such as rock outcroppings, trees, or historic buildings within view from a scenic highway.

Level of Significant Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AES-3 Substantially degrade the existing visual character or quality of the site and its surroundings?

Impact Analysis

The proposed project consists of subdividing the 5.59-acre site and developing 32 single-family detached dwelling units. To the north and south, the project site is bordered by vacant land. To the west, the project site is bordered by a single-family residential subdivision. To the east the project site is bordered by a single-family residence and Heidorn Ranch Road.

The proposed project is required to be designed consistent with the City's General Plan, Zoning Ordinance, and the Citywide Design Guidelines. The proposed project would implement design criteria for single-family development such as architectural and setback variations to create the greatest degree of variety, attractiveness, and function within the development. The dwelling units would be of similar height to existing single-family residences located to the west of the project site in the "Meadow Creek Village" subdivision. Therefore, these structures would be consistent with the existing visual character.

The City's General Plan, Zoning Ordinance, and the Citywide Design Guidelines also require the proposed project to be designed so that it maximizes the use of the site by creating a residential neighborhood complete with landscaping, pedestrian-friendly walkways, and street trees. The proposed project design would complement the design and appearance of existing single-family residences located to the west of the project site in the "Meadow Creek Village" subdivision and provide landscaping and screening from surrounding single-family residential development to minimize the visual impact on existing viewers. Buildings would be highly articulated on all sides facing public rights-of-way to maximize architectural interest and minimize building massing. As such, the proposed project would be consistent with the City's General Plan, City Zoning Ordinance and the Citywide Design Guidelines. Therefore, the proposed project would not substantially degrade the visual character of the project site or its surroundings; impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AES-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact Analysis

The proposed project would develop 30 single-family residential dwelling units with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system on the project site. New sources of light and glare may potentially be intrusive since the site is vacant and does not currently generate night lighting. The proposed project would incorporate City standard freestanding street lighting along roadways, walkways and parking areas. City street lighting standards call for shielding to direct light and avoid skyglow. In addition, construction of buildings would result in exterior building lighting, glass windows and other reflective surfaces that would introduce new sources of daytime glare and nighttime glow. These additional sources of light and glare are expected to be incremental and visible from surrounding residences, land uses, and streets, and may potentially degrade daytime and nighttime views. Light generated by the proposed project could also be perceived as a nuisance by those traveling to, from, and passing by the project site if the proposed project were to include light that is excessive, improperly placed, or inadequately screened. Therefore, a potentially significant impact may occur if not appropriately mitigated. As it relates to glare and glass, the resulting amount of reflective surface area would have the potential to impact daytime views in the area by adversely affecting drivers passing by the proposed project. However, the proposed project plan does not propose buildings with significant amounts of reflective materials. Moreover, construction materials would consist of wood, stucco and roofing materials, none of which is highly reflective; hence, significant glare impacts are not expected to occur. Nonetheless, Mitigation Measure AES-1 is proposed to ensure that the potentially significant impact with regard to lighting and glare is reduced to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AES-1: Prior to issuance of building permits for the proposed project, the applicant shall provide a lighting plan for the City's review and approval. The lighting plan shall include provisions to ensure that outdoor lighting is designed so that potential glare or light spillover to surrounding roadways and properties are minimized through appropriate site design and shielding of light fixtures. The City would review the lighting plan to ensure that all lighting is directed downward and away from adjacent properties and residences. This mitigation measure does not preclude the use of small-scale decorative lighting that may be directed upward, such as wall wash lighting or spot lighting for landscaping. This type of lighting is allowed if it does not spill over onto adjacent properties.

Level of Significant After Mitigation

Less Than Significant Impact With Mitigation.

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3.2 AGRICULTURE AND FORESTRY RESOURCES

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

3.2.1 Environmental Setting

The City is located in an area of Contra Costa County that has traditionally contained areas of land used for grazing, orchards, field, and row crops. The City has approximately 5,600 acres of grazing and former agricultural lands (City of Antioch 2003). There are no lands zoned for agricultural use within the City. According to the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP), the project site is identified as Farmland of Local Importance (California Department of Conservation 2014). Additionally, there are no forestlands or timberland on or within the vicinity of the project site.

The project site is bordered by the Meadow Creek Subdivision Village to the west. To the east the project site is bordered by a single-family residence. To the north the proposed project is bordered by vacant land, eventually to be developed as the Heidorn Village Subdivision. To the south the project site is bordered by vacant land, zoned Study District according to the City's Zoning Ordinance.

3.2.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan Environmental Impact Report (EIR), CDC FMMP database, historical aerial imagery of the project site, Contra Costa County 2012-2013 Williamson Act Map, and the City Zoning Ordinance. The following impact discussions consider the effects of the proposed project related to agriculture and forestry resources in the City.

3.2.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AG-1 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?

Impact Analysis

According to the FMMP database the project site is identified as Farmland of Local Importance. A review of historical aerial imagery shows that the project site was in agricultural use and contained remnants of such activities until 2004 (Google Earth 2015). However, the project site is currently vacant and designated by the General Plan as medium low density residential. Additionally, the project site is zoned P-D according to the City Zoning Ordinance. The P-D Zoning Designation allows for various types of development, such as neighborhood and district shopping centers, professional and administrative offices, multiple housing developments, single-family residential developments, commercial service centers, and industrial parks, or any other combination of uses which are appropriately a part of a planned development (City of Antioch Municipal Code 2015). As such, the proposed project is consistent with the General Plan and City's Zoning Ordinance. Furthermore, lands surrounding the project site are either in residential use or zoned for future residential development. Therefore, the proposed project would not result in the conversion of prime, unique, or farmland of Statewide Importance; no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-2 Conflict with existing zoning for agricultural use or a Williamson Act contract?

Impact Analysis

The project site is zoned P-D, which is a non-agricultural zoning designation. The Contra Costa County 2010-2013 Williamson Act Map does not identify the project site or lands surrounding the project site as being encumbered by a Williamson Act contract. Therefore, the proposed project would not conflict with existing agricultural zoning or with a Williamson Act contract and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-3 Conflict with existing zoning for, or cause rezoning of, forestland (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))?

Impact Analysis

The proposed project is located in a sub-urban residential area within the City. There are no forest resources on or adjoining the project site. The FMMP database identifies the project site as Farmland of Local Importance (California Department of Conservation 2014). The project site is currently a vacant lot, with no timber or forest resources located on or surrounding the project site. The General Plan designates the project site as Medium Low Density, and the project site is zoned P-D in accordance with the City Zoning Ordinance. The project site is consistent with the General Plan and City Zoning Ordinance. Therefore, the proposed project would not conflict with existing zoning or cause rezoning of forestland or timberland zoned for timberland production as defined by Government Code section 51104(g) and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-4 Result in the loss of forestland or conversion of forestland to non-forest use?

Impact Analysis

The project site is currently vacant. There are no forestland resources on or adjoining the project site, or within the general vicinity of the project site. The project site is located in a suburban residential area, with existing residential developments surrounding the project site to the west, and vacant land to the north and south of the project site. As such, construction of the proposed project would not result in the loss of forestland or conversion of forestland to non-forest use; therefore, no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AG-5 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 forestland to non-forest use?

Impact Analysis

The FMMP identifies the project site as Farmland of Local Importance. However, the General Plan designates the project site as Medium Low Residential Density. Additionally, the project site is zoned P-D according to the City's Zoning Ordinance. The project site is currently vacant and consistent with the General Plan land use designation and City Zoning Ordinance. Furthermore, lands surrounding the project site are either in residential use or zoned for planned residential use. Therefore, the proposed project would not result in other changes that were not already

accounted for in the City's General Plan, General Plan, EIR, and City Zoning Ordinance. Therefore, the proposed project would not involve changes in the existing environment and result in the conversion of farmland to non-agricultural use, or forestland to non-forest use. No impacts associated with the proposed project would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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3.3 AIR QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose Sensitive Receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.3.1 Environmental Setting

The City is located in Contra Costa County, which is within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB) and under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board (CARB). The regional climate within the San Francisco Bay Area is driven by a summertime high-pressure cell centered over the northeastern Pacific Ocean that dominates the summer climate of the West Coast. The persistence of this high-pressure cell generally results in negligible precipitation during the summer and meteorological conditions are typically stable with a steady northwesterly wind flow. This flow causes upwelling of cold ocean water from below the surface, which produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts to the south, resulting in wind flows offshore, the absence of upwelling, and an increase in the occurrence of storms. Winter stagnation episodes are characterized by nocturnal drainage wind flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the Air Basin.

Criteria Air Pollutants

The Federal Clean Air Act (FCAA) establishes the framework for modern air pollution control. The FCAA, enacted in 1970 and amended in 1990, directs the Environmental Protection Agency (EPA) to establish ambient air quality standards. These standards are divided into primary and secondary standards. The former are set to protect human health, and the latter are set to protect environmental values, such as plant and animal life. The FCAA requires the EPA to set National Ambient Air Quality Standards for the six criteria air pollutants. These pollutants include particulate matter (PM), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. Appendix A includes a detailed definition of each of these criteria pollutants. According to the BAAQMD, ozone and fine particulate matter (PM_{2.5}) are the major regional air pollutants of concern in the San Francisco Bay Area. Ozone is primarily an issue in the summer and PM_{2.5} in the winter (BAAQMD 2015).

Air Quality Standards

According to CARB, "Federal clean air laws require areas with unhealthy levels of ozone, inhalable PM, carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop plans, known as State Implementation Plans (SIPs). A SIP is prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The 1990 amendments to the FCCA set deadlines for attainment based on the severity of an area's air pollution problem" (CARB 2013).

The SIP for the State of California is administered by the CARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for each regional air district. SIPs are prepared by the regional air district and sent to CARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

The CARB also administers the California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the California Clean Air Act. The 10 State air pollutants include the six federal criteria pollutant standards listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The federal and state ambient air quality standards are summarized in Table 3.3-1.

Table 3.3-1: California and National Ambient Air Quality Standards

Pollutant	Averaging	California Standards	National Standards	
	Time	Concentration	Primary	Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m ³)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	
Respirable Particulate Matter	24 Hour	50 µg/m ³	150 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m ³	—	
Fine Particulate Matter	24 Hour	—	35 µg/m ³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m ³	15 µg/m ³	
Carbon Monoxide	1 Hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	—
	8 Hour	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	—
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)	—	—
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	—
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as Primary Standard
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)	—
	3 Hour	—	—	0.5 ppm (1300 µg/m ³)

Pollutant	Averaging	California Standards	National Standards	
	Time	Concentration	Primary	Secondary
	24 Hour	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
Lead	30-Day Average	1.5 µg/m ³	—	—
	Calendar Quarter	—	1.5 µg/m ³	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m ³	
Visibility- Reducing Particles	8 Hour	See Footnote 1	No National Standards	
Sulfates	24 Hour	25 µg/m ³		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)		
Notes:				
<p>¹ - 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.</p> <p>mg/m³: milligrams per cubic meter µg/m³: micrograms per cubic meter Source: CARB 2013</p>				

As summarized in Table 3.3-2, the San Francisco Bay Area Basin and Contra Costa County are currently designated as nonattainment areas for state ozone, PM_{2.5}, and PM₁₀ standards, as well as national ozone and PM_{2.5} standards, but are listed as unclassified under national PM₁₀. The standards for CO, NO₂, SO₂, and lead are being met in the Bay Area. Because the Air Basin is nonattainment for the national and State ozone standards, the BAAQMD has prepared an ozone attainment demonstration plan to satisfy the federal 1-hour ozone planning requirement and a clean air plan to satisfy the state 1-hour ozone planning requirement. The 2010 Clean Air Plan, which was adopted in September 2010, builds from and incorporates components of the 2005 Ozone Strategy and is designed to provide integrated control strategies to reduce ozone, particulate matter, toxic air contaminants, and greenhouse gases (GHGs).

Table 3.3-2: Contra Costa County Area Designations for State and National Ambient Air Quality

Criteria Pollutants	State Designation	National Designation
Ozone	Nonattainment	Nonattainment
PM ₁₀	Nonattainment	Unclassified
PM _{2.5}	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	Attainment	—
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	—
Visibility Reducing Particles	Unclassified	—
Source: CARB 2013		

Nearly all development projects in the Bay Area have the potential to generate air pollutants that may increase the difficulty of attaining federal and State AAQS. Therefore, for most projects, evaluation of air quality impacts is required to comply with CEQA. In order to help public agencies evaluate air quality impacts, the BAAQMD has developed the CEQA Air Quality Guidelines. The BAAQMD's guide includes recommended thresholds of significance, including mass emission thresholds for construction-related and operational ozone precursors. The

BAAQMD's guide also includes screening criteria for localized CO emissions and thresholds for new stationary sources of Toxic Air Contaminants (TACs).

In June 2010, the BAAQMD adopted significance thresholds for reactive organic gases (ROG), NO_x, construction-related particulate matter, operational CO, and CO_{2e} (Table 3.3-3). The thresholds were challenged in a lawsuit, and on March 5, 2012, the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the thresholds. Although the District does not recommend that the thresholds be used as an applicable measure of a project's significance impact, the thresholds were used in this analysis as they are useful for comparative purposes.

Table 3.3-3: 2010 BAAQMD Proposed Project-Level Air Quality CEQA Thresholds of Significance

Criteria Pollutants	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (regional)	Average Daily Emissions (lb/day)	Average Daily Emissions (lb/day)	Maximum Annual Emissions (tpy)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀ (exhaust)	82	82	15
PM _{2.5} (exhaust)	54	54	10
PM ₁₀ /PM _{2.5} (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
GHGs (projects other than stationary sources)	None	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO _{2e} /yr OR 4.6 MT CO _{2e} /SP/yr (residents + employees)	
Notes:			

Criteria Pollutants	Construction-Related	Operational-Related
lb/day= pounds per day tpy= trips per year MT CO ₂ e= metric tons of carbon dioxide equivalent per year MT CO ₂ e/SP/yr= metric tons of carbon dioxide equivalent per service population per year Source: BAAQMD 2010		

The BAAQMD has established rules and regulations to attain and maintain state and national air quality standards. The rules and regulations that apply to this proposed project include, but are not limited to, the following:

Regulation 2, Rule 2

New Source Review. This rule requires any new source resulting in an increase of any criteria pollutant to be evaluated for adherence to best available control technology. For compression internal combustion engines, best available control technology requires that the generator be fired on "California Diesel Fuel" (fuel oil with a sulfur content less than 0.05 percent by weight and less than 20 percent by volume of aromatic hydrocarbons). All stationary internal combustion engines larger than 50 horsepower must obtain a Permit to Operate. If the engine is diesel-fueled, then it must also comply with the District-administered Statewide Air Toxics Control Measure for Stationary Diesel Engines.

Regulation 2, Rule 5

New Source Review of Toxic Air Contaminants. This rule applies to preconstruction review of new and modified sources of toxic air contaminants, contains project health risk limits, and requires Toxics Best Available Control Technology.

Regulation 8, Rule 3

Architectural Coatings. This rule governs the manufacture, distribution, and sale of architectural coatings and limits the reactive organic gas (ROG) content in paints and paint solvents. Although this rule does not directly apply to the proposed project, it does dictate the ROG content of paint available for use during the construction.

Regulation 8, Rule 15

Emulsified and Liquid Asphalts. Although this rule does not directly apply to the proposed project, it does dictate the ROG content of asphalt available for use during the construction through regulating the sale and use of asphalt and limits the ROG content in asphalt.

Additionally, as a component of the 2003 General Plan, the City has adopted policies to minimize air pollutant emissions within the Antioch planning area. The following policies are applicable to the proposed project:

10.6.2 Air Quality Policies

Construction Emissions

a. Require development projects to minimize the generation of particulate emissions during construction through implementation of the dust abatement actions outlined in the CEQA Handbook of the BAAQMD.

3.3.2 Methodology

The potential Project-related impacts are discussed below. In order to assess potential air quality generated from the proposed Project, the California Emissions Estimator Model (CalEEMod) was run using estimations of project construction activities and predicted future operational emissions. As of August 5, 2013, the BAAQMD requires the use of the CalEEMod for CEQA-related air quality and GHG analyses. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. The model inputs were based on information from the project design as of 2016, which then included 32 residential units. As the project has been reduced to 30 units, the resulting impacts will be less than this analysis. The inputs use the default CalEEMod values, as well as the following assumptions (the model output and detailed assumptions are provided in Appendix A:

- Construction activities would last approximately 18 to 24 months to complete;
- Construction would occur in sequential phases;
- The residential lots would be an average of approximately 5,332 square feet; and
- The 32 single-family residential du, once constructed, would generate approximately 368 daily trips.

As mentioned above, the BAAQMD adopted significance thresholds for construction-related and operational ROG, NO_x, particulate matter, operational CO, and CO_{2e}, in June 2010. Although the District does not recommend that the thresholds be used as an applicable measure of a project's significance impact, the thresholds were used in this analysis as they are useful for comparative purposes.

3.3.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

As discussed above, the BAAQMD is in nonattainment for state and federal ozone and PM_{2.5} and state PM₁₀. As a result, the BAAQMD has established ozone, PM_{2.5} and PM₁₀ air quality plans to reduce pollutant emissions within the basin and attain state and federal air quality standards.

In order to assess the proposed project's potential to obstruct implementation of the BAAQMD air quality plans, localized criteria pollutant emissions were analyzed, as these are the pollutants with established ambient air quality standards. Potential localized impacts would include exceedances of state or federal standards for PM and ozone. Particulate matter emissions, primarily PM₁₀, are of concern during construction because of potential fugitive dust emissions during earth-disturbing activities. Ozone emissions are generated from increased hauling and the use of off-road heavy-duty diesel equipment used for site grading and paving during construction.

Air quality modeling was performed using project-specific details in order to determine whether the proposed project would result in criteria air pollutant emissions in excess of the applicable thresholds of significance. Presented in Table 3.3-4, the proposed project's construction- and operations-related emissions have been estimated using CalEEMod. The results of the unmitigated emissions modeling were compared to the 2010 BAAQMD standards of significance, summarized in Table 3.3-3, in order to determine the associated level of impact.

Construction Emissions

During construction of the proposed project, various types of equipment and vehicles would temporarily operate on the proposed project site. Construction exhaust emissions would be generated from construction equipment, earth movement activities, construction workers' commutes, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which includes PM₁₀ emissions.

Because the BAAQMD is in nonattainment for federal and state ozone and PM_{2.5}, and state PM₁₀, see Table 3.3-2 and in accordance with the General Plan, Mitigation Measure AIR-1 would be implemented to reduce the potential for project emissions to obstruct the implementation of an air quality plan or substantially contribute to an existing air quality violation.

Additionally, CARB has adopted regulations to control emissions from portable equipment as a component of the state's air quality plans. All applicable portable engines and off-road equipment must be registered with CARB's portable engine and off-road equipment programs

and would align with the requirements set forth in the attainment plans. In order to control emissions from portable equipment Mitigation Measure AIR-2: Implement BMPs to Reduce Impacts on Air Quality from Construction Equipment would be implemented to reduce equipment idling times and ensure properly maintained equipment.

Operational Emissions

Operational emissions of criteria pollutants would be generated by the proposed project from both mobile and stationary sources. Day-to-day activities such as future residents' vehicle trips to and from the proposed project site would make up the majority of the mobile emissions. Emissions would also occur from area sources such as natural gas combustion from heating mechanisms, landscape maintenance equipment exhaust, and consumer products (e.g., deodorants and cleaning products).

The modeling performed for the proposed project included compliance with BAAQMD rules and regulations. The project-specific vehicle trip rates based on the Final Transportation Impact Study prepared for the proposed project by Stantec were applied to CalEEMod as well. The study concluded that the housing development would generate approximately 368 vehicle trips per day. The proposed project's estimated operational emissions are presented in Table 3.3-5. As shown in the table, the proposed project's operational emissions would not exceed the BAAQMD 2010 recommended thresholds of significance.

Conclusion

Because the proposed project would not result in emissions in excess of applicable thresholds of significance during construction or operation, the proposed project would not be considered to conflict with or obstruct implementation of an applicable air quality plan. Additionally, Mitigation Measure AIR-1, which includes the implementation of a fugitive dust control plan, would be incorporated to ensure that PM emissions are kept to a minimum, and Mitigation Measure AIR-2 would be implemented to reduce emissions from construction equipment emissions. Therefore, impacts would be considered less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AIR-1: The selected contractor shall be required to prepare and implement a dust control plan prior to construction. A range of mitigation measures will be conducted throughout the construction period to limit and control dust, including the use of water or other such agents to be placed on roads, grading and excavation areas, and exposed soil in a manner that minimizes the generation of dust. In the absence of rain, these measures will be implemented in all seasons during which grading, excavation, and earth moving, or other work occurs.

The Dust Control Plan measures shall include:

- 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 track-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; and
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency 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.

MM AIR-2: Implementation of BMPs to reduce impacts on air quality from construction equipment shall be implemented to ensure emissions generated during proposed project construction activities are maintained at regulatory levels by requiring the following actions by the construction contractor:

- 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;
- 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.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact AIR-2 Violate any air quality standard or contribute to an existing or projected air quality violation?

Impact Analysis

As discussed above, Contra Costa County and the BAAQMD are in nonattainment for state and federal ozone and PM_{2.5} and state PM₁₀. In order to attain state and federal air quality standards, the 2010 Clean Air Plan was adopted September 2010. It is designed to provide integrated control strategies to reduce ozone, particulate matter, toxic air contaminants, and GHGs. Additionally, the General Plan and the Bay Area Plan have adopted goals, policies, and rules to improve air quality within Antioch and the Bay Area region.

In addition to the 2010 Clean Air Plan, the BAAQMD attempted to establish significance thresholds for construction-related and operational ROG and NO_x (ozone precursors), PM₁₀ and PM_{2.5} from vehicle exhaust emissions, PM₁₀ from fugitive dust, and local CO (see Table 3.3-3). As described above, these thresholds are not binding to the BAAQMD but are useful for comparative purposes. According to the BAAQMD CEQA Guidelines, if a project exceeds the identified significance thresholds, the project would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Except for NO_x, ROG, and localized CO emissions, land use development projects do not typically have the potential to result in concentrations of criteria air pollutants that exceed or contribute to an exceedance of the respective standards. Criteria air pollutants are predominantly generated in the form of mobile-source exhaust from vehicle trips associated with the land use development project, which typically occur throughout a paved network of roads. Accordingly, associated exhaust emissions of criteria air pollutants are distributed over the roadway network and are not typically generated in any single location. Operational vehicle travel-related emissions of PM₁₀ and PM_{2.5} could have the potential to exceed their respective standards if a project would generate a high volume of vehicle trips on unpaved roadways.

In order to assess the proposed project's potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation, localized criteria pollutant emissions were analyzed since these are the pollutants with established ambient air quality standards. Potential localized impacts would include exceedances of state or federal standards for PM, CO, and ozone. Particulate matter emissions, primarily PM₁₀, are of concern during construction because of potential fugitive dust emissions during earth-disturbing activities. CO emissions are of concern during project operation because CO hotspots can be created due to increases in on-road vehicle congestion. Ozone emissions are generated from increased hauling and the use of off-road vehicles during construction.

Although the thresholds adopted by the BAAQMD in 2010 are not binding, they are useful for comparative purposes. In 2010, the BAAQMD did not establish thresholds specifically for fugitive dust emissions but adopted a threshold for PM₁₀ emissions from vehicle exhaust of 82 lb/day. In regards to CO, the BAAQMD developed a 9.0 ppm (8 hour average), 20.0 ppm (1 hour average) threshold. The BAAQMD did not establish thresholds specifically for ozone emissions but provided recommended thresholds for ROG and NO_x of 54 lb/day for each pollutant. Any

project that causes an exceedance of the threshold or of any state or federal ambient air quality standard, or contributes significantly to an existing exceedance, would be considered a significant impact.

Air quality modeling was performed using project-specific details in order to determine whether the proposed project would result in criteria air pollutant emissions in excess of the applicable thresholds of significance. Presented in Table 3.3-3, the proposed project's construction-related operational emissions have been estimated using project-specific data, where available and CalEEMod default values. The results of both construction and operational emissions estimations were compared to the standards of significance required by the BAAQMD in order to determine the associated level of impact. The following discussions provide project-specific emissions evaluations for construction and operation in a summary format; in addition, all CalEEMod modeling outputs are included in Appendix B.

Construction Emissions

During construction of the proposed project, various types of equipment and vehicles would temporarily operate on the project site. Air quality impacts from construction activities are generally associated with the combustion of fossil fuels from the operation of internal combustion engines (portable equipment, off-road equipment, and vehicles), fugitive dust generated from earth moving activities, and ROG/VOC emissions from architectural coating. The proposed project's maximum estimated unmitigated emissions, according to CalEEMod, are presented in Table 3.3-4. As summarized in Table 3.3-4, emissions of criteria pollutants would temporarily increase during construction activities and ROG/VOC emissions would temporarily exceed the 2010 BAAQMD significance thresholds during architectural coating. All other criteria pollutant emissions would be below the 2010 BAAQMD thresholds.

Table 3.3-4: Project Construction Emissions Estimates

	Overall Construction lbs./day (maximum daily emissions – criteria pollutants)			
	ROG/VOC	NO _x	PM ₁₀ (Total)	PM _{2.5} (Total)
Maximum Yearly Unmitigated Construction Emissions	58.5	38.5	8.4	5.4
BAAQMD 2010 Significance Thresholds (lbs./day)	54	54	82	54
Project Emissions Exceed Thresholds	Yes	No	No	No
Source: Stantec 2015, CalEEMod 2013				

Overall, construction of the proposed project would temporarily exceed the BAAQMD significance thresholds for ROG/VOC during architectural coating activities, as summarized in

Table 3.3-4. As recommended by the BAAQMD, Mitigation Measure AIR-3 would be implemented, which includes measures requiring the use of low-VOC paint as described within the local requirements (BAAQMD Regulation 8, Rule 3: Architectural Coatings) during interior and exterior painting of the single family dwellings, and Mitigation Measure AIR-2 to reduce emissions from construction vehicle exhaust. According to the BAAQMD CEQA Guidelines, using low VOC architectural coating applications would represent the same percent VOC reduction in applicable coatings. For example, using 50 g/l VOC limit instead of 100 g/l VOC limit would represent a 50% reduction in overall VOC emission from architectural coating activities. CalEEMod was run using the VOC default values of 100 g/l VOC for interior architectural coating applications and 150 g/l VOC for exterior applications; this represents a worst case scenario. According to BAAQMD Regulation 8, Rule 3: Architectural Coatings, VOC limits applied to the project would include the following: Flat Coatings – 50 g/l, Nonflat Coatings – 100 g/l, and Nonflat High Gloss Coatings – 150 g/l. It is estimated that Mitigation Measure AIR-3 would reduce ROG/VOC emissions by 50 percent for flat coatings and approximately 33 percent for Nonflat Coatings. Therefore, with the implementation of Mitigation Measure AIR-2 and AIR-3, ROG/VOC levels would be reduced below the BAAQMD 2010 thresholds, ensuring that the proposed project would not violate any air quality standards or contribute to an existing air quality violation (i.e., the region's nonattainment status of ozone or PM) during construction.

Operational Emissions

Operational emissions of criteria pollutants would be generated by the proposed project from both mobile and stationary sources. Day-to-day activities such as future residents' vehicle trips to and from the project site would make up the majority of the mobile emissions. Emissions would also occur from area sources such as natural gas combustion from heating mechanisms, landscape maintenance equipment exhaust, and consumer products (e.g., deodorants, cleaning products, and spray paint).

The modeling performed for the proposed project included compliance with BAAQMD rules and regulations. The project-specific vehicle trip rates based on the Transportation Study (Appendix G) prepared for the proposed project by Stantec Consulting Services Inc. were applied to CalEEMod, as well. The study concluded that the 32 single family dwellings would generate approximately 368 vehicle trips per day. The proposed project's estimated operational emissions are presented in Table 3.3-5. As shown in the table, the proposed project's operational emissions would not exceed the BAAQMD 2010 recommended thresholds of significance.

Table 3.3-5: Project Operational Emissions Estimates

	Overall Operational Emissions			
	ROG	NO _x	PM ₁₀ (Total)	PM _{2.5} (Total)
Average Daily Operational-Related Emissions (lbs./day)	4.9	2.9	1.8	0.5
BAAQMD 2010 Significance Thresholds (lbs./day)	54	54	82	54
Project Operational Emissions Exceed Thresholds (lbs/day)	No	No	No	No
Maximum Annual Emissions (tpy)	0.9	0.5	0.3	0.09
BAAQMD 2010 Operational-Related Significance Thresholds (tpy)	10	10	15	10
Project Operational Emissions Exceed Thresholds (tpy)	No	No	No	No
Source: Stantec 2015, CalEEMod 2013				

The proposed project would not generate enough vehicle trips to have a substantial impact on the existing traffic conditions or exceed any air quality standard. The proposed project would not include unpaved roadways during the operational phase and thus operational activities would generate negligible PM fugitive dust emissions. Therefore, in accordance with BAAQMD guidance, the proposed project's operational emissions would not be expected to have a substantial impact.

Conclusion

Overall, with the implementation of Mitigation Measures AIR-1, AIR-2 and AIR-3, the proposed project would not violate any air quality standards or contribute to an existing air quality violation (i.e., the region's nonattainment status of ozone or PM) during operations.

Although the proposed project would result in emissions of ROG/VOCs during architectural coating activities, Mitigation Measure AIR-3 would be implemented to reduce project construction emissions to below applicable thresholds of significance. The proposed project would not result in emissions in excess of thresholds during operation, the proposed project would not violate any air quality standards, contribute to an existing air quality violation, or be considered to conflict with or obstruct implementation of an applicable air quality plan. Therefore, impacts would be considered less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure AIR-1 and AIR-2 are required.

MM AIR-3: The following mitigation measure shall be implemented to ensure that VOC levels are kept at a minimum during architectural coating activities.

- Use low VOC (i.e., ROG) coatings as described in the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings)

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact AIR-3 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Impact Analysis

A cumulative impact analysis considers a project over time in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed. Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants, including ozone and PM, is a result of past and present development, and, thus, cumulative impacts related to these pollutants could be considered cumulatively significant. Future attainment of standards is a function of successful implementation of BAAQMD attainment plans. Consequently, the BAAQMD's approach to cumulative thresholds of significance is relevant to whether a project's individual emissions would result in a cumulatively considerable contribution to the Bay Area existing cumulative impacts related to air quality conditions. According to the BAAQMD CEQA Guidelines, if a project's emissions would be less than BAAQMD thresholds, the project would not be expected to result in a cumulatively considerable contribution to a significant cumulative impact. However, exceedance of the project-level thresholds would not necessarily constitute a significant cumulative impact. As discussed above, emissions of ROG/VOC would temporarily exceed the 2010 BAAQMD significance thresholds during architectural coating activities. All other criteria pollutant emissions would be below the 2010 BAAQMD thresholds. Mitigation Measure AIR-3: Use of low VOC paint would be implemented to reduce emissions of ROG/VOCs. In addition, the proposed project would be required to comply with all applicable BAAQMD rules and regulations. Therefore, the proposed project's individual emissions would not be expected to result in a cumulatively considerable contribution to a significant cumulative impact, and impacts would be considered less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure AIR-3 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact AIR-4 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. Existing sensitive receptors in the vicinity of the project site include residential properties west of the proposed project and one property to the east.

The proposed project involves the development of 32 new single family residential housing units; refer to Section 2.0, Project Description for greater detail. The existing nearby residences to the east and west of the proposed project would be considered sensitive receptors. The major pollutant concentrations of concern are localized CO emissions and TAC emissions, both of which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the proposed project would increase traffic volumes on streets near the project site; therefore, the proposed project would be expected to increase local CO concentrations. Concentrations of CO approaching the ambient air quality standards are only expected where background levels, traffic volumes, congestion levels are high. The BAAQMD's preliminary screening methodology for localized CO emissions provides a conservative indication of whether project-generated vehicle trips would result in the generation of CO emissions that contribute to an exceedance of the applicable threshold of significance. According to the BAAQMD CEQA Guidelines, the 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, a regional transportation plan, and local congestion management agency plans.

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

The project traffic 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, below-grade roadway).

According to the Transportation Study (Appendix G), prepared August 11, 2015, for the proposed project by Stantec Consulting Services Inc., the proposed project would not generate traffic that would result in deterioration of an intersection from acceptable Level of Service (LOS) LOS A through D to LOS E or F under existing plus project conditions. Project generated trips were distributed to the two access roads, at the existing Prewett Ranch Drive located west of the project and Heidorn Ranch Road via the proposed Prewett Ranch Drive extension to the east. According to the traffic study, it is anticipated that the proposed project would generate 368 vehicle trips per day; thus, the additional vehicle trips generated by the proposed project would not increase traffic volumes to more than 44,000 vehicles per hour. Therefore, in accordance with BAAQMD's second tier screening criteria, the proposed project would not be expected to result in the generation of localized CO emissions in excess of the applicable threshold of significance.

TAC Emissions

The CARB Handbook provides recommendations for siting new sensitive land uses near sources typically associated with significant levels of TAC emissions, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure.

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road, heavy-duty diesel equipment used for site grading, paving, and other construction activities result in the generation of DPM. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. In addition, only portions of the site would be disturbed at a time and with the operation of construction equipment regulated by federal, state, and local regulations. These include BAAQMD rules and regulations and occur intermittently throughout the course of a day. The likelihood that any one sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low. As described in Impact AIR-1, CARB has adopted regulations to control emissions from portable equipment as a component of the state's air quality plans. As a part of

project construction, all applicable portable engines and off-road equipment must be registered with CARB's portable engine and off-road equipment programs and would align with the requirements set forth in the attainment plans.

Operational-related emissions of TACs are typically associated with stationary diesel engines or land uses that involve heavy truck traffic or idling. The proposed project includes single family residential housing that would not require deliveries from heavy truck traffic or necessitate idling as part of product deliveries. Additionally, the proposed project would not be located near high traffic freeways, high use rail lines, or stationary high pollutant emitters. Therefore, overall, the proposed project would not expose any existing sensitive receptors to any new permanent or substantial TAC emissions.

Conclusion

As discussed above, the proposed project would not cause or be exposed to substantial pollutant concentrations, including localized CO or TAC emissions or DPM. Therefore, exposure of sensitive receptors to substantial pollutant concentrations would not occur and the impact is less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-5 Create objectionable odors affecting a substantial number of people?

Impact Analysis

Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact do not exist. According to the CARB's Handbook, some of the most common sources of odor complaints received by local air districts are sewage treatment plants, landfills, recycling facilities, waste transfer stations, petroleum refineries, biomass operations, autobody shops, coating operations, fiberglass manufacturing, foundries, rendering plants, and livestock operations. The project site is not located near any such land uses, and the proposed project would not introduce any such land uses.

Residential, retail, or office land uses are not typically associated with the creation of substantial objectionable odors. Diesel fumes from construction equipment are often found to be

objectionable. Construction, however, is temporary and associated diesel emissions would be regulated per federal, state, and local regulation, including compliance with all applicable BAAQMD rules and regulations. This would help to control construction-related odorous emissions. Therefore, construction of the proposed project would not be expected to create objectionable odors affecting a substantial number of people.

For the aforementioned reasons, construction and operation of the proposed project would not create objectionable odors, nor would the project site be affected by any existing sources of substantial objectionable odors, and a less than significant impact related to objectionable odors would result.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.4 BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.4.1 Environmental Setting

The project site is located in the City of Antioch, Contra Costa County, California (Figure 2.0-1). The project site is located on the west side of Heidorn Ranch Road at the eastern terminus of Prewett Ranch Drive, on the undeveloped parcel identified as APN 056-130-012 (Figure 2.0-2). The project site is located in an area generally containing non-native annual grasslands and agriculturally developed lands. In addition, the greater project area contains extensive areas under residential and commercial development. Non-native annual grasslands are dominant throughout the extent of the project site.

3.4.2 Methodology

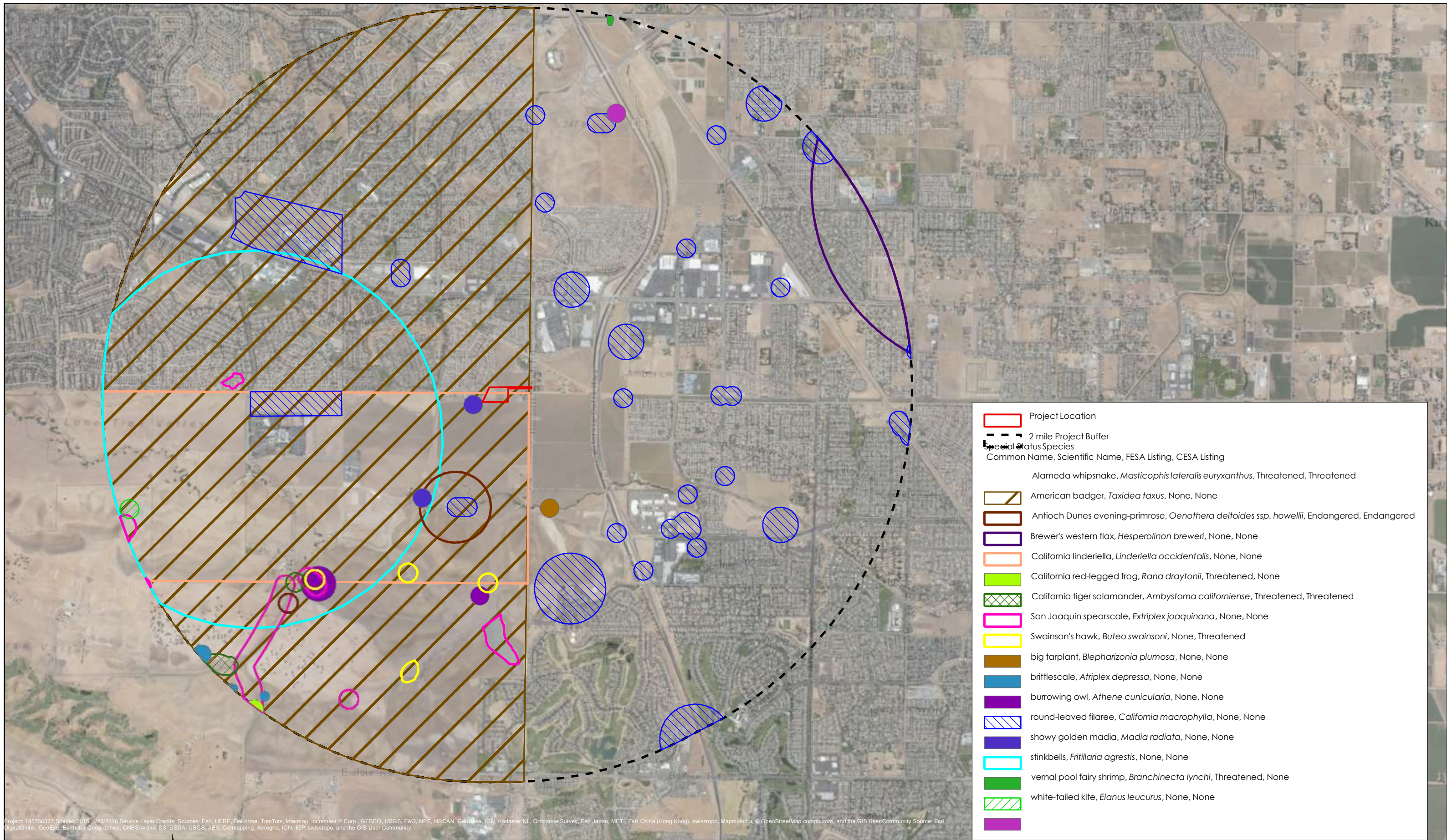
Prior to reconnaissance-level field surveys, Stantec conducted background research for existing biological resources within the project site and project region. Background research was focused on reviewing federally listed species as defined by the U.S. Fish and Wildlife Service (USFWS), California State listed species and State sensitive species as defined by California Department of Fish and Wildlife (CDFW), as well as vegetation that has a degree of concern as defined by the California Native Plant Society (CNPS) California Rare Plant Ranking (CRPR). Environmental setting baseline data on sensitive species known to occur in the project vicinity from the California Natural Diversity Database (CNDDDB) is included in Figure 3.4-1.

Specifically, the resources reviewed include:

- California Natural Diversity Database (CNDDDB) records search for Endangered, Threatened, and sensitive species within two miles of the project site (CNDDDB 2015);
- Federally threatened or endangered species list from the USFWS website (USFWS 2015),
- California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California records for the North Antioch, South Antioch, Brentwood and Jersey Island USGS 7.5-minute quadrangles (CNPS 2015);
- Aerial photographs and topographic maps of the project site and surrounding area.

CDFW and the CNPS have developed a standard classification system for floristically describing vegetation communities/habitats statewide, further translating to the National Vegetation Classification (NVC). The CDFW and CNPS system has been compiled in *A Manual for California Vegetation, 2nd Edition* (Sawyer et al. 2009), and has been accepted and adopted by State and federal agencies. The Manual of California Vegetation (MCV) classifications assist in defining vegetation based on quantitative based rules to distinguish between vegetation community types, local variation, ecological land classification /composition, species rarity and significance, and historical and current land management practices.

The MCV defines vegetation communities by dominant and/or co-dominant species present as: 1A) alliance- a broad unit of vegetation with discernable and related characteristics; 1B) provisional alliance- a temporary vegetation community and/or candidate alliance; and/or 2)



Project Location	
[Red rectangle]	Project Location
2 mile Project Buffer	
Special Status Species	
[Symbol]	Common Name, Scientific Name, FESA Listing, CESA Listing
[Symbol]	Alameda whipsnake, <i>Masticophis lateralis euryxanthus</i> , Threatened, Threatened
[Symbol]	American badger, <i>Taxidea taxus</i> , None, None
[Symbol]	Antioch Dunes evening-primrose, <i>Oenothera deltooides</i> ssp. <i>howellii</i> , Endangered, Endangered
[Symbol]	Brewer's western flax, <i>Hesperolinon breweri</i> , None, None
[Symbol]	California linderiella, <i>Linderiella occidentalis</i> , None, None
[Symbol]	California red-legged frog, <i>Rana draytonii</i> , Threatened, None
[Symbol]	California tiger salamander, <i>Ambystoma californiense</i> , Threatened, Threatened
[Symbol]	San Joaquin spearscale, <i>Extriplex joaquinana</i> , None, None
[Symbol]	Swainson's hawk, <i>Buteo swainsoni</i> , None, Threatened
[Symbol]	big tarplant, <i>Blepharizonia plumosa</i> , None, None
[Symbol]	brittle scale, <i>Atriplex depressa</i> , None, None
[Symbol]	burrowing owl, <i>Athene cunicularia</i> , None, None
[Symbol]	round-leaved filaree, <i>California macrophylla</i> , None, None
[Symbol]	showy golden madia, <i>Madia radiata</i> , None, None
[Symbol]	stinkbells, <i>Fritillaria agrestis</i> , None, None
[Symbol]	vernal pool fairy shrimp, <i>Branchinecta lynchi</i> , Threatened, None
[Symbol]	white-tailed kite, <i>Elanus leucurus</i> , None, None
[Symbol]	

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Figure 3.4-1 CNDDB
Quail Cove Subdivision Project

association a basic secondary unit of classification, not as broad as an alliance, with uniform composition and conditions. The MCV classifications replace lists of vegetation types developed for the CNDDDB. The biological community in the project site has been classified using MCV standards (Sawyer et al. 2009) and is detailed below.

Reconnaissance-Level Biological Resources Survey

A reconnaissance-level survey was conducted on August 5, 2015 of the Biological Survey Area (BSA), which included the project site and a 500 foot buffer where the buffer could be walked. If the buffer was located on an adjacent parcel that area was surveyed from the edge of the property using high powered binoculars. The primary objective of the reconnaissance-level survey was to document and confirm existing conditions and determine the potential presence of sensitive biological resources.

The field survey was conducted on foot between the hours of 08:00 a.m. and 11:15 a.m. The objective of the survey was not to extensively search for every species occurring within the project site, but to ascertain general project site conditions and identify potentially suitable habitat for various sensitive plant and wildlife species. During this site visit, the Stantec biologist walked transects within the project site to assure maximum coverage of the site. In addition to walking transects on the project site, the Stantec biologist included a 500 foot buffer of the project site where possible.

During the reconnaissance-level survey, a western burrowing owl (*Athene cunicularia hypugaea*) habitat assessment was conducted to determine the presence of the species on the project site or the potential for the project site to support sensitive species. Weather conditions during the survey included an average temperature of 70 °F with winds ranging from two to seven miles per hour and no cloud cover. Per the CDFW Staff Report on Burrowing Owl Mitigation, "Surveys have greater detection probability if conducted when ambient temperatures are >20°C, <12 kilometers per hour (km/hr.) winds, and cloud cover is <75 percent" (CDFW 2012). The survey consisted of a Stantec biologist walking the entire project site as well as a 500 foot buffer (where possible) of the site while searching for suitable burrows to support burrowing owls and burrowing owl signs (e.g., whitewash, pellets, and feathers). During the survey, two owls were observed to be occupying a single burrow near the southwestern extents of the BSA (see attached Project Photo Record in Appendix C).

Field notes and photos taken during that evaluation are included in this IS/MND as Appendix C. The impact analysis below is based on the background research completed prior to field surveys and the results of the reconnaissance-level biological resources survey. No federally listed species were observed within the BSA, but State-listed and special status sensitive species were observed including black walnut and western burrowing owl. No sensitive habitats or nesting migratory birds were observed during the site visit conducted on August 5, 2015.

The following habitat associations described below were observed in the BSA. In addition, based on a review of available information (including the CNDDDB and USFWS species lists) and the results of the field surveys, the following special status wildlife species have a moderate potential to occur within and/or adjacent to the BSA: Swainson's hawk (*Buteo swainsoni*), white-tailed kite

(*Elanus leucurus*), and western burrowing owl. Four special status plant species have the potential to occur at the project site. One species, black walnut, is known to occur within the BSA. In addition, Brewer's western flax (*Hesperolinon breweri*), round-leaved filaree (*California macrophylla*), and showy golden madia (*Madia radiata*) have a moderate potential to occur. A discussion for each of these species and a discussion of the Alameda whipsnake, which is both State and federally listed, are presented below.

Non-Native Annual Grassland Herbaceous Alliance

Native grasslands within the project site have been degraded due to encroachment from non-native species and development; thus decreasing biodiversity and habitat suitability. Species composition in non-native annual grassland habitats is similar to those exhibited in pastures. Within the ruderal habitat of the project site, the dominant ecological features include invasive vegetation species, and moderate slopes in the southcentral portion of the project site. The observed vegetation species present within the BSA include: yellow star thistle (*Centaurea solstitialis*), black mustard (*Brassica nigra*), Russian thistle (*Kali tragus*), wild radish (*Raphanus sativus*), slender oats (*Avena barbata*), common wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*) and other non-native annual grasses. Non-native annual grasslands are dominant throughout the extent of the project site.

Alameda whipsnake

The Alameda whipsnake, also called the striped racer, is a black to brown snake with two yellowish stripes along the back. Alameda whipsnakes are listed as State and Federally Threatened. The species is endemic to California and occupies a relatively small range in the Bay Area of California. Habitat for this species is threatened by development. On November 1, 2006 the USFWS designated 154,834 acres of land as critical habitat for the species to aid in conservation and recovery. The designated critical habitat (DCH) is located in Alameda, Contra Costa, Santa Clara, and San Joaquin Counties, California; however, DCH habitat and suitable habitat for this species is not found within the BSA. No Alameda whipsnakes were observed during the field survey conducted on August 5, 2015. Therefore, the project would not impact this species given the lack of suitable habitat for it within the BSA.

Western Burrowing Owl

Western burrowing owls nest and shelter in ground squirrel and other suitable small mammal burrows or artificial structures. Low grading and sparse vegetation also provides suitable foraging habitat for the species. *Burrowing owls and their nesting habitat are protected by federal law, as well as by State laws and codes. The U.S. Fish and Wildlife Service consider the species to be a "Species of Concern" or "Species at Risk", although these designations are not formally recognized under the Endangered Species Act. At the State level, the burrowing owl was listed in 1978 by the California Department of Fish and Wildlife (CDFW) as a Species of Special Concern, a category that has legal implications. As a special status species, the burrowing owl is protected from direct and indirect impacts to birds and nests. Because disturbing nesting owls is a significant impact, measures to avoid or reduce the impact must be identified. California Department of Fish and Wildlife Codes §3503, §3503.5, and §3800 also prohibit the take,*

possession, or destruction of birds, their nests or their eggs. To prevent take, project related disturbances in active nest territories must be reduced or eliminated during the nesting season, February 15 to August 31. "Take" includes activities that cause nest abandonment, loss of reproductive effort, or loss of habitat necessary for owl survival and reproduction. Such activities would also violate the Migratory Bird Treaty Act. Due to their semi-subterranean lifestyle, burrowing owls can go undetected and be inadvertently destroyed by ground-disturbing activities such as plowing, disking, soil stock-piling, or grading.

According to the CNDDDB, there *have been* multiple known occurrences of western burrowing owls within two miles of the project site (Figure 3.4-1). Given the presence of suitable habitat at the project site (sparse vegetation and ground squirrel burrows) and the one known active burrow (observed August 5, 2015), nesting burrowing owl surveys should be conducted to determine if burrowing owls or active burrows exist within the project site. If active burrows are observed mitigation measures should be used as outlined in 3.4.3.

Swainson's Hawk

Swainson's hawk is protected under the MBTA and is listed as State Threatened in California. Swainson's hawks migrate annually from winter areas in South America to breeding locations in northwestern Canada, the western United States, and Mexico (CDFW). In the Central Valley, Swainson's hawks forage in large, open agricultural habitats, including alfalfa and hay fields mainly for small rodents (CDFW). Nest sites are found in trees in riparian corridors or adjacent to agricultural fields. Breeding season occurs from approximately late March through late August, with peak activities occurring from late May through July. Threats to the Swainson's hawk include loss of habitat primarily from development and pesticide poisoning (CDFW).

Limited suitable foraging habitat exists within the project site, but there are multiple known occurrences of this species within two miles of the project site (Figure 3.4-1). No Swainson's hawks were observed in the project site during field survey conducted on August 5, 2015. However, trees and foraging habitat within the vicinity of the BSA provide suitable habitat for this species.

White-tailed Kite

The white-tailed kite is a California fully protected species and is also protected under the MBTA. White-tailed kites nest in trees adjacent to grasslands, oak woodland, and on edges of riparian habitats (Polite 2005). They are year-round residents in California often observed in agricultural areas, herbaceous and open cismontane habitats.

No white-tailed kites were observed in the project site during field surveys conducted on August 5, 2015. However, suitable nesting habitat for this species exists adjacent to the BSA and a known occurrence was documented within two miles of the BSA (Figure 3.4-1).

Brewer's Western Flax CNPS 1B.2

Brewer's western flax is an annual herb that blooms between May and July and is endemic to California. The species occurs on the eastern slope of the coastal range within the delta region

of California. The species can be found between 30 to 945 meter elevations and is largely associated with serpentine soils; however, the species is also known to occur in chaparral and well as valley and foothill grassland. The species is primarily threatened by habitat loss from development (CNPS 2016). This species was not observed during the site visit on August 5, 2015; however, the field survey conducted within the site visit was conducted outside of the species' bloom period amid several years of drought.

Black Walnut CNPS 1B.1 or 4.2

Seven black walnut trees (*Juglans sp.*) were observed within the project area during reconnaissance-level biological surveys conducted on August 5, 2015. Exact classification of the observed black walnut trees was not determined at that time. A qualified biologist should be sent to the project site to determine if the trees are Northern California black walnut (*Juglans hindsii*) or Southern California black walnut (*Juglans californica*). See Impact BIO-1 for additional survey requirements.

Both species of black walnut are endemic to California. The native range of the Southern California black walnut is primarily the Los Angeles basin extending west along the coastal range near the Santa Barbara area. Southern California black walnuts have been introduced to other parts of California and have an affinity to hybridize with other walnut species. The species has a bloom period between March and August and occurs between 50 to 900 meters.

The Northern California black walnut's native range is the San Francisco Bay Area extending inland to the delta region of the Central Valley. The Northern California black walnut also has an affinity to hybridize with other walnut species leading to genetic dilution of the native strain. The species is known to occur at elevations between 0 to 440 meters.

Round-leaved Filaree CNPS 1B.2

Round-leaved filaree is an annual herb that is found in Oregon, California and the Baja peninsula of Mexico. The species blooms between March and May at elevations between 10 – 1200 meters. In California, the species is found along the coastal range and within the foothills of the southern Sierra near Bakersfield, CA. The species prefers clay soils within valley and foothill grasslands. The species is primarily threatened by the habitat loss from urbanization and habitat alteration (CNPS 2016). This species was not observed during the site visit on August 5, 2015, however this site visit was conducted outside of the species' bloom period amid several years of drought.

Showy Golden Madia CNPS 1B.1

Showy golden madia is an annual herb that blooms between March and May and is endemic to California. The species primarily occurs along the eastern slope of the coastal range as far north as the Bay Area extending south to the Transverse Range near the Los Padres National Forest. The species is primarily found as elevations between 20 – 1215 meters and primarily associated with cismontane woodland and valley and foothill grassland. The species is primarily threatened by habitat loss and grazing (CNPS 2016). This species was not observed during the

site visit on August 5, 2015; however, this site visit was conducted outside of the species' bloom period amid several years of drought.

Common Wildlife

Common wildlife species observed within the project site during reconnaissance-level surveys conducted on August 5, 2015 include northern mockingbird (*Mimus polyglottos*), rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), California ground squirrel (*Otospermophilus beecheyi*), cricket (*Gryllidae*), American kestrel (*Falco sparverius*), horse-fly (*Tabanidae*), Eurasian collared-dove (*Streptopelia decaocto*), Brewer's blackbird (*Euphagus cyanocephalus*), dragonfly (*Anisoptera*), damselfly (*Zygoptera*) and black-tailed jackrabbit (*Lepus californicus*).

3.4.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact BIO-1 Have a substantial adverse effect, either directly or through habitat modifications on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact Analysis

Special-Status Plant Species

One special status plant species, black walnut, was observed in the BSA during the biological survey conducted on August 5, 2015. The species is not federally or State listed; however, the species is listed as 4.2 or 1B.1 by CNPS, which is a listing for plants with limited distribution and are considered watch list species (CNPS 2016) a qualified biologist should be sent to the project site to determine the species prior to construction. Three other special status plants (Brewer's western flax, round-leaved filaree and showy golden madia) have a moderate potential to occur with suitable habitat for those species found within the BSA. Pre-construction botanical surveys for special status plants should be conducted in the project area during the appropriate blooming periods, and should be performed by a qualified botanist following CDFW and CNPS protocols for surveying special status native plants. Implementation of Mitigation Measure BIO-1 is recommended and if any of these species are documented during special-status plants surveys, consultations with CDFW are recommended.

Special-Status Wildlife Species

During the reconnaissance-level biological field survey of the project site on August 5, 2015, two western burrowing owls were observed occupying a burrow near the southwestern extents of the project site. Additional western burrowing owl surveys should be implemented prior to construction to determine the potential of the project to impact western burrowing owls. If they are found to occur prior to construction, additional mitigation and consultations with CDFW would be required (see Mitigation Measure BIO-2 below).

Trees located within and adjacent to the BSA provide habitat suitable for various nesting raptors and birds protected by the Migratory Bird Treaty Act (MBTA). During the field surveys, no nesting bird species protected under the MBTA and CESA were observed in the BSA; however, pre-construction surveys should occur prior to construction activity if construction is to be initiated during the nesting season. In addition, raptors such as the white-tailed kite are fully protected under Fish and Game Code Section 3511. Fully protected raptors cannot be taken or possessed (that is, kept in captivity) at any time. Standard nesting bird pre-construction mitigation is proposed (see Mitigation Measure BIO-3) that would reduce potentially significant impacts to a level of less than significant. This mitigation would only apply to ground disturbing and vegetation removal activities that occur between February 15 and August 31. Ground disturbance and vegetation removal that occurs outside of this window would not require additional measures. With the implementation of mitigation, impacts would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-1: To avoid or minimize impacts to endangered, threatened, rare, and/or special status plants that have a potential to occur within the project area, pre-construction surveys shall be conducted. Pre-construction surveys shall be timed to cover the early-bloom (typically February through April) and mid-bloom (typically May through July) floristic periods for special status plant species with a potential to occur in the project site. Within the BSA, a special status plant pre-construction survey could be implemented in late April or early May in order to document whether any of the potential special status plant species occur within the BSA. Surveys shall be performed by a qualified botanist, and follow CDFW and CNPS protocols for surveying special status native plants.

- If special status plants are determined to have no presence in the project site, then no further mitigation is required.
- If special status plants are determined to be present within the project site during pre-construction field surveys, project activities shall be reduced and minimized to avoid impact by:
 - a. Mapping the population and placing flagging and/or exclusion fencing to protect special status plants within the project site during construction. Install environmentally sensitive fencing and appropriate signage at an appropriate buffer distance, starting from the edge of the special status plant and/ or plant population. Signage should indicate the area is environmentally sensitive and not to be disturbed;
 - b. Adjust project activities away from special status plants to the extent feasible in order to minimize impacts to extant populations.

- c. Supervision, guidance, and verification of the implementation of these measures shall be achieved by the County and an agency approved biological monitor (i.e., a qualified biologist or botanist approved by the City, CDFW, and USFWS).
- If special status plants are determined present in the project site during pre-construction field surveys and direct/unavoidable impacts to special status plants shall result from project activities, then consultation with appropriate agencies (i.e., CDFW and/or USFWS) shall be required to develop acceptable mitigation (e.g., agency recommended mitigation may include translocation of individual plants, rectification of impact by seed collecting and stockpiling for replanting/replacement, mitigation fees, and/or permitting).

MM BIO-2: To avoid disturbance of Western Burrowing Owls and active Western Burrowing Owl burrows, the following shall be implemented:

- A pre-construction survey would be conducted by a qualified biologist for burrowing owls within 30 days of the on-set of construction. This survey would be conducted according to methods described in the Staff Report on Burrowing Owl Mitigation (CDFW 2012). All suitable habitats of the site would be covered during this survey.
- If pre-construction surveys undertaken during the breeding season (February 1 through August 31) locate active nest burrows within or near construction zones, these nests, and an appropriate buffer around them (as determined by a qualified biologist) would remain off-limits to construction until the breeding season is over or until a qualified biologist has determined that the natal burrow is no longer in use.
- During the non-breeding season (September 1 through January 31), resident owls may be relocated to alternative habitat. The relocation of resident owls must be according to a relocation plan prepared by a qualified biologist. Passive relocation would be the preferred method of relocation. This plan must provide for the owl's relocation to nearby lands possessing available nesting and foraging habitat.

MM BIO-3: Depending on the specific construction timeframe, to avoid disturbing nesting raptors and other migratory birds, the following measures would be implemented:

- If construction activities are scheduled to occur during the nesting season (approximately February 15 through August 31), a qualified wildlife biologist shall be retained to conduct a pre-construction nesting survey within the appropriate habitat.
 - a. Surveys shall be conducted within the project site and all potential nesting habitat within 500 feet of this area (this distance covers recommended Swainson's hawk and western burrowing owl buffers);
 - b. The surveys should be conducted within one week before initiation of construction activities at any time between February 15 and August 31. If no active nests are detected, then no additional mitigation is required; or
 - c. If surveys indicate that migratory bird nests are found in any areas that would be directly or indirectly affected by construction activities, a no-disturbance buffer shall

be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (typically late June to mid-July). The extent of these buffers shall be determined by a qualified biologist and shall depend on the special status species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors should be analyzed to make an appropriate decision on buffer distances.

- If construction activities begin outside the breeding season (approximately September 1 through February 14) then construction may proceed until it is determined that an active migratory bird or raptor nest would be subject to abandonment as a result of construction activities. Optimally, all necessary vegetation removal should be conducted before the breeding season so that nesting birds would not be present in the construction area during construction activities. If any bird nests are in the project site under pre-existing construction conditions, then it is assumed that they are habituated (or would habituate) to the construction activities. Under this scenario, the pre-construction survey described previously should still be conducted on or after February 15 to identify any active nests in the vicinity. Active sites should be monitored by a qualified biologist periodically until after the breeding season or after the young have fledged (typically late June to mid-July). If active nests are identified on or immediately adjacent to the project site, then all non-essential construction activities (e.g., equipment storage and meetings) should be avoided in the immediate vicinity of the nest site, but the remainder of construction activities may proceed.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact BIO-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish or U.S. Fish and Wildlife Service?

Impact Analysis

The project site is not located within any riparian habitat or other sensitive natural community identified within a local or regional plan, policy, and regulation, or by CDFW and USFWS. Therefore, the proposed project would have no impact to sensitive habitats.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-3 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact Analysis

The project site does not contain any federally protected wetlands and would therefore have no impacts to them. Therefore, the proposed project would not be subject to regulations covered under Section 404 of the Clean Water Act.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-4 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?

Impact Analysis

Wildlife movement corridors are important habitats that allow wildlife to travel, migrate, or disperse between significant habitats (Harris and Gallagher 1989). Wildlife movement corridors have been recognized by federal agencies such as the USFWS and the State of California as important habitats worthy of conservation. In general, movement corridors are comprised of areas of undisturbed land cover that connects larger, contiguous habitats.

Construction activities and/or removal of vegetation could cause temporary disturbance to common wildlife movements within the BSA; however, the extent of this disturbance would be limited as wildlife could move around the area given the availability of neighboring open space adjacent to the project site. As a result, the proposed project construction and operation is expected to have a less than significant impact on species' movements. Thus, the potential impacts to native resident or migratory wildlife species are considered less than significant with no mitigation required.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact BIO-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Impact Analysis

The proposed project does not conflict with any local policy or ordinance protecting biological resources, including any policy or ordinance related to tree preservation. None of the trees at the project site meet the City's criteria for Landmark and/or Heritage tree status; nor are they included on the City's Indigenous Tree List.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact BIO-6 Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?

Impact Analysis

The proposed project would not conflict with an approved habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.

Level of Significance After Mitigation

No Impact.

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3.5 CULTURAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.5.1 Environmental Setting

Cultural resources reflect the history, diversity, and culture of the region and people who created them. They are unique in that they are often the only remaining evidence of activity that occurred in the past. Cultural resources can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built environment resources, including but not necessarily limited to buildings, structures, objects, districts, and sites. Cultural resources include sites of important events, traditional cultural places and sacred sites, and places associated with an important person. Any cultural resources that are determined to be eligible for listing on the California Register of Historical Resources (CRHR) are referred to as “historical resources” as per Public Resources Code Section 15064.5. A Cultural Resources Technical Memorandum for the proposed project is included in Appendix D.

Project Area

The project area encompasses all areas subject to construction-related impacts, including staging areas and grading limits. The project area is approximately 5.59 acres. These boundaries are considered appropriate and include the areas that are expected to be disturbed by the proposed project.

History of the City of Antioch

The City is located in the northeastern portion of Contra Costa County, and shares a border with the City of Oakley to the east, the City of Pittsburg to the west, and the City of Brentwood to the southeast. The north side of the City faces the Sacramento-San Joaquin Delta. In general, the

City is urbanized with residential, commercial, and industrial land uses. Open space is scattered throughout the northern and southern portions of the City and accounts for approximately 50 percent of the land within the City. Archaeological materials discovered during the cultural resources clearance of the Los Vaqueros Reservoir about 12 miles south of the City were dated to around 9500 years before present (BP) (Erlandson et al. 2007). At the time of sustained European contact, northeastern Contra Costa County was occupied by speakers of the Bay Miwok language. The initial Spanish and Mexican development in the area consisted of ranching activities, while early American development consisted of coal mining and agriculture (Samuelson et al. 1994).

Prehistoric Context

The City is located in the Delta which formed an interface zone between the San Francisco Bay Area and the Central Valley culture regions (Moratto 1984). Californian Native Americans within the Delta area developed a sophisticated material culture, became central figures within an extensive trade system incorporating distant and neighboring regions, and achieved population densities equaled only by agricultural societies in the American Southwest and Southeast. In this area, prehistory is generally broken up into five periods: the Paleoindian Period (13,500–10,500 BP), the Lower Archaic Period (10,500–7,500 BP), the Middle Archaic Period (7,500–2,500 BP), the Upper Archaic Period (2,500–850 BP), and the Emergent Period (850–150 BP) (Rosenthal et al. 2007).

The oldest identified archaeological sites near Antioch date to the Lower Archaic. Archaeological deposits from this period are dominated by large projectile points and stone milling implements for the processing of plant foods, primarily acorns. By the Middle Archaic, rising sea levels pushed inland caused the formation of the Delta. The resulting wetlands provided inhabitants with abundant food resources and led to the establishment of long-term village sites. The early part of the Middle Archaic in Contra Costa County is not well understood due to considerable soil accumulation in the area, but more sites have been found dating to after 4,500 BP. These sites contain elaborate and diverse assemblages of artifacts that reflect complex societies focused on resources available along rivers and in marshes, called the Windmill Pattern. One of the important markers of Windmill Pattern sites is burials wherein the individuals were placed in an extended position facing west. The Upper Archaic is characterized by increasingly complex material culture and the establishment of large mounded village sites surrounding the Delta (Rosenthal et al. 2007). This cultural expression is called the Berkeley Pattern and likely represents the entry of Miwok-speaking people into the area from the northern Bay Area and southern North Coastal Ranges, displacing the Windmill Pattern around 2,500 BP (Moratto 1984; Rosenthal et al. 2007). The presence of mortars and pestles indicate the people's reliance on acorns as a staple food source. The cultural traditions observed during the time of European contact developed during the Emergent Period. This highly complex culture is referred to as the Augustine Pattern and was most likely brought to the area by Patwin speakers from the north. This pattern included use of the bow and arrow and complex societies with large, populous villages focused on both riverine resources and extensive gathering of acorns (Moratto 1984; Rosenthal et al. 2007).

Ethnographic Context

When encountered by Spanish missionaries and colonists, the inhabitants of eastern Contra Costa County spoke dialects of Bay Miwok. This language belongs to the Eastern Miwok division of the Miwok language family, part of the wider Penutian linguistic stock (Golla 2011). The Bay Miwok ethnolinguistic group was organized into a number of different "tribelets," small social and political entities that occupied a distinct territory. Each tribelet contained a principal village surrounded by several smaller villages and numerous campsites used during the seasonal gathering of different resources (Levy 1978). There have been different interpretations of the locations of Bay Miwok villages, however current ethnohistorical research indicates that the southeastern portions of the City, including the project site, was in the territory of the *Julpun* tribelet (Milliken et al 2006). The Bay Miwok economy was based on fishing, gathering, and hunting in both the Delta wetlands and the surrounding hills. These areas provided diverse set of resources including acorns, various seeds, salmon, deer, rabbits, insects, and quail (City of Antioch 2003). The Bay Miwok primarily lived in conical thatch houses made of tules, but may have also constructed semi-subterranean earth-covered houses (Levy 1978). According to the General Plan EIR, it is estimated that 1,700 Bay Miwok were living in five tribelets in northeastern Contra Costa County at the time of arrival of the Spanish. Aggressive missionization of the Native Californians in Contra Costa County took place as the indigenous coastal populations declined, with most ending up in Misión San José. This resulted in Bay Miwok resistance to the Spanish colonist, culminating in a series of small-scale wars between the Spanish and the Miwok peoples. In the 1830s and 1840s, American and British trappers brought diseases into the Central Valley, decimating the indigenous populations (Levy 1978). No Bay Miwok groups exist today as federally-recognized tribes. However, some Bay Miwok descendants are members of the Muwekma Ohlone California Native American tribe, who trace their ancestry to Misión San José and the terminated Federally Recognized Verona Band of Alameda County (Muwekma Ohlone 2015). Other Bay Miwok descendants may have membership in other modern Miwok groups, such as the Wilton Rancheria of Sacramento County (Wilton Rancheria 2015).

Historic-era Context

Spanish Period

The recorded history of Contra Costa County began with the arrival of the Fages-Crespi expedition in 1772, which expanded the exploration initiated by the Spanish in the Bay Area in 1769 (City of Antioch 2003). Subsequently, the Abella expedition (1811), the Arguello expedition (1813), and the Duran and Arguello expedition (1817) passed near the project area (Beck and Haase 1974). Baptismal records show that Native Californians from near the project area were removed to both Mission San Francisco de Asís and Mission San José in the late 18th and early 19th centuries (Levy 1978). As noted above, the relations between the Spanish colonists and the Bay Miwok groups were generally hostile, leading to a series of small-scale wars.

Mexican Period

Once Mexico gained independence from Spain in 1821, lands once allocated for the missions and for the Native California inhabitants of the missions were redistributed and granted as land grants or ranchos to citizens in Mexican California. Neither of the two land grants in the City covered the project site, but Rancho Los Medanos, granted to Colonel Johnathan Drake Stevenson in 1839, was located a short distance to the south (Beck and Haase 1974; City of Antioch 2003). Generally, the area was used for grazing livestock, primarily cattle for the hide and tallow trade.

American Period

In 1837, John Marsh, an early settler, bought the Rancho Los Meganos land grant from Noriega and established Marsh's Landing, to the west of present-day Antioch. Marsh's Landing was an important commercial center for trade along the San Joaquin River during the Gold Rush. Eventually, the Smith brothers of New Hampshire acquired the Los Medanos land grant from Stevenson and established Smith's landing, west of Marsh's Landing. On July 4, 1851, Smith's Landing was renamed Antioch after the biblical city (City of Antioch 2003).

From the 1850s to the 1880s five boomtowns developed within the vicinity of the City. The coal mining industry developed in the City with the establishment of the Black Diamond, Cumberland, Mount Hope, Empire, and Central Mines in the Mount Diablo coal field, south of Antioch (City of Antioch 2003). The closest mine to the project site is the Empire Mine and in 1878 the Empire Railroad was established, running from the coalfields to the Antioch waterfront. However, due to rising costs, diminishing profits, and played out coal deposits, these towns and mines eventually disappeared in the late 19th century, with the last, the Black Diamond Mine, closing in 1907 (Samuelson et al. 1994). Throughout the historic district in Antioch and the Black Diamond Mines Regional Park, there are numerous monuments, and plaques acknowledging the City's once thriving coal mining industry.

By 1909, the Oakland and Antioch Railway connected Antioch to the greater Bay Area by rail. As a result, Antioch became a manufacturing center for diversified industries such as pottery, a distillery, canneries, brickyards, and paper mills (City of Antioch 2003). In the 1920s, the Black Diamond Mining area started to be mined for silica sand for use in glassmaking and foundry casting. This continued until the late 1940s when most of the area was converted to ranching (Samuelson et al. 1994). Today, the City is experiencing dramatic growth as housing is developed for the increasing population of the San Francisco Bay Area (City of Antioch 2003).

Historical Resources

Prehistoric cultural resources in the San Francisco Bay region tend to be located near sources of fresh water, along the bayshore, and in the hills of Contra Costa County. Therefore, it is likely that additional unidentified prehistoric cultural resources exist within the Antioch area. The rapid urbanization of the study area during the late 20th century may have resulted in the burial of unknown cultural resources under modern development (City of Antioch 2003).

According to the General Plan EIR, the City is home to a variety of historic-period cultural resources, ranging from landmark commercial buildings, to Victorian, Craftsman, and Modern-style homes, to churches, schools, and civic buildings. There are 20 historical archaeological sites recorded within the City. Additionally, 56 of Antioch's historic-era buildings, 4 monuments, and vanished sites are listed on national, State, and local registers of historic properties and landmarks. The Antioch waterfront is also a distinctive resource both on- and offshore (City of Antioch 2003).

Native American Consultation

As of August 2015, no California Native American Tribes have notified the City regarding their interest to engage in consultation under Assembly Bill 52 (AB 52). Thus, the City was not able to receive comments on the proposed project from any Tribes and was not able to receive any information from the Tribes regarding tribal cultural resources in or around the project site. In order to make a good faith effort to involve the Tribes, on September 14, 2015, a request was sent to the California State Native American Heritage Commission (NAHC) to provide a list of Native American individuals/organizations to contact or further consultation and to check the

Sacred Lands File for information on any tribal cultural resources within or adjacent to the project site. On January 28, 2016, the NAHC was contacted again asking for a response to the original request sent in September 2015. No response has been received as of the date of this report. The forthcoming response and subsequent Native American outreach efforts would be included as an addendum to the cultural resources technical memorandum for the project.

3.5.2 Methodology

The existing cultural resources setting and potential impacts from project implementation on the project site and its surrounding area are based on record searches at the Northwest Information Center and the NAHC, as well as a pedestrian survey conducted within the project boundaries.

Records Search and Literature Review

On August 10, 2015, a Stantec Archaeologist requested a records search at the Northwest Information Center (NWIC) at California State University, Sonoma (Figure 3.5-1). The results of the records search were provided on August 20, 2015. Records consulted at the CWIC included the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Historic Landmarks list, topographic maps showing the locations of sites are surveys, and historic topographic maps. A 0.5-mile search radius was utilized. Stantec reviewed a series of U.S. Geological Survey versions of the Elmira Quadrangle. Based on the review of these maps, the area surrounding the project site has transitioned from rural agricultural to suburban residential over the past 60 years.

Research showed that part of the project area has been surveyed for cultural resources, and areas within the 0.5-mile search radius have been surveyed over the years. Table 3.5-1 provides a list of surveys within the search radius that were conducted in the last five years, the number of years that a survey remains current according to the Office of Historic Preservation's guidelines, while Table 3.5-2 provides a list of surveys that were conducted prior to that five year mark.

Table 3.5-1: Cultural Resources Studies Conducted in the Last Five Years in 0.50 Mile of the Project Site

Report Number	Author	Year	Title	In Project Site?
S-036622	B Siskin, C DeBaker, and J Lang	2008	Cultural Resources Investigation and Architectural Evaluation for the Contra Costa to Las Positas Reconductoring of the 230 kV Transmission Line, Contra Costa County and Alameda County, California	No
S-037839	P Farnsworth	2010	Archaeological Survey and Cultural Resources Assessment of the SR-4 Bypass SR-4/160 Connectors, Contra Costa County, California (letter report)	No
S-038392	A Whitaker	2010	PG&E Contra-Costa to Moraga Reconductoring Project (letter report)	No

Environmental Checklist and Environmental Evaluation

S-039618	M Russell and N Fino	2012	Cultural Resources Assessment Report, Northeast Antioch Reorganization, Antioch, Contra Costa County, California	No
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Table 3.5-2: Cultural Resources Studies Conducted Prior to Five Years ago in 0.50 Mile of the Project Site

Report Number	Author	Year	Title	In Project Site?
S-001978	A. Aiello	1960	The Islands of Contra Costa	No
S-000595	R King	1974	A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five Mile Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California	No
S-017835	Judy Myers Suchey	1975	Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium	No

Report Number	Author	Year	Title	In Project Site?
S-000848	D Fredrickson	1977	Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources	No
S-005208	G Greenway and W Soule	1977	Sacramento-San Joaquin Delta Investigations: Cultural Resources Reconnaissance	No
S-009462	T Miller	1977	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	No
S-009583	D. Mayfield	1978	Ecology of the Pre-Spanish San Francisco Bay Area	No
S-001451	D Chavez	1979	Cultural Resources Evaluation of the Hillcrest Development Location in the City of Antioch (letter report)	No
S-011826	D Theodoratus, M Peters, C Blount, P McGuire, R Ambro, M Crist, B Peck, and M Saxe	1980	Montezuma I and II Cultural Resources	No
S-002458	S Ramiller, N Ramiller, R Werner, and S. Stewart	1981	Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda	No
S-009795	T Jackson	1986	Late Prehistoric Obsidian Exchange in Central California	No
S-009054	P M Quick	1987	An archaeological survey of the Village Creek Apartments property in Antioch (letter report)	No
S-012320	William Self Assoc.	1990	Cultural Resources Assessment Report for Lone Tree Valley Feasibility Study, Contra Costa County, CA.	Yes
S-012790	K Owens	1991	Sacramento-San Joaquin Delta, California: Historical Resources Overview	No
S-013256	A Bramlette, M Praetzellis, A Praetzellis, K Dowdall, P Brunmeier, and D Fredrickson	1991	Archaeological Resources Inventory for Los Vaqueros Water Conveyance Alignments, Contra Costa County, California	No
S-016660	J Fentress	1992	Prehistoric Rock Art of Alameda and Contra Costa Counties, California	No

Report Number	Author	Year	Title	In Project Site?
S-017773	A Banet	1992	Contract 04E634-EP, Task Order #9, Historic Map Review for CALTRANS Maintenance Facilities (letter report)	No
S-015529	R Gearhart II, C Bond, S Hoyt, J Cleland, J Anderson, P Snethcamp, G Wesson, J Neville, K Marcus, A York, and J Wilson	1993	California, Oregon, and Washington: Archaeological Resource Study	No
S-016916	A Samuelson, C Rice, and W Self	1994	Archeological Survey Report Future Urban Area 1, Antioch, Contra Costa County, California	Yes
S-023674	M Moratto, R Pettigrew, B Price, L Ross, R Schalk, R Atwell, A Bailey, G Bowyer, R Bryson, T Canaday, D Gardner, W Hildebrandt, K Katsura, C Lebow, P Mikkelsen	1994	Archaeological Investigations, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California (Volume I, II, III, IV, V)	No
S-033545	National Park Service	1994	Draft Comprehensive Management and Use Plan and Environmental Impact Statement, Juan Bautista de Anza National Historic Trail, Arizona and California	No
S-017993	B Hatoff, B Voss, S Waechter, S Wee, and V Bente	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project	No
S-018217	G Gmoser	1996	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report: April 1996	No
S-018440	G. J West and P Welch	1996	Class II Archaeological Survey of the Contra Costa Canal, Contra Costa County, California	No
S-022812	C Busby	1997	Contra Costa County Water Multipurpose Pipeline Project, Environmental Documentation Study, Cultural Resources Review (letter report)	No
S-020395	D Gillette	1998	PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?	No
S-022464	Jones & Stokes Assoc.	1999	Cultural Resource Inventory Report for the Williams Communications, Inc. Fiber Optic Cable System Installation Project, Pittsburg to Sacramento, California	No

Report Number	Author	Year	Title	In Project Site?
S-028811	K Popetz and W Self	2003	Cultural Resources Assessment Report, State Route 4 Bypass Segment 1, Contra Costa County, California	No
S-031375	M. K Lewis, K Heidecker, M Bunse, D. C Young, and J Rosenthal	2004	State Route 4 (East) Widening Project: Loveridge Road to State Route 160, 04-CC-4-KP 37.8/R47.6 (PM 23.5/R29.6), EA 04275-228500, Contra Costa County	No
S-029690	S Billat	2005	Collocation on PG&E tower and new equipment shelter, East Antioch/CA-2424B, Willow Road, Antioch, CA.	No
S-031171	M Carper and K Tremaine	2005	Cultural Resources Inventory Report: Trembath and Oakley Floodwater Control Basins, Antioch, California.	No
S-032596	R Milliken, J King, and P Mikkelsen	2006	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways	No
S-033600	J Meyer and J Rosenthal	2007	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	No
S-035244	S Baker and L Shoup	2007	eBart Transit Corridor EIR/EIS, Historic Resource Evaluation Report: East Contra Costa Irrigation District Main Canal System, eBart Project, Contra Costa County, California	No
S-035244	L Shoup	2007	eBart Transit Corridor EIR/EIS, Historic Resources Evaluation Report: San Pablo & Tulare Railroad/Central Pacific Railroad (Southern Pacific Railroad/Union Pacific Railroad), eBart Project, Contra Costa County, California	No
S-035244	W Hill, L Shoup, M Dobkin, and S Baker	2007	DRAFT #2, eBART Transit Corridor EIR/EIS, Historic Resources Evaluation Report: Historic Architecture of the eBART Project, Contra Costa County, California	No
S-035244	S Baker and L Shoup	2007	eBART Transit Corridor EIR/EIS, Positive Archaeological Survey Report: eBART Project, Contra Costa County, California (Union Pacific Mococo Line Alternative)	No

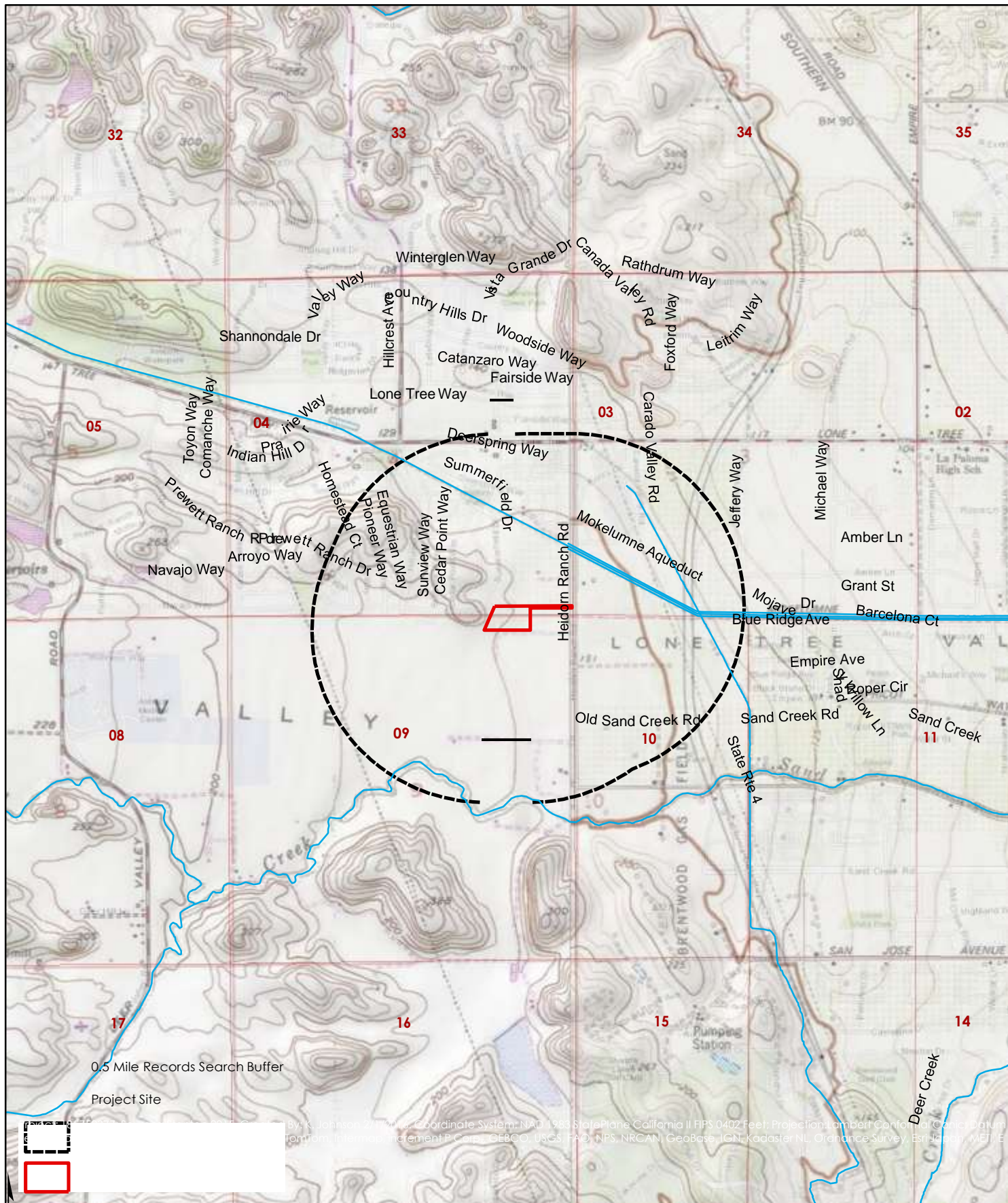
Report Number	Author	Year	Title	In Project Site?
S-035244	S Baker and L Shoup	2008	eBart Project EIR, Archaeological Survey Report: eBart Project, Contra Costa County, California	No

There have been no surveys of the project site conducted within the last 5 years. Two studies, *Archeological Survey Report Future Urban Area 1, Antioch, Contra Costa County, California* (Samuelson et al. 1994) and *Cultural Resources Assessment Report for Lone Tree Valley Feasibility Study, Contra Costa County, California* (William Self Assoc. 1990), covered 4 acres of the southern portion of the project site, but did not identify any cultural resources as being present during the study. Table 3.5-3 lists the cultural resources that have been recorded in the 0.50 mile search radius of the project site.

Table 3.5-3: Known Cultural Resources Located Within 0.50 Mile of the Project Site

Primary Number	In Project Site?	Age	Resource type	CRHR Eligible
P-07-000005	No	Historic-era	Ranch outpost with habitation features.	Unknown
P-07-000015	No	Historic-era	Foundation and ruins of the Lone Tree School	Unknown
P-07-002951	No	Historic-era	Contra Costa Las Positas Transmission Line	No

No buildings or other construction are shown within the project site on historical USGS topographic maps (USGS and ESRI 2015). Aerial and satellite photographs of the project site revealed that the property was used for agriculture until recently, with an orchard planted on the property subsequent to 1939 and prior to 1953 (Google Earth 2015; USGS 1953). Differential growth patterns in the vegetation covering the ground surface indicates that a stream channel passed through the center of the project site, but was filled prior to 1939 (Google Earth 2015). No stream is shown on any of the historical maps consulted. The presence of the stream channel increases the likelihood of encountering previously unknown prehistoric cultural resources, as the lifeways of the prehistoric inhabitants of the area emphasized wetland and riparian resources.



By: K. Johnson 2/17/16 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet; Projection: Lambert Conformal Conic Datum; Datum: International Reference Ellipsoid; GCS: GCRS; UTM; USGS; FAD; NPS; NRCAN; GeoBase; IGN; Kadaster NL; Ordnance Survey; Esri; DeLorme; NAVTEQ;



Feet
Scale: 1:24,000

Figure 3.5-1
Cultural Resources Records Search Area
Quail Cove Subdivision Project

Field Survey

A qualified Stantec Archaeologist conducted a field survey of the project area on August 28, 2015 that consisted of examining all of the areas mentioned in the project area. The project area was evaluated for the presence of prehistoric and historic site indications. The survey used transects spaced between 15 meters and 20 meters apart and examined the entire project area, with periodic boot scrapes conducted to examine the soils and gauge the presence of shallowly buried subsurface archaeological materials. Periodic boot scrapes were also administered. Ground visibility was poor with the majority of soil covered with a cover crop.

The survey found that the project area has been subject to historic and modern disturbances, primarily from grading or disking as a result of planting the cover crop. The western portion of the project site is covered by a large dirt pile from earthmoving activities. Satellite photos indicate that this is the result of construction of the housing developments to the west (Google Earth 2015). The archaeologist did not observe any built environment or archaeological cultural resources during the survey. No other historic-era or prehistoric cultural resources were observed within or immediately adjacent to the project area.

3.5.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact CUL-1 Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of no historic resources within or near the study area. Furthermore, initial field review of the project area did not identify any potential historic resources within or adjacent to the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential historical resources.

However, subsurface construction activities such as trenching and grading associated with the project could potentially damage or destroy previously undiscovered historical resources. This is considered a potentially significant impact. Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface historic resources. With the implementation of this mitigation measure, potential impacts would be reduced to a level of less than significant.

Level of Significance before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-1: If any cultural resource is encountered during ground disturbance or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50-foot radius of the identified potential resource shall cease until a Secretary of the Interior qualified archaeologist evaluates the item for its significance and records the item on the appropriate State Department of Parks and Recreation (DPR) 523 series forms. All forms and associated reports would be submitted to the NWIC of the California Historical Resources Information System (CHRIS). The archaeologist shall determine whether the resource requires further study. If, after the qualified archaeologist conducts appropriate technical analyses, the resource is determined to be eligible for listing on the California Register of Historical Resources or as a unique archaeological resource as defined in Public Resources Code Section 15064.5, the archaeologist shall develop a plan for the treatment of the resource. This shall contain appropriate mitigation measures, including avoidance, preservation in place, data recovery excavation, or other appropriate measures, as outlined in Public Resources Code Section 21083.2.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Impact Analysis

The archival records search performed as part of the cultural resources analysis resulted in the identification of no known prehistoric or historic-era archaeological resources within or near the project area. Furthermore, initial field review of the project area did not identify any signs of previously unidentified subsurface archaeological resources within or adjacent to the project area. Thus, the proposed project is not anticipated to have an impact on any known or potential historical resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered unique archaeological resources. This is considered a potentially significant impact. Mitigation Measure CUL-1 is proposed requiring implementation of standard inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface unique archaeological resources. With the implementation of this mitigation measure, potential impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure CUL-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-3 Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074?

Impact Analysis

The search of the NAHC Sacred Lands File and consultation with California Native American Tribes failed to identify any tribal cultural resources in or adjacent to the project site. However, it is possible that subsurface construction activities or other ground disturbance could encounter previously unidentified archaeological materials that could be considered by the Tribe to be tribal cultural resources. Implementation of Mitigation Measure CUL-2 would help reduce the severity of impacts to any unanticipated tribal cultural resources to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-2: If a prehistoric or ethnographic period archaeological resource is encountered during ground disturbance or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50-foot radius of the identified potential resource shall cease and a list of representatives of California Native American Tribes identified by the NAHC would be contacted. Construction activities shall not resume until the tribal representative has had an opportunity to evaluate the archaeological resource for its potential as a tribal cultural resource. If it is determined that the cultural materials do constitute a tribal cultural resource, further mitigation and/or recommendations for the treatment and protection of the resource would be developed in consultation with the Tribes.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact CUL-4 Disturb any human remains, including those interred outside of formal cemeteries?

Impact Analysis

There are no known human remains within the project area, however, ground disturbance and subsurface construction activities such as trenching and grading associated with the proposed project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. With the implementation of Mitigation Measure CUL-3 impacts would be reduced to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-3: If ground-disturbing activities uncover previously unknown human remains, Section 7050.5 of the California Health and Safety Code applies, and the following procedures shall be followed:

There shall be no further excavation or disturbance of the area where the human remains were found or within 50 feet of the find until the Contra Costa County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project site and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 27460, et seq. Excavation or disturbance of the area where the human remains were found or within 50 feet of the find shall not be permitted to re-commence until the Coroner determines that the remains are not subject to the provisions of law concerning investigation of the circumstances, manner, and cause of any death. If the Coroner determines the remains are Native American, the Coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the MLD's recommendations, the owner or the MLD may request mediation by NAHC.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

3.6 GEOLOGY AND SOILS

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

3.6.1 Environmental Setting

The following background setting information focuses on the existing topography of the project site, the underlying bedrock, site seismicity, as well as the general conditions and expansiveness of the on-site soils. A Geotechnical Study, dated April 10, 2015, was prepared for the project site by TRC Solutions; Stantec conducted a third-party review of the geotechnical study on September 15, 2015 (Appendix F).

The City is located on the western boundary of the Great Valley geomorphic province, which is composed of a trough in which sediments have been deposited almost continuously for the last 160 million years. Directly west of Antioch is the Coast Ranges geomorphic province, which is a relatively geologically young and seismically-active region on the western margin of the North American plate, composed of thick Mesozoic and Cenozoic sedimentary strata (California Geological Survey 2002)

The Alquist-Priolo Special Studies Zone Act of December 1972 (AP Zone Act) regulates development near active faults in order to mitigate the hazard of surface fault rupture. The AP Zone Act requires that the State Geologist (Chief of the California Department of Mines and Geology [CDMG]) delineates "special study zones" along known active faults in California. Cities and Counties affected by these zones must regulate certain development projects within these zones. The AP Zone Act prohibits the development of structures for human occupancy across the traces displacement during the last 11,000 years. "Potentially" active faults are those that show evidence of surface displacement during the last 1.6 million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity is sometimes difficult to obtain and locally may not exist.

The City is located in a seismically active region. Major earthquakes have occurred in the vicinity of Antioch in the past, and can be expected to occur again in the near future. An earthquake centered west of Antioch in 1889 demolished many chimneys and created fissures along Main Street (Stover and Coffman 1993). The U.S. Geological Survey's Working Group on California Earthquake Probabilities (WGCEP, 2014) estimates there is a 72 percent chance of at least one magnitude 6.7 earthquake occurring in the San Francisco Bay region between 2014 and 2044. This result is an important outcome of WGCEP's work because any major earthquake can cause damage throughout the region.

Although no known active faults are located on the project site, several major faults are located within a few miles. Both the Greenville Fault, located seven miles southwest of the project site, and the Green Valley Fault, located over 12 miles west of the project site, have been active within the past 200 years; however, each of these faults only have a three percent probability of producing a magnitude 6.7 or greater earthquake prior to 2036 (USGS 2008). The Mt. Diablo Thrust Fault, located approximately 12 miles southwest of the project site, is also considered active but only has a one percent probability of producing a magnitude 6.7 or greater earthquake prior to 2036 (USGS 2008).

A Probabilistic Seismic Hazard Assessment (PSHA) for California was completed by the California Geological Survey to describe the statewide distribution of estimated ground motion throughout

the State. According to that assessment, the project site has a peak ground acceleration (PGA) of approximately 0.50 g with a 10 percent probability of being exceeded in 50 years (California Department of Conservation 2008). The Modified Mercalli (MM) scale is commonly used to measure earthquake intensity due to ground shaking, ranging from I to XII, where I denotes earthquake not felt and XII denotes nearly total damage. Using the MM scale, an average PGA of between 0.34 and 0.65 is classified as an intensity of VIII (USGS 2011). Earthquake resistance of any building is dependent upon an interaction of seismic frequency, intensity, and duration with the structure's height, condition, and construction materials.

Soil properties can affect the construction and maintenance of roads, building foundations, and infrastructure. The soils at the project site are comprised mainly of Altamont Clay and Rincon Clay Loam (NRCS 2014). The City may be susceptible to some soil hazards, such as erosion, shrink/swell potential (expansive soils), and subsidence.

Erosion refers to the removal of soil from exposed bedrock surfaces by water or wind. Although erosion occurs naturally, it is often accelerated by human activities that disturb soil and vegetation. Erosion potential is generally identified on a case-by-case basis, depending on factors such as climate, soil cover, slope conditions, and inherent soil properties.

Shrink/swell potential refers to soils that expand when wet and shrink when dry. Shrink/swell occurs primarily in soils with high clay content and can cause structural damage to foundations and roads that do not have proper structural engineering and are generally less suitable or desirable for development than non-expansive soils.

Subsidence is the sinking of land, usually occurring over broad areas, which can be either natural or induced by human activities such as the over-withdrawal of groundwater, oil and natural gas, and by peat oxidation. Subsidence could produce cracks in pavements and buildings, and may dislocate wells, pipelines, and water drains.

According to the Geotechnical Study prepared for the project site, a subsurface exploration was performed on March 27, 2015 using conventional truck-mounted, solid-flight auger drilling equipment to investigate, sample, and log subsurface soils. Four exploratory borings were drilled to depths of 15 feet below the existing ground surface. Borings EB-1 and EB-2 generally encountered stiff to hard lean clay to a depth of 12 feet. Below 12 feet, borings EB-1 and EB-2 encountered hard fat clay to a depth of 15 feet, the maximum depth explored. Borings EB-3 and EB-4 encountered very stiff to hard fat clay to depths of approximately 4 and 5 feet, respectively. Below the depths of 4 and 5 feet, borings EB-3 and EB-4 generally encountered weathered, friable, and very soft reddish to yellowish brown siltstone and sandstone bedrock to the maximum explored depth of 15 feet.

3.6.2 Methodology

Evaluation of potential geologic and soil impacts was based on a review of documents pertaining to the project site, including the General Plan, the U.S. Department of Agriculture SCS Soil Survey of Contra Costa County, and the Geotechnical Investigation Report prepared for the proposed project (Appendix F). The information obtained from these sources was reviewed and

summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations, as well as the General Plan's goals, policies, and actions presented above.

3.6.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact GEO-1 Expose people or structures to 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?**

Impact Analysis

i) The Geotechnical Investigation Report confirmed that there are no active faults are present on the project site, and there is little risk of fault-related ground rupture onsite. The nearest known active faults to the project site are Greenville Fault, located approximately six miles to the southwest, the Green Valley Fault, located over 12 miles to the west of the project site, and the Mt. Diablo Thrust Fault, located approximately 12 miles to the southwest. Therefore, fault rupture through the site is not anticipated. Less than significant impacts would occur.

ii) The Geotechnical Investigation Report confirmed that strong ground shaking would likely occur at the project site during an earthquake, and because of the proximity of active faults in the region, there would be a strong potential for ground shaking. Based on Equation 11.8-1 of ASCE 7-10, it was estimated that a maximum earthquake geometric mean peak ground acceleration of 0.5g may be likely onsite. As a result, the Geotechnical Report recommended that all applicable California Building Standards Code requirements, as well as additional design recommendations, be incorporated into the proposed project. Implementation of Mitigation Measure GEO-1 would include compliance with the latest adopted edition of the California Building Standards Code and the recommendations of the Geotechnical Report. With the implementation of mitigation, impacts would be reduced to a level of less than significant.

iii) Liquefaction and densification are phenomena associated with loose, cohesionless, sands and gravels subjected to ground shaking during earthquakes, and can result in unacceptable total and/or differential settlements. The Geotechnical Investigation Report confirmed that the site is located within an area that has not been mapped by the State of California for seismically induced liquefaction hazard. The Association of Bay Area Governments maps the site in an area of moderate liquefaction susceptibility. During cyclic ground shaking, such as during earthquakes, cyclically induced stresses may cause increased pore water pressures within the soil matrix, resulting in liquefaction. Liquefied soil may lose shear strength that may lead to large shear deformations and/or flow failure under moderate to high shear stresses, such as beneath foundations or sloping ground (NCEER/NSF, 2001), and in many ways may behave more like a liquid than a solid. Liquefied soil can also settle (compact) as pore pressures dissipate following an earthquake. Limited field data is available on this subject; however, in some cases, settlement on the order of two to three percent of the thickness of the liquefied zone has been measured.

The Geotechnical Investigation Report found that the explorations onsite did not encounter loose or moderately dense granular soils to a depth of 15 feet. Therefore, the report concluded that the risk of liquefaction at the project site is low. Should liquefaction occur below a depth of 15 feet, it was estimated that the consequence of liquefaction would be limited to ground surface settlement of less than 1 inch. Less than significant impacts would occur.

iv) The Geotechnical investigation Report concluded that the project area contains generally flat relief, which precludes the possibility of landslides. No impacts would occur.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Prior to issuance of building permit, the project Applicant shall submit plans to the City for review and approval demonstrating project compliance with the latest adopted edition of the California Building Standards Code seismic requirements and the recommendations of the geotechnical investigation report prepared by TRC Solutions dated April 10, 2015. All soil engineering recommendations and structural foundations shall be designed by a licensed professional engineer. All onsite soil engineering activities shall be conducted under the supervision of a licensed Geotechnical Engineer or Certified Engineering Geologist.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact GEO-2 Result in substantial soil erosion or the loss of topsoil?

Impact Analysis

Construction activities associated with the project site would include removal of vegetation, excavation, and grading; as such, there is potential for erosion to occur. The total impacted area would be greater than one acre. As a result, a Storm Water Pollution Prevention Plan (SWPPP) would be required for the project in accordance with the State Water Resources Control Board Construction General Permit. As part of the SWPPP, the project Applicant would be required to provide erosion control measures to protect topsoil and prevent erosion and runoff throughout the construction process. Mitigation Measure HYD-1 would require the implementation of a SWPPP. With the implementation of mitigation, impacts would be reduced to a level of less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact GEO-3 Be located on strata 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?

Impact Analysis

Densification- If near-surface soils vary in composition both vertically and laterally, strong earthquake shaking can cause non-uniform densification of loose to medium dense cohesionless soil strata. This results in movement of the near-surface soils. The Geotechnical Investigation Report did not find any loose to medium dense cohesionless soils above the design ground water depth of 20 feet; therefore, it concluded that the probability of significant differential settlement of non-saturated sand layers at the site would be below.

Landslide - The Geotechnical Investigation Report found that the site is located in an area that has not been mapped by the California Geological Survey for seismically-induced landslide hazards. The report concluded that the project site area is generally flat. Therefore, the potential of landslides during a seismic event is not a hazard for the site.

Lateral Spreading - Lateral spreading typically occurs as a form of horizontal displacement of relatively flat-lying alluvial material toward an open or "free" face such as an open body of water, channel or excavation. In soils, this movement is generally due to failure along a weak plane and may often be associated with liquefaction. As cracks develop within the weakened material, blocks of soil displace laterally towards the open face. Cracking and lateral movement

may gradually propagate away from the face as blocks continue to break free. The Geotechnical Investigation Report found that Sand Creek is located approximately ½-mile south of the site. Based on the distance to the creek, the design groundwater depth at the site, and the low potential for liquefaction, the report concluded that lateral movement is unlikely to affect the proposed development.

Subsidence – Subsidence is the downward shift of ground surface relative to sea-level. Subsidence typically occurs as a result of the dissolution of limestone, subsurface mining, extraction of natural gas, earthquakes, groundwater pumping and fault rupture. The Geotechnical Investigation Report did not identify any specific concerns relating to subsidence from any of these factors.

Liquefaction – The Geotechnical Investigation Report found that the explorations onsite did not encounter loose or moderately dense granular soils to a depth of 15 feet. Therefore, the report concluded that the risk of liquefaction at the project site is low. Should liquefaction occur below a depth of 15 feet, it was estimated that the consequence of liquefaction would be limited to ground surface settlement of less than 1 inch. Less than significant impacts would occur.

Collapse – The Geotechnical Investigation Report found that the soils onsite would not present the risk of collapse. Therefore, risk of collapse would be low.

Based on the findings above, the proposed project is not located on strata or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Therefore, less than significant impacts would occur. Additionally, implementation of Mitigation Measure GEO-1 would further reduce any potential for impacts to structures.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GEO-4 Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code, creating substantial risks to life or property?

Impact Analysis

Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wetted. The Geotechnical Investigation Report evaluated conditions on the project site and makes site-specific recommendations related to, but not limited to, earthwork, foundations, concrete slabs and pedestrian pavements, retaining walls, and vehicular pavements. To reduce the potential impacts pertaining to expansive soils, the recommendations contained in the report would be

implemented during proposed project construction through the implementation of Mitigation Measure GEO-1. Therefore, following incorporation of mitigation, impacts associated with expansive soils would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure GEO-1 is required.

Level of Significance After Mitigation

Less than Significant Impact With Mitigation.

Impact GEO-5 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Impact Analysis

The proposed project does not include the construction, replacement, or disturbance of septic tanks or alternative wastewater disposal systems. The proposed project would tie into the City's existing sanitary sewer system for disposal of wastewater. Therefore, no impact would occur.

Level of Significance before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance after Mitigation

No Impact.

3.7 GREENHOUSE GASES

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

3.7.1 Environmental Setting

Greenhouse Gases

GHGs and climate change are cumulative global issues. The CARB and EPA regulate GHG emissions within the State of California and the United States, respectively. While the CARB has the primary regulatory responsibility within California for GHG emissions, local agencies can also adopt policies for GHG emission reduction.

Many chemical compounds in the earth's atmosphere act as GHGs, as they absorb and emit radiation within the thermal infrared range. When radiation from the sun reaches the earth's surface, some of it is reflected back into the atmosphere as infrared radiation (heat). GHGs absorb this infrared radiation and trap the heat in the atmosphere. Over time, the amount of energy from the sun to the earth's surface should be approximately equal to the amount of energy radiated back into space, leaving the temperature of the earth's surface roughly constant. Many gases exhibit these "greenhouse" properties. Some of them occur in nature (water vapor, carbon dioxide, methane, and nitrous oxide), while others are exclusively human-made (like gases used for aerosols) (EPA 2014b). The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere include Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), and Fluorinated Gases. A detailed description of these gases is included in Appendix B.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. A project's GHG emissions are at a micro-scale relative to global emissions, but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

For California, climate change in the form of warming has the potential to incur/exacerbate environmental impacts, including, but not limited to, changes to precipitation and runoff patterns, increased agricultural demand for water, inundation of low-lying coastal areas by sea-level rise, and increased incidents and severity of wildfire events (Moser et al. 2009). Cooling of the climate may have the opposite effects. Although certain environmental effects are widely accepted to be a potential hazard to certain locations, such as rising sea level for low-lying coastal areas, it is currently infeasible to predict all environmental effects of climate change on any one location.

In September 2006, then-Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, which requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. AB 32 delegated the authority for implementation to the CARB and directs the CARB to enforce the statewide cap. In accordance with AB 32, CARB prepared the Climate Change Scoping Plan (Scoping Plan) for California, which was approved in 2008. The Scoping Plan provides the outline for actions to reduce California's GHG emissions. Based on the reduction goals called for in the 2008 Scoping Plan, a 29 percent reduction in GHG levels relative to a Business-As-Usual (BAU) scenario would be required to meet 1990 levels by 2020. A BAU scenario is a baseline condition based on what could or would occur on a particular site in the year 2020 without implementation of a proposed project or any required or voluntary GHG reduction measures. A project's BAU scenario is project- and site-specific, and varies from project to project.

In 2011, the baseline or BAU level for the scoping plan was revised to account for the economic downturn and State regulation emission reductions (i.e., Pavley, Low Carbon Fuel Standard [LCFS], and Renewable Portfolio Standard [RPS]). Again, the BAU condition is project site specific and varies. The BAU scenario is based on what could or would occur on a particular site in the year 2020 without implementation of a proposed project or consideration of any State regulation emission reductions or voluntary GHG reduction measures. Accordingly, the scoping plan emission reduction target from BAU levels required to meet 1990 levels by 2020 was modified from 29 percent to 21.7 percent (where BAU levels is based on 2010 levels). The amended scoping plan was re-approved August 24, 2011.

In 2010, the BAAQMD adopted recommendations for GHG guidance for analysis and thresholds of significance; these recommendations have since been challenged in a lawsuit and, although they are not binding to projects in the Bay Area, they provide comparative guidelines. The 2010, guidance recommended an initial project-level threshold of 1,100 MTCO_{2e} or 4.6 MT CO_{2e}/SP/yr. If annual emissions of operation-related GHGs exceed the recommended thresholds, the proposed project would result in a cumulatively significant impact to global climate change.

The City has adopted two separate Climate Action Plans (CAP), the first being the Community CAP and the second, the Municipal CAP. The Community CAP is focused on implementing strategies to reduce GHG emissions through green building design, renewable energy, transit oriented development, and education. The Municipal CAP has been developed to address GHG emissions resulting from municipal operations and infrastructure.

3.7.2 Methodology

The potential project-related impacts are discussed below. In order to assess potential air quality and greenhouse emissions generated from the proposed project, the California Emissions Estimator Model (CalEEMod) was run using estimations of project construction activities and predicted future operational emissions (Appendix B). The model was run using the following assumptions/project details:

- Construction activities would last approximately 18 to 24 months;
- Construction would occur in sequential phases;
- The housing development, once constructed, would generate approximately 368 daily trips.

In June 2010, the BAAQMD adopted significance thresholds for ROG, NO_x, construction related particulate matter, operational CO, and CO_{2e}. The thresholds were challenged in a lawsuit, and on March 5, 2012, the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the thresholds. Although the District does not recommend that the thresholds be used as an applicable measure of a project's significance impact, the thresholds were used in this analysis as they are useful for comparative purposes.

Greenhouse gas emissions associated with the proposed project construction, and current and future operations were estimated using CO_{2e} (Carbon Dioxide Equivalent) emissions as a proxy for all greenhouse gas emissions. In order to obtain the CO_{2e}, an individual GHG is multiplied by its global warming potential (GWP). The GWP designates on a pound for pound basis the potency of the GHG compared to CO₂.

For this analysis, predicted project GHG emissions were compared to AB 32 scoping plan action measures and the 2010 BAAQMD GHG significance threshold for land use development projects of 1,100 metric tons CO_{2e} per year (for operational GHG emissions). Although these thresholds are not currently recognized by the BAAQMD, they are useful to quantify potential Project related impacts from GHG emissions.

3.7.3 Environmental Impact Analysis

Impact GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

The proposed project may contribute to climate change impacts through its contribution of GHGs. The proposed project would generate a variety of GHGs during construction, including several defined by AB 32, such as CO₂, CH₄, and N₂O from the exhaust of equipment and the exhaust of construction hauling trips and worker commuter trips. The proposed project may also emit GHGs that are not defined by AB 32. For example, the proposed project may generate

aerosols from diesel particulate matter exhaust. Aerosols are short-lived GHGs, as they remain in the atmosphere for approximately one week.

Certain GHGs defined by AB 32 would not be emitted by the proposed project. PFCs and SF₆ are typically used in industrial applications, none of which would be used by the proposed project. Therefore, it is not anticipated that the proposed project would emit PFCs or SF₆.

As described above, the BAAQMD suggests applying greenhouse gas efficiency thresholds to projects with emissions of 1,100 metric tons of carbon dioxide equivalent (MTCO_{2e}) or greater. With projects that have emissions below this threshold per year, the effect is considered less than significant.

Construction Emission Inventory

Construction emissions were computed for both construction and operation of the proposed project using the California Emissions Estimator Model (CalEEMod). The construction phases included demolition, site preparation, site grading, paving, building construction, and architectural coating. Exhaust emissions during construction of the proposed project are presented in Table 3.7-1.

Table 3.7-1: Construction Greenhouse Gas Emissions

Construction Year	MTCO _{2e}
2016	208.1
2017	238
Total	446.3

Source: Stantec 2015

During the construction of the project, approximately 445.1 MTCO_{2e} would be emitted. The BAAQMD, from which the Air District gets its own thresholds, does not have quantified thresholds for construction activities. The construction emissions were then compared with the lowest project emission threshold (1,100 MTCO_{2e}) considered by BAAQMD and the annual construction emissions were found to be below this threshold.

Operational Emission Inventory

Operational or long-term emissions occur over the life of the proposed project. The operational emissions for the project are shown in Table 3.7-2. Sources for operational emissions include:

- Motor Vehicles: These emissions refer to greenhouse gas emissions contained in the exhaust from the cars and trucks that would travel to and from the project site.

- Natural Gas: These emissions refer to the greenhouse gas emissions that occur when natural gas is burned on the project site. Natural gas uses include heating water, space heating, dryers, stoves, or other uses.
- Indirect Electricity: These emissions refer to those generated by offsite power plants to supply electricity required for the project.
- Water Transport: These emissions refer to those generated by the electricity required to transport and treat the water to be used on the project site.
- Waste: These emissions refer to the greenhouse gas emissions produced by decomposing waste generated by the project. These include: waste removed from car interior during the cleaning process; waste generated in the restrooms; and/or waste generated from the operation of the project.

The CalEEMod default assumptions were used for each of these sources of emissions. The operational emissions are shown in Table 3.7-2.

Table 3.7-2: Operational Greenhouse Gas Emissions

Source Category	MTCO ₂ e
Area	0.4
Energy Consumption	126.7
Mobile	320.9
Solid Waste Generation	17.5
Water Usage	7.2
Total	472.8
<i>BAAQMD Thresholds</i>	<i>1,100</i>
Are emissions significant?	No

As shown in Table 3.7-2, operation of the proposed project would produce approximately 418.7 MTCO₂e per year. Thus, the BAAQMD significance threshold of 1,100 MTCO₂e per year is not exceeded. Accordingly, this impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact Analysis

The City has adopted two separate Climate Action Plans (CAP), the first being the Community CAP and the second, the Municipal CAP. The Community CAP is focused on implementing strategies to reduce GHG emissions through green building design, renewable energy, transit oriented development, and education. The Municipal CAP has been developed to address GHG emissions resulting from municipal operations and infrastructure. The Community CAP includes a goal of reducing county greenhouse gas emissions by 25 percent below 2005 levels by 2020, and 80 percent below 2005 by 2050, but has no mandatory provisions that would apply to the proposed project. The State of California has adopted regulations that apply to the project that would help the County achieve its reduction goal. The proposed project would be subject to Title 24 energy efficiency standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions. The proposed project would comply with the California Green Building Standards Code, which includes requirements to increase recycling, reduce waste, reduce water use, increase bicycle use, and other measures that would reduce greenhouse gas emissions. Motor vehicle emissions associated with the proposed project would be reduced through compliance with state regulations on fuel efficiency and fuel carbon content. The regulations include the Pavley fuel efficiency standards that require manufacturers to meet increasing stringent fuel mileage rates for vehicles sold in California and the Low Carbon Fuel Standard that requires reductions in the average carbon content of motor vehicle fuels. Emissions related to electricity consumption by the project would be reduced as the electric utility complies with the Renewable Portfolio Standard, which requires utilities to increase its mix of renewable energy sources to 33 percent by 2020. The proposed project would not conflict with the City Community CAP and regulations adopted by the State of California to reduce GHG emissions. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.8 HAZARDS AND HAZARDOUS MATERIALS

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

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.8.1 Environmental Setting

Hazardous materials, as defined by the California Code of Regulations, are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories, based on their properties:

- Toxic – Causes Human Health Effects
- Ignitable – Has the Ability to Burn
- Corrosive – Causes Severe Burns or Damage to Materials
- Reactive – Causes Explosions or Generates Toxic Gases

Hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. The criteria that define a material as hazardous also define a waste as hazardous. If improperly handled, hazardous materials and hazardous waste can result in public health hazards if released into the soil or groundwater or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer. The California Government Code, Title 22, Sections 66261.20–24 contains technical descriptions of toxic characteristics that could cause soil or groundwater to be classified as hazardous waste.

California Government Code, Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to compile, maintain, and update specified lists of hazardous material release sites. The CEQA (California Public Resources Code, Section 21092.6) requires the lead agency to consult the lists compiled pursuant to California Government Code, Section 65962.5 to determine whether the proposed project and any alternatives are identified on a federal or State listing database. The required lists of hazardous material release sites are commonly referred to as the "Cortese List" after the legislator who authorized the legislation. Since the statute was enacted more than 20 years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information required in the Cortese List does not exist. Those requesting a copy of the

Cortese List are now referred directly to the appropriate information resources contained on internet websites hosted by the boards or departments referenced in the statute, including the online EnviroStor database from the Department of Toxic Substances Control (DTSC) and the online GeoTracker database offered by the State Water Resources Control Board (SWRCB). These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction.

Federal regulations and regulations adopted by the BAAQMD apply to the identification and treatment of hazardous materials during demolition and construction activities. Failure to comply with the regulations respecting asbestos and dust control may result in a Notice of Violation being issued by the BAAQMD, civil penalties under State and/or federal law, and possible action by the US EPA under federal law (BAAQMD, 2015). Federal law covers a number of different activities involving asbestos, including demolition and renovation of structures (40 CFR § 61.145). The CDC and State and US Geologic Surveys (CGS, USGS) map naturally-occurring asbestos (NOA) areas throughout the State of California for research purposes.

The project site is bordered by residential development immediately to the west and Heidorn Ranch Road to the east. Between Heidorn Ranch Road and the project site, there is a single-family residence. Agricultural fields lie to the south of the project site. To the north is a vacant parcel, to be developed as the Heidorn Village Subdivision. The project site is not included on a list of hazardous materials sites compiled pursuant to California Government Code, Section 65962.5 and the project site is not known or expected to contain any existing contaminated soils. A search of EnviroStor, Geotracker and NOA maps in August 2015 revealed no listings associated with the project site, (CDC, 2013, 2015; CGS, 2010; USGS, 2011). The project site is void of development, eliminating the possibility of structural asbestos on site.

The nearest public airport to the proposed project is Byron Airport, located approximately 11 miles to the southeast. There are no private airstrips located within two miles of the proposed project (Tollfree, 2015). The project site does not fall within the boundaries of an airport influence area, exempting project construction and operations from a determination of consistency with a relative Comprehensive Airport Land Use Compatibility (ALUC) Plan, in accordance with Public Utility Code, Section 21676.5(a) (Byron Airport Land Use Compatibility Plan, 2000). In addition, there are no public schools located within 0.25 mile of the proposed project.

There are no wildlands located within the City. CAL FIRE evaluates fire hazard severity risks according to areas of responsibility (i.e., federal, State, and local). According to CAL FIRE, there are no very high fire hazard severity zones within the Local Responsibility Area on or within close proximity to the proposed project. Likewise, there are no moderate, high, or very high fire hazard severity zones within the State Responsibility Areas near the proposed project (CAL FIRE, 2007).

3.8.2 Methodology

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal existing on the project site and resulting from the proposed project and identifies the primary ways that these hazardous materials could expose individuals or the environment to

health and safety risks. Local and State agencies would be expected to continue to enforce applicable requirements to the extent that they do so now.

The following reports documenting potential hazardous conditions at the project site were reviewed for this analysis: Phase I, prepared by Enegeo Incorporated on January 14, 1992, proposed project Vesting Tentative Map; available literature, including documents published by federal, State, and local agencies; and applicable chapters from the General Plan. Additionally, a review of the Phase I conducted on the project site by EnviroStor database from the DTSC, Geotracker database offered by the SWRCB, Byron Airport ALUC Plan, Cortese List, BAAQMD federal regulations, USGS NOA mapped areas, and CAL FIRE State Responsibility Area maps were reviewed in regards to the project site and the area surrounding the project site.

The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental impacts. In determining the level of significance, the analysis assumes that development in the project site would comply with relevant federal, State, and local ordinances and regulations.

3.8.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact HAZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact Analysis

The proposed project consists of developing a 5.59-acre vacant project site as a 30-lot single-family residential subdivision with associated infrastructure and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. Residential uses would not involve the regular use, storage, transport, or disposal of significant amounts of hazardous materials. Construction of the proposed project would involve the minor routine transport and handling of hazardous substances such as diesel fuels, lubricants, solvents, asphalt, paints, building materials, finishing materials, pesticides, and fertilizers. Handling and transportation of these materials could result in the exposure of workers to hazardous materials. However, the proposed project would not create a significant hazard to the public or the environment, because project construction and operation would be in compliance with applicable federal, State, and local laws pertaining to the safe handling and transport of hazardous materials. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-2 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?

Impact Analysis

A search of EnviroStor, Geotracker and NOA maps in August 2015 revealed no listings associate with the project site; the potential for NOA due to geologic fault lines in Antioch is confined to rifts located remotely from the proposed project, to the southeast (CDC 2013, 2015; CGS 2010; USGS 2011). The project site is void of development, eliminating the possibility of structural asbestos onsite.

As previously noted in Impact HAZ-1, the proposed project would involve the minor use of hazardous materials, including fuels, lubricants, solvents, paint, finishing materials, pesticides, and fertilizers. The use of these substances is not expected to create a significant hazard to the public or the environment through reasonably foreseeable upset or accident. Further, all project construction and operation activities would be in compliance with applicable federal, State, and local laws pertaining to the safe handling and transport of hazardous materials. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-3 Emit hazardous emissions or handle hazardous or acutely-hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact Analysis

There are no schools within the boundaries of the Brentwood Unified School District (BUSD) and Liberty Union High School District (LUHSD) within 0.25 mile of the project site. However, the Heritage Baptist Academy is located within 0.25 mile north of the project site. The Heritage Baptist Academy private school serves grades K-12. The proposed project would not involve the use of significant quantities of hazardous materials without following applicable federal, State, and local laws pertaining to the safe handling and transport of hazardous materials. Therefore, the proposed project would not have the potential to expose any school to such substances, and impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-4 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?

Impact Analysis

Pursuant to CEQA, the California DTSC maintains a Hazardous Waste and Substances Sites List (Cortese List). As part of the Cortese List, DTSC also tracks "Calsites," which are mitigation or brownfield sites (previously used for industrial purposes) that are not currently being worked on by DTSC. Before placing a site on the backlog, DTSC ensures that all necessary actions have been taken to protect the public and environment from any immediate hazard posed by the site. The proposed project is not included in the DTSC Cortese List and according to the State Water Resources Control Board "Geotracker," an online hazardous materials database, the project site is not listed as a hazardous materials site. In addition, the project site is undeveloped; no commercial or industrial land use activities have occurred previously onsite, precluding the possibility of impacts from prior use. No impacts would occur.

Level of Significance before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance after Mitigation

No Impact.

Impact HAZ-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Impact Analysis

The proposed project is not within two miles of an airport. The closest public airport, Byron Airport, is located approximately 11 miles to the southeast of the proposed project, and does not encompass the project site within its airport influence area, as shown in the Byron Airport Land Use Compatibility Plan (BALUC, 2000). No impacts would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HAZ-6 For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Impact Analysis

No private airstrips occur within the vicinity of the proposed project. The proposed project would not include any improvement that would occur at a height that could potentially interfere with air traffic patterns. Therefore, no impacts associated with private airstrip hazards would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HAZ-7 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact Analysis

The Contra Costa County Fire Prevention District (CCCFPD) considers its service levels adequate for existing developments and response areas; the proposed project would not alter or interfere with the provision of emergency services or existing evacuation plans to these existing developments and response areas. As such, the proposed project would have a less than significant impact to emergency service plans and no mitigation would be required.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact HAZ-8 Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Impact Analysis

There are no wildlands within the City. According to the Antioch County Fire Hazard Severity Zone Maps of State and Local Responsibility Areas, the proposed project is located in an Unzoned Area, indicating no moderate, high, or very high fire hazard severity within the vicinity of the proposed project (CAL FIRE 2007, 2008). The proposed project is located on the edge of a suburban area and is surrounded by residential development to the west, vacant land to north and south, and a single-family residence to the east of the project site. These land use types are not associated with wildland fires and preclude the possibility of exposure thereof.

In its undeveloped condition, the project site is covered by non-native vegetation that would pose a fire hazard in the presence of heavy equipment used during project construction. Mitigation Measure HAZ-1 would require the removal of non-native vegetation or other materials that could serve as fuel for combustion, to the extent feasible. Such vegetation removal would reduce the potential of fire by providing a clearing, reducing fire fuels and removing fire sustaining litter. In addition, during construction, spark arrestors or turbo chargers (which eliminate sparks in exhaust) and fire extinguishers would be required for all heavy equipment pursuant to Mitigation Measure HAZ-2. With the implementation of Mitigation Measures HAZ-1 and HAZ-2, the impacts from wildland fires would be reduced to a less than significant impact.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HAZ-1: Construction contractors shall ensure that during construction, staging areas and building areas where spark-producing equipment is used shall be cleared of non-native vegetation or other materials that could serve as fuel for combustion. To the extent feasible, the contractor shall keep these areas clear of combustible materials to maintain a firebreak.

MM HAZ-2: Construction contractors shall ensure that any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

3.9 HYDROLOGY AND WATER QUALITY

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation of seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.9.1 Environmental Setting

The following paragraphs describe the hydrologic and water quality setting within the City of Antioch.

Climate and Precipitation

The City of Antioch is located on the south side of the Carquinez Strait. The Carquinez Strait is the only sea-level gap in the central and northern California coastal mountains, which results in relatively strong and persistent winds flowing through the gap (City of Antioch 2003). Winds are generally greatest during spring and summer and lowest in fall and winter. During fall and winter, winds are generally more variable both in speed and direction as the area is influenced by storms from the Pacific Ocean. Antioch has cool and humid winters, and hot and dry summers (City of Antioch 2003).

Based on historical data obtained from the California Irrigation Management Information System (CIMIS) the City of Antioch's average monthly temperature ranges from 47 to 73 degrees Fahrenheit. The rainy season begins in November and ends in March. Average monthly precipitation during the winter months is about two to three inches, but records show that the monthly precipitation has been as high as eight inches and as low as zero inches. Low humidity usually occurs in the summer months, from May to September (City of Antioch 2003).

Topography

The City consists of two general topographic areas: the Lowland Area and the Upland Area (City of Antioch 2003). The Lowland Area is described as having generally level terrain and wetlands adjacent to the San Joaquin River and low-lying areas top the south. The Upland Area

consists of moderate to steeply sloping hills, and is generally located south of the Lowland Area. The total relief of the project site ranges from a high elevation of 161 feet near the east edge of the property to a high elevation of 165 feet to the west. The Natural Resources Conservation Service (NRCS) Web Soil Survey classifies the project site with a NRCS Hydrologic Soil Group "D" and Soil Group "C" designation. Hydrologic Soil Group "D" soils are characterized as having high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. In some areas, they also have high shrink-swell potential (Natural Resources Conservation Service 2012). Hydrologic Soil Group "C" soils are characterized as having moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures (Natural Resources Conservation Service 2012).

The project site is nearly an equal combination of Rincon Clay Loam and Altamont Clay (Isakson and Associates Inc. 2014). Therefore, the project site is characterized as having poorly draining soils (Isakson and Associates Inc. 2014). An existing broad swale is located in the center of the project site and drains south to north at approximate slope of one percent. The approximate elevation of the swale is 154 feet (Isakson and Associates Inc. 2014).

Watershed and Regional Drainage

A watershed is the geographic area draining into a river system, ocean, or other body of water through a single outlet and includes the receiving waters. The City contains three watershed areas; East Antioch Creek, West Antioch Creek, and Lower Marsh Creek watersheds. The project site is located within the East Antioch Creek watershed.

Local Drainage

The City receives water from the San Joaquin River and the Sacramento-San Joaquin Delta. The project site is located in the northeastern portion of the City and is served by the City's storm drain system, maintained by the City. Existing stormwater runoff from the project site would discharge into the City's storm drain system within Prewett Ranch Drive. There are seven principal waterways within the City: San Joaquin River, East Antioch Creek, West Antioch Creek, Markley Creek, Sand Creek, Marsh Creek, and Deer Creek (City of Antioch 2003). In addition to the natural creeks, other waterways including the Contra Costa Canal and East Bay Municipal Utility District Aqueduct run through the City.

Groundwater

The City receives water from the San Joaquin River and the Sacramento-San Joaquin Delta (City of Antioch 2003). Although the City is located within the Tracy sub-basin in the Greater San Joaquin Basin, no municipal water is pumped from groundwater (City of Antioch 2003).

Water Quality

The project site is located in the East Antioch Creek watershed. Storm water runoff from the project site would discharge into a bioretention area located within Parcel A at the northeast corner of the project site. The bioretention basin would be approximately 12,976 sq. ft. at an elevation of 154.60 and one foot deep (Isakson and Associates Inc. 2014). The bioretention basin would connect to the City's storm drain system located on Prewett Ranch Drive, which flows to the San Joaquin River and eventually into the Sacramento-San Joaquin Delta.

State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the State. Aquatic ecosystems and underground aquifers provide many different benefits to the people of the State. The State Water Resource Control Board (SWRCB) is responsible with protecting all these uses from pollution and nuisance that may occur as a result of waste discharges in the region. Beneficial uses of surface waters, groundwater, marshes, and wetlands serve as a basis for establishing water quality objectives and discharge prohibitions to attain these goals.

In accordance with Section 303 (d) of the Clean Water Act (CWA), the State must present the EPA with a list of impaired water bodies that do not meet water quality standards. Once a water body has been placed on the 303 (d) list of impaired waters, States are required to develop a Total Maximum Daily Load (TMDL) to address each pollutant causing impairment. A TMDL defines how much of a pollutant a water body can tolerate and still meet the water quality standards (SWRCB 2012). The City is located in Regional Water Quality control Board (RWQCB) Region 2- San Francisco Bay Region.

Flooding

Flooding within the City is mainly caused by heavy rainfall, high tides, and subsequent runoff volumes that cannot be adequately conveyed by the existing storm drainage system and surface water (City of Antioch 2003).

Flood hazard zones are areas subject to flood hazards that are identified on an official Flood Insurance Rate Map (FIRM), issued by the Federal Emergency Management Agency (FEMA). Flooding can be earthquake induced or the result of intense rainfall. Areas within a 100-year floodplain have a one percent probability of flooding in a given year.

The project site is not located within a 100-year floodplain, as defined by FEMA and depicted on FIRM #06013C0335F. Sand Creek is located south of the project site and located within a 100-year floodplain area, however the floodplain is within the Sand Creek channel and does not extend onto the project site. Furthermore, the California Office of Emergency Services has compiled inundation maps for the San Francisco Bay Area and indicates that the project site is not located within a dam inundation area.

The project site is over five miles from the San Joaquin River and over 50 miles from the Pacific Ocean, and is not within the mapped tsunami inundation area.

Seiches are waves that oscillate in enclosed water bodies, such as reservoirs, lakes, ponds, swimming pools, or semi enclosed bodies of water, such as the Delta and San Francisco Bay. Because the project site is over 50 miles from the San Francisco Bay and the Delta is over five miles away, it would not be subject to seiches.

3.9.2 Methodology

Evaluation of potential hydrologic and water quality impacts was based on a review of FEMA FIRM of the project site, General Plan, General Plan EIR, and Section 2.0, Project Description, of this IS/MND. Additionally, this evaluation is based on the January 12, 2014 Stormwater Control Plan (Appendix E), prepared by Isakson and Associates Inc. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations.

3.9.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact HYD-1 Violate any water quality standards or waste discharge requirements?

Impact Analysis

Development of the proposed project would result in the conversion of approximately 5.59 acres of undeveloped land, resulting in a largely impervious surface with the potential to result in an increased volume and velocity of surface water runoff.

Construction Impacts

Construction activities could result in the degradation of water quality, releasing sediment, oil and greases, and other chemicals to nearby water bodies. Construction materials such as fuels, solvents, and paints may present a risk to surface water quality. Refueling and parking of construction vehicles and other equipment on-site during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into the storm drain system.

To minimize these potential impacts, the proposed project would be required to comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit (GCP) as well as prepare a Storm Water Pollution Prevention Plan (SWPPP) that requires the incorporation of Best Management Practices (BMPs) set forth by the Contra Costa Clean Water Program to control sedimentation, erosion, and hazardous materials contamination of runoff during construction. The SWRCB mandates that projects that disturb one or more acres must obtain coverage under the Statewide GCP. Since the proposed project would involve development of 5.59 acres, it would be subject to these requirements. The GCP also requires that prior to the start of construction activities the applicant must file Permit Registration Documents (PRDs) with the

SWRCB, which includes a Notice of Intent (NOI), risk assessment, site map, annual fee, signed certification statement, SWPPP, and post-construction water balance calculations.

In addition, the proposed project must comply with the City's Grading and Erosion Control Ordinance. A Stormwater Control Plan and Grading Plan would be prepared and submitted to the City for review and approval, which would satisfy all Provision C.3 requirements and meet or exceed all requirements in order to reduce impacts from impervious surfaces. Furthermore, the selection, sizing, and preliminary design of stormwater treatment and other control measures would be required to comply with the requirements of the RWQCB Order R2-2009-0074 and Order R2-2011-0083.

Therefore, implementation of Mitigation Measure HYD-1 would reduce the temporary, short-term construction-related drainage and water quality impacts to a less than significant level.

Operational Impacts

Runoff from residential developments and associated infrastructure typically contain oils, grease, fuel, byproducts of combustion (such as lead, cadmium, nickel, and other metals), roofing, gutter, and trim runoff, as well as fertilizers, herbicides, pesticides, and other pollutants associated with landscaping.

In order to control runoff from roofs, asphalt pavement, concrete curbs, sidewalks, patios and driveways, integrated management practices (IMPs) would be implemented. The proposed project would implement BMPs to provide small-scale treatment, retention, and/or detention integrated into the project site layout, landscaping, and drainage design. Due to the size of the proposed project, the project site would require treatment and source control measures as well as hydrologic modification.

Runoff created from the proposed project would be collected and conveyed to the bioretention area located within Parcel A; located on the project site. Surface flows would be graded to drain to the curb and gutter within the streets and then discharged to the bioretention basin. The outflow pipes to the bioretention areas would slowly meter flow to the existing City maintained storm drain system located at Prewett Ranch Drive. The bioretention basin area would be designed to accommodate runoff for treatment and hydro modification as specified in the Provision C.3 requirements. The Homeowner's Association would be responsible for the operation and maintenance of the bioretention basin.

With the implementation of the project site designs and BMPs the potential operational impact to water quality would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HYD-1: Prior to the issuance of any construction related permits, the applicant shall prepare and submit an NOI to the State Water Board and prepare a SWPPP in compliance with the NPDES GCP requirements. The final drainage plan shall demonstrate the ability of the planned onsite storm drainage to adequately collect onsite stormwater flows in accordance with all applicable standards and requirements by: minimizing impervious surfaces, and directing flows to BMPs; integrating appropriately sized BMPs to minimize impact on local water quality by controlling runoff from erosion and potential contaminants; and incorporating bio-retention in combination with site planning, and dispersion of runoff to meet Low Impact Development (LID) requirements.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Impact Analysis

New construction could result in impacts related to groundwater if areas currently available for the infiltration of rainfall runoff are reduced and permeable areas are replaced by impermeable surfaces. The proposed project would result in the development of 3.31 acres of impermeable surface. According to the NRCS, the project site is characterized with poorly draining soils. The proposed project would provide permeable landscaped areas and open land in order to generate some groundwater recharge.

According to the General Plan EIR, the City does not pump groundwater supplies for municipal use. Therefore, potable water delivered to the project site would not be sourced from groundwater supplies. The City would serve the project site with potable water, which it obtains from the San Joaquin River and the Sacramento-San Joaquin Delta. Therefore, the proposed project would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge. Impacts would be less than significant.

Level of Significance before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance after Mitigation

Less Than Significant Impact.

Impact HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Impact Analysis

The proposed project does not involve alteration of any natural drainage channels or any watercourse. The proposed project would involve site improvements that would require grading and soil exposure during construction. If not controlled, the transport of these materials into local waterways could temporarily increase suspended sediment concentrations. In order to minimize such impacts, implementation of Mitigation Measure HYD-1 would control the treatment and flow of site drainage prior to discharge into the City storm drain system. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measures HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

Impact HYD-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Impact Analysis

The proposed project would involve the development of 30 single-family residential du on a 5.59-acre vacant lot. The proposed project would result in approximately 3.31 acres of impermeable surface, increasing stormwater runoff. The proposed project would implement Mitigation Measure HYD-1 for treatment and flow of site drainage prior to discharge into the City storm drain system. Additionally, the proposed project would incorporate bioretention basins in order to retain and treat runoff. Treated runoff would be discharged from the BMPs to the existing storm drain on Prewett Ranch Drive. No runoff would be directly discharged to the drainage systems outside of the project site. Therefore, with the implementation of Mitigation Measure HYD-1 and proposed project BMPs the proposed project would not substantially increase the rate or amount of surface runoff which would result in flooding on or off-site. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-5 Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Impact Analysis

As required by the City and County stormwater management guidelines, BMPs would be implemented across the project site, during both the construction and operational phases. These BMPs would control and prevent the release of sediment, debris, and other pollutants from entering the storm drain system.

As described in Impact HYD-1, HYD-2, and HYD-3 above, construction generated runoff would be required to comply with all of the requirements in the State GCP, including preparation of PRDs and submittal of a SWPPP to the SWRCB prior to the start of construction activities. All operational project-generated runoff would be treated prior to discharge from the permanent BMPs to the storm drain system on Prewett Ranch Drive. No runoff would be directly discharged to the drainage systems outside of the project site. As a result, with implementation of Mitigation Measure HYD-1 and proposed project BMPs, the proposed project is not anticipated to be a substantial additional source of polluted runoff. Therefore, impacts would be less than significant with mitigation.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-6 Otherwise substantially degrade water quality?

Impact Analysis

Implementation of BMPs during construction would be in accordance with the provisions of the SWPPP, as identified in Mitigation Measure HYD-1. Implementation of BMPs would minimize the release of sediment, soil, and other pollutants. Operational BMPs would be required to meet the C.3 provisions of the Contra Costa County Clean Water Program Stormwater Guidebook and the applicant would be required to submit a SWPPP to the City for review and approval prior to the start of construction. These requirements include the incorporation of project site design,

source control, and treatment control measures to treat and control runoff before it enters the storm drain system. As such, with the implementation of Mitigation Measure HYD-1 the proposed project would not result in substantial degradation of water quality. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure HYD-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact HYD-7 Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Impact Analysis

FIRM #06013C0335F indicates that the project site is located in Zone X, which is defined as areas outside of a 100-year flood hazard zone. Sand Creek is located south of the project site, and located within a 100-year floodplain. However, the floodplain is contained within the Sand Creek channel and does not extend onto the project site. Therefore, the proposed project would not be placed within a 100-year flood zone; therefore, impacts would be less than significant.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Impact Analysis

The project site is located outside of an identified Flood Hazard Area (either a one percent or 0.2 percent annual chance for flooding), according to FIRM (Panel #06013C0335F) prepared by FEMA. Sand Creek is located south of the project site, and located within a 100-year floodplain. However, the floodplain is contained within the Sand Creek channel and does not extend onto the project site. As a result, although the proposed project would include numerous buildings and

structures, these improvements would not impede or redirect flood flows. Therefore, no impacts associated with placing structures within a 100-year flood hazard area would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-9 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact Analysis

The City is located below the Contra Loma Reservoir. The Bureau of Reclamation Division of Dam Safety determined that the Contra Loma Dam can be expected to perform safely under all anticipated loading conditions, including the maximum credible earthquake and maximum flood events (City of Antioch 2003). Therefore the overall classification of the Contra Loma Dam is registered as satisfactory. According to FIRM #06013C0335F prepared by FEMA, implementation of the proposed project would occur outside of an identified Flood Hazard Area (either a one percent or 0.2 percent annual chance for flooding). In addition, the project site is not located within a dam inundation area (City of Antioch 2003). Therefore, no impacts associated with flooding would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-10 Inundation of seiche, tsunami, or mudflow?

Impact Analysis

The project site, primarily because of its location and topographical characteristics, would not be susceptible to seiche, tsunami, or mudflow. Seiche effects locations adjacent to larger water bodies such as lakes or reservoirs; the project site is not located near any such water body. The project site is located over 50 miles from the Pacific Ocean, and over five miles from the San Joaquin River, which substantially reduces the potential for impacts from tsunami. In addition, based upon the gently sloping topography of the project site, as well as the lack of adjacent

hillsides and embankments, the potential for mudflow on the project site would also be greatly minimized. Therefore, no impacts associated with seiche, tsunami, or mudflow would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation necessary.

Level of Significance After Mitigation

No Impact.

3.10 LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.10.1 Environmental Setting

The General Plan designation of the property is Medium Low Density Residential. The Medium Low Density Residential land use designation pertains to single family homes in typical subdivision developments generally located in areas of the City on level terrain with no or relatively few geological or environmental constraints. Older subdivisions within the northern portion of the City reflect this residential density of six du/ac. The proposed project would be developed at a density of 5.58 du/ac, which is just under the allowed maximum density of the Medium Low Density Residential designation. The development of single-family homes, as those being proposed, is consistent with the site's Medium Low Density Residential land use designation. Therefore, an amendment to the General Plan to change the land use designation is not required for the proposed project.

3.10.2 Methodology

Evaluation of potential land use impacts are based on a review of documents pertaining to the proposed project, including the General Plan, City's Municipal Code, and Zoning Ordinance. In determining the level of significance, this analysis assumes that the proposed project would comply with relevant State and local ordinances and regulations, as well as the City's General Plan goals, policies, and actions.

3.10.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact LU-1 Physically divide an established community?

Impact Analysis

The proposed project consists of subdividing the 5.59-acre vacant parcel as a 30-lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system. The currently vacant project site is bordered by vacant land to the south. To the north, the project site is bordered by the proposed Prewett Ranch Drive extension, and vacant land, which has been approved for future residential development. To the east, the project site is bordered by a single-family residence and Heidorn Ranch Road. To the west, the project site is bordered by the single-family residential subdivision known as "Meadow Creek Village". The proposed project would become an extension of the surrounding residential developments and therefore would not physically divide the established communities. The proposed project would have no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact LU-2 Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Impact Analysis

The proposed project would remain consistent with the existing land use designation and would not require any change to the General Plan land use designation or City Zoning Ordinance. Furthermore, the proposed project would be consistent with the General Plan's goals policies, and actions. The proposed project would consist of subdividing the 5.59-acre vacant parcel as a 30-lot single-family residential subdivision with associated infrastructure, and connections to water, sewer, storm drainage, electricity, natural gas service, communications, and City circulation system.

The proposed project would be compliant with existing conditions, as well as the General Plan's goals, policies, and actions and goals, policies, and implementing programs outlined in the City of Antioch 2015-2023 Housing Element. The proposed project would be required to conform to the general design standards and guidelines of the City Municipal Code and Citywide Design Guidelines regarding residential uses. As such, the proposed project would not conflict with any

applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project. As such, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact LU-3 Conflict with any applicable habitat conservation plan or natural communities conservation plan?

Impact Analysis

The project site is not located within any adopted Habitat Conservation Plan area. The closest Habitat Conservation Plan is the East Contra Costa County (ECCC) Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP). The ECCC HCP and NCCP covers 175,000 acres of east Contra Costa County. However, the City is not included within the ECCC HCP and NCCP area. Therefore, the proposed project is not subject to the ECCC HCP and NCCP requirements and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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3.11 MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.11.1 Environmental Setting

The CGS classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act of 1975 (SMARA). Mineral Resource Zones (MRZ) have been designated to indicate the significance of mineral deposits.

The MRZ categories are as follows:

- MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- MRZ-2: Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.

According to USGS, limited mineral resources are excavated within the City. Near the southwestern boundary of the City, historic coal mining once occurred resulting in the excavation of mining tunnels in the Sand Creek Focus Area and the Black Diamond Mines Regional Preserve. However, none of the areas identified in the General Plan as available for new development contain known mineral resources that would be of value to the region (General Plan 2003).

3.11.2 Methodology

The following analysis is based on a review of available maps and documents published by the CDC Office of Mines Reclamation Map Viewer and the General Plan. The following impact discussions consider the effect of the proposed project related to mineral resources.

3.11.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact MIN-1 Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the State?

Impact Analysis

The project site does not support any mineral extraction activities nor do any known mineral deposits exist on site. Therefore, implementation of the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. No impacts would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measure

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact MIN-2 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?

Impact Analysis

The project site is not designated for mineral resources by the General Plan. Therefore, the implementation of the proposed project would not result in the loss of availability of a locally important mineral resource. No impacts would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measure

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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3.12 NOISE

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.12.1 Environmental Setting

Characteristics of Noise

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. The 0 point on the dB scale is based on the lowest sound level that the healthy,

unimpaired human ear can detect. Changes of three dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of three dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. 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.

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 a number of various sound level metrics, including the day/night sound level (Ldn) and the Community Noise Equivalent Level (CNEL), both of which represent how humans are more sensitive to sound at night. In addition, the equivalent continuous sound level (Leq) is the average sound energy of time-varying noise over a sample period and the Lmax is the maximum instantaneous noise level occurring over a sample period.

Existing Ambient Noise Levels





The existing noise environment in a project area is characterized by the area's general level of development because the level of development and ambient noise levels tend to be closely correlated. Areas that are not urbanized are relatively quiet, while areas that are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities. According to Table 3.12-1, given the residential single-family nature of the project site, ambient noise levels are expected to be in the range of 60 to 70 Ldn.

Major noise sources within the City include "mobile sources" such as traffic along SR 4 and SR 160, rail lines, and major arterial roadways. Significant "stationary" sources of noise within the City include heavier industrial development in the northern portion of the City, commercial development, where it backs up against residential neighborhoods and construction activities (City of Antioch 2003). Traffic noise depends primarily on traffic speed (tire noise increases with speed) and the proportion of truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise). Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, a doubling of traffic volumes results in a 3 dB increase in noise levels.

Table 3.12-1: Noise and Land Use Compatibility Matrix

Community Noise Exposure Level (CNEL)	
Land Use Receiving the Noise	55 60 65 70 75 80
Residential-Low Density, Single Family, Duplex, Mobile Homes	Normally Acceptable (55-70), Conditionally Acceptable (70-75), Normally Unacceptable (75-80), Clearly Unacceptable (80)
Residential-Multifamily	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Transient Lodging, Motels, Hotels	Normally Acceptable (55-60), Conditionally Acceptable (60-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable (55-60), Conditionally Acceptable (60-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Sports Arena, Outdoor Spectator Sports	Normally Acceptable (55-60), Conditionally Acceptable (60-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Playgrounds, Neighborhood Parks	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Office, Business, Retail Commercial	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)
Industrial Manufacturing, Agriculture, Utilities	Normally Acceptable (55-65), Conditionally Acceptable (65-70), Normally Unacceptable (70-75), Clearly Unacceptable (75-80)

Source: State of California Office of Noise Control

-  **Normally Acceptable**
Specified land use is satisfactory, based on the assumption that any buildings involved are of normal 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 feature included in the design.
-  **Normally Unacceptable**
New construction of development should be discouraged. If new construction of 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.

Vibration Standards

Vibration is like noise such that noise involves a source, a transmission path, and a receiver. While related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception

to the vibration would depend on his or her individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system that is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV. The City does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities and proposed project operations are addressed as potential noise impacts associated with implementation of the proposed project.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. In Table 3.12-2, the general threshold at which human annoyance could occur is noted as 0.10 in/sec PPV. Table 3.12-3 indicates that the threshold for damage to structures ranges from a PPV of 0.20 to 0.60 in/sec.

Table 3.12-2: Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.90	0.10
Severe	2.00	0.40
Source: California Department of Transportation 2004. Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		

Table 3.12-3: Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structure	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Source: California Department of Transportation 2004.		

Noise Regulatory Framework

The Noise Element of the General Plan identifies land use compatibility noise standards for noise-sensitive land uses affected by transportation and non-transportation noise sources. As shown in Table 3.12-1, for noise sensitive land uses, including residential land uses, that are affected by transportation noise sources, the “normally acceptable” exterior and interior noise level is 60 dBA Ldn/CNEL and 45 dBA Ldn/CNEL, respectively. Exterior noise levels of up to 75 dBA Ldn/CNEL for residential land uses is considered “conditionally acceptable” provided needed noise mitigation measures have been incorporated and interior noise levels are maintained within “normally acceptable” levels. The City’s exterior noise standards for single-family residential uses exposed to non-transportation noise sources are 60 dBA within rear yards (City of Antioch 2003).

The proposed project would be required to comply with the City’s goals and policies related to noise, outlined in the General Plan. The City has adopted goals and policies in the General Plan to reduce exposure of unacceptable noise levels to the residents of Antioch. Additionally, Title 9, Section 5.1901 of the City Municipal Code sets forth noise attenuation requirements for new development in the City.

Sensitive Receptors

The closest sensitive noise receptors consists of single-family residential properties located approximately 50 feet west, 470 feet east of the project site.

3.12.2 Methodology

The impact assessment is based upon the community noise survey conducted by Stantec on August 4, 2015, as presented in Table 3.12-4, as well as the existing noise conditions presented in the General Plan, and the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). In order to assess existing noise conditions at the project site and at nearby sensitive receptors, ambient noise measurements were taken at three locations between 50 and 100 feet from the project site boundary. Daytime (7:00 a.m. to 7:00 p.m.), evening (7:00 p.m. to 10:00 p.m.), and nighttime (10:00 p.m. to 7:00 a.m.) measurements, lasting at least 10 minutes, were collected at each of the three locations. The noise measurement locations can be found on Figure 3.12-1. Additionally, the noise survey modeling data is presented in Appendix H.

The data collected during the community noise survey was used as an input to the FHWA RCNM. The RCNM is used as the FHWA's national standard for predicting noise generated from construction activities. The RCNM analysis includes the calculation of noise levels (Lmax and Leq) at incremental distances for a variety of construction equipment. The spreadsheet inputs include acoustical use factors, Lmax values, and Leq values at various distances depending on the ambient noise measurement location. For this analysis, it was assumed that a worst-case scenario for construction activity would entail the operation of the three noisiest pieces of equipment (grader, pneumatic tools, and tractor) simultaneously.

Table 3.12-4: Community Noise Survey Results

Site	Location	Distance from Project Site	Daytime (7 a.m. to 7 p.m.) LAeq (dBA)	Evening (7 p.m. to 10 p.m.) LAeq (dBA)	Nighttime (10 p.m. to 7 a.m.) LAeq (dBA)
Site 1	Terminus of Prewett Ranch Drive	20 feet	42.41	38.48	41.13
Site 2	On project site –west boundary near residence.	0 feet	44.41	41.40	41.13
Site 3	On project site- east boundary.	0 feet	44.18	40.25	41.90
Source: Stantec 2015					

The community noise survey was used to establish existing noise conditions of the project site and at the surrounding sensitive receptors. According to the General Plan, sensitive receptors, including residential areas, hospitals and extended care facilities, schools, libraries, and parks and open spaces, are land uses that are considered more sensitive to high noise levels and changes in ambient noise levels.



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

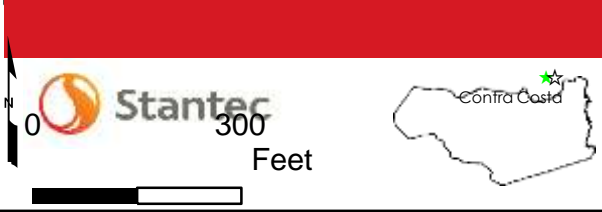


Figure 3.12-1
Community Noise Monitoring Locations
 Quail Cove Subdivision Project

3.12.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact NOI-1 Exposure of 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?

Impact Analysis

Short-Term Construction Noise Impacts

Two types of short-term noise impacts could occur during construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the project site. The projected construction traffic would be short-term, consisting of construction worker commutes and delivery/removal of construction equipment, causing intermittent noise nuisance. The associated short-term noise increase along Prewett Ranch Drive extension and Heidorn Ranch Road and at the nearest sensitive receptors would be perceptible; however, such a noise increase would be instantaneous and short-term. Therefore, short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during construction. Construction activities would include excavation activities and grading, foundation work, building construction, and paving. Each construction stage has its own mix of equipment and, consequently, its own noise characteristics. These various construction operations would change the character of the noise generated at the project site and, therefore, the ambient noise level as construction progresses. The loudest phases of construction include excavation, building construction, and grading phases as the noisiest construction equipment is earthmoving and grading equipment. Throughout construction, the following types of equipment would be used (with their estimated maximum operational noise level measured at 50 feet from the operating equipment).

Table 3.12-5: Summary of Federal Highway Administration Roadway Construction Noise Model

Source	Distance to Nearest Sensitive Receptor	Sound Level at Residence		
		Lmax	Acoustical Use Factor (%)	Leq
Backhoe	50 feet	77.6	40	73.6
Compactor (ground)	50 feet	83.2	20	76.2
Crane	50 feet	80.6	16	72.6
Concrete Mixer Truck	50 feet	78.8	40	74.8
Compressor (air)	50 feet	77.7	40	73.7
Bulldozer	50 feet	81.7	40	77.7
Excavator	50 feet	80.7	40	76.7
Front End Loader	50 feet	79.1	40	75.1
Flat Bed Truck	50 feet	74.3	40	70.3
Generator	50 feet	80.6	50	77.6
Grader	50 feet	85	40	81
Paver	50 feet	77.2	50	74.2
Pickup Truck	50 feet	75	40	71
Pneumatic Tools	50 feet	85.2	50	82.2
Welder / Torch	50 feet	74	40	70
Tractor	50 feet	84	40	80
Source: Stantec 2016, Federal Highway Administration 2006				

A reasonable worst-case noise condition for general construction activity is that a grader, pneumatic tools, and tractor would operate simultaneously. This represents a conservative scenario, as it assumes that all three pieces of equipment would be operating at the same time and same place. Construction would occur in sequential phases. Thus, in reality, it is not likely that the three loudest pieces of equipment would be operating simultaneously at the exact location of the project site closest to the nearest residence. Nevertheless, the RCNM calculated

that this scenario would result in a combined noise level of 85.2 dBA-Lmax and 85.9 dBA-Leq at 50 feet. Therefore, this would be a potentially significant impact.

Mitigation Measure NOI-1 would be implemented to reduce construction noise in the proximity of sensitive receptors. This would include the construction of temporary barriers where construction noise levels have the potential to exceed the maximum exterior residential noise standard. Specifically, barriers would be installed along the west boundary of the project site where the nearest sensitive receptors are located, approximately 50 feet from construction activities. Although noise levels could range into the clearly unacceptable range, as defined on Table 3.12-1, increases in noise levels from construction activities would be temporary and construction activities would be limited between 7:00 a.m. and 6:00 p.m., Monday through Friday, on weekdays within 300 feet of occupied dwellings between 8:00 a.m. and 5:00 p.m., and between 9:00 a.m. and 5:00 p.m. on weekends, in accordance with the City's Municipal Code.

In conclusion, construction noise would be short-term and intermittent. Furthermore, implementation of Mitigation Measure NOI-1 would ensure compliance with the City's construction noise standards (including construction BMPs and restrictions on permissible hours of construction); therefore, impacts would be less than significant with mitigation incorporated.

Long-Term Operational Noise Impacts

It is not anticipated that noise levels at the project site would expose the future residents to noise levels exceeding the City threshold of 60 dB Ldn for exterior noise. As summarized in Table 3.12-2, the community noise survey conducted by Stantec identified the existing noise levels at 42.41 dBA, 38.48 dBA, and 41.13 dBA during the morning, day time, and night time surveys, respectively, on the western boundary of the project site, at the eastern terminus of Prewett Ranch Drive. According to Table 3.12-1, the recorded noise levels would be considered "normally acceptable" for single-family residential land uses. The City has established a threshold of 45 dBA Ldn for indoor noise levels for designated residential land uses. Modern construction materials, consistent with the Universal Building Code (UBC), typically provide an exterior-to-interior noise level reduction of 25 to 30 dB with all exterior openings sealed (Caltrans 2013). Therefore, given the average exterior volumes recorded during the morning, day time, and night time community noise surveys on the project site, 40.67 dBA, the projected interior noise conditions for the proposed project are estimated at 15.67 dBA. Based on the construction design, it is not anticipated that interior noise levels would exceed the City's threshold, resulting in a less than significant impact.

Additionally, the proposed project's contribution to traffic noise increase is predicted to be minimal. The Traffic Study prepared by Stantec on August, 11, 2016 (Appendix I) indicates the proposed project would generate 368 weekday daily trips. Of that total, 32 trips (8 inbound and 24 outbound) would be generated during the a.m. peak hour and 38 (24 inbound and 14 outbound) trips would be generated during the p.m. peak hour

As mentioned in the Environmental Settings section, a doubling of traffic counts would result in 3 dB increase of noise levels. The results of the community noise level survey indicate that existing

noise levels range from 38.48 dB to 44.41 dB. The increase in traffic from the proposed project would be minimal, therefore would not change the level of service (LOS) of existing conditions. As such, the increase in traffic level noise from the proposed project would be minimal, if at all, and would not impact the existing noise levels at the project site. As such, long-term operational noise impacts with implementation of the proposed project would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM NOI-1: Implementation of the following multi-part mitigation measure is required to reduce the potential construction period noise impacts.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.
- Utilize “quiet” air compressors and other stationary noise sources where technology exists.
- Limit hours of operation of outdoor noise sources through conditions of approval.
- If construction activities are required outside of the daytime working hours allowed within the conditions of approval, the City would notify residents 48 hours in advance. If after-hour construction is required due to an emergency, the City would notify nearby residents immediately.
- The construction contractor would prohibit unnecessary idling of internal combustion engines.
- Where necessary noise-reducing enclosures or temporary barriers would be used around noise-generating equipment. Where feasible existing barrier features (terrain, structures) would be used to block sound transmission especially where sensitive receptors are located less than 50 feet from construction activities and construction noise levels are expected to exceed the maximum exterior noise standard.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact NOI-2 Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Impact Analysis

During construction of the proposed project, equipment such as cranes, excavators, graders, loaders, backhoes, and bulldozers may be used as close as 50 feet from the nearest sensitive receptor. Construction equipment that would be used during project construction would generate vibration levels between 0.001 and 0.074 PPV at 50 feet, as shown below in Table 3.12-6. All of the groundbourne vibration levels are below the Federal Transit Administration (FTA) vibration threshold at which human annoyance could occur of 0.10 PPV. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors. As such, implementation of the proposed project would have a less than significant impact related to vibration.

Table 3.12-6: Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 25 Feet	Peak Particle Velocity at 50 Feet	Peak Particle Velocity at 100 Feet	Threshold at which Human Annoyance Could Occur	Potential for Proposed Project to Exceed Threshold
Large Bulldozer	0.089	0.031	0.011	0.1	None
Loaded Trucks	0.076	0.027	0.010	0.1	None
Small Bulldozer	0.003	0.001	0.000	0.1	None
Auger/Drill Rigs	0.089	0.031	0.011	0.1	None
Jackhammer	0.035	0.012	0.004	0.1	None
Vibratory Hammer	0.070	0.025	0.009	0.1	None
Vibratory Compactor/Roller	0.210	0.074	0.026	0.1	None
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006					

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact NOI-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

As discussed in the long-term operational impact discussion in Impact NOI-1, it is not anticipated that implementation of the proposed project would expose future residents to noise levels exceeding the City threshold of 60 dB Ldn for exterior noise. Additionally, the proposed project's contribution to traffic noise is predicted to be minimal and would not permanently result in an increase in ambient noise levels within the project vicinity. Therefore, traffic noise after implementation of the proposed project would not result in a perceptible permanent increase in ambient noise levels at the project site. Therefore, noise levels with implementation of the proposed project would result in a less than significant impact.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact NOI-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact Analysis

During the construction of the proposed project, including grading and building construction, noise from construction activities would add to the noise environment in the project area. Table 3.12-5 lists equipment that is expected to be used along with noise levels generated from the FHWA RCNM (Federal Highway Administration 2006). Lmax sound levels at the nearest sensitive receptor (50 feet) are shown along with the typical acoustic use factor. The acoustical use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its loudest condition) during construction and is used to estimate Leq values from Lmax values. For example, the Leq value for a piece of equipment that operates at full power 50 percent of the time (acoustical use factor of 50) is 3 dB less than the Lmax value.

The nearest sensitive receptors to the project site are single-family residences located approximately 50 feet west of the project site. Due to the close proximity of the residences, the residents could potentially be affected by construction noise levels generated by the proposed project above the City noise standard. Mitigation Measure NOI-1 would be implemented to minimize impacts from construction generated noise. Therefore, impacts would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measure NOI-1 is required.

Level of Significance After Mitigation

Less Than Significant Impact With Mitigation.

Impact NOI-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

The project site is not located within the boundaries of an airport land use plan. The closest public airport to the project site is the Byron Airport, located approximately 11.0 miles from the project site. As such, the proposed project would not expose persons residing or working in the project vicinity to excessive aviation noise and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact NOI-6 For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Impact Analysis

There are no private airstrips within two miles of the project site. In addition, the project site is not located within the boundaries of an airport land use plan. As such, the proposed project would not expose persons residing or working in the project vicinity to excessive aviation noise and no impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.13 POPULATION AND HOUSING

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

3.13.1 Environmental Setting

The current population of the City, as of January 2015, was estimated at 108,298, with Antioch being the third largest city in Contra Costa County (California Department of Finance 2013). Based on the California Department of Finance's average of 3.25 persons per du for a single-family residence in the City, the proposed project's 30 new single-family residential dwelling units would result in the generation of 98 new residents.

3.13.2 Methodology

The following analysis is based on general descriptions in the General Plan, General Plan EIR, 2015-2023 City of Antioch Housing Element, and Section 2.0, Project Description, of this IS/MND. Evaluation of potential population, housing, and employment impacts of the proposed project was based on data obtained from the U.S. Census, the California Department of Finance, and documentation from the City. The following impact discussions consider the effect of the proposed project related to employment, population and housing in the City.

3.13.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact POP-1 Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Impact Analysis

The proposed project would allow the development of a maximum of 30 new single-family residential dwelling units. Using the City's 2015 average household size figure of 3.25 provided by the California Department of Finance, the proposed project would increase the population by as much as 98 persons. This represents an increase of 0.003 percent relative to the City's 2015 estimated population of 108,298. In addition, the project site is designated by the General Plan and Zoning Ordinance for residential uses; therefore, the population increase associated with the proposed project would be considered with the anticipated planned growth of the area. Therefore, implementation of the proposed project would not directly or indirectly induce substantial growth within the area. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact POP-2 Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Impact Analysis

The project site is currently vacant and does not contain existing housing. Development of the proposed project would not result in any housing displacement that would necessitate the construction of replacement housing elsewhere. Therefore, there would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact POP-3 Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?

Impact Analysis

Construction of the proposed project would not result in the displacement of any people, either for short-term construction or permanently as a result of project implementation that would necessitate the construction of replacement housing elsewhere. Therefore there would be no impact.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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3.14 PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.14.1 Environmental Setting

Fire Protection

The City is served by the CCCFPD. The CCCFPD provides fire protection and first responder emergency medical services to the City and would ultimately serve the project site. The CCCFPD employs 348 people and has a minimum daily staffing level of 95. The CCCFPD staffs 30 fire stations (28 fully staffed fire stations and two fire stations staffed with on-call reserve firefighters), located in the Cities of Antioch, Clayton, Concord, Lafayette, Martinez, Pittsburg, Pleasant Hill, San Pablo, and Walnut Creek. There are five active CCCFPD fire stations (Stations No. 81, 82, 83, 88, and Administration East) located in the City (City of Antioch 2003).

Station No. 82 (196 Bluerock Drive) and Station No. 88 (4288 Folsom Drive) are the two closest fire stations to the project site. The CCCFPD standard response time is to respond to an emergency within five minutes 90 percent of the time for all City emergency calls. This is within the three to five minute standard response time identified in the General Plan (City of Antioch 2003).

The CCCFPD Fire Prevention Bureau reviews development plans and inspects construction projects to ensure that all new and remodeled buildings and facilities meet State and local building and fire code requirements (CCCFPD 2010). In addition, the CCCFPD implements a

building inspection program to ensure compliance with applicable standards and regulations, including requirements for emergency access.

Property taxes are collected and development impact fees are assessed on new development projects in the CCCFPD's service area. Collection of these fees is the primary source of revenue to fund fire and emergency medical services. According to the City's Municipal Code, Title 3 Section 7.06, development impact fees would be imposed and collected at the time the building permit for a new development is issued (City of Antioch Municipal Code 2015). For the proposed project, the amount of fees imposed shall be \$591 per single-family du, according to Title 3 Section 7.05 of the City's Municipal Code.

Police Protection

The Antioch Police Department (APD) is a full service municipal agency staffed with 124 sworn and 59 non-sworn employees (Antioch Police Department 2015). The APD is comprised of two divisions, Support Services and Field Services. The Support Services Division consists of the Administration Investigations, Narcotics, and Records and Animal Services Bureaus. The Field Services Division includes Dispatch, Patrol, Community Policing and Traffic Bureaus. The General Plan performance standard is to maintain a force level within a range of 1.2 to 1.5 officers, including community service officers assigned to community policing and prisoner custody details, per 1,000 population (City of Antioch 2003). The ratio of community service officers assigned to community policing and prisoner custody details to sworn officers shall not exceed 20 percent of the total number of sworn officers. The APD strives to provide an average response time to all emergency calls between seven and eight minutes from the time the call is received to the time an officer arrives.

The APD divides the City into six "beats" (geographical areas within the City). The project site is located within Beat-6 (southeastern area). For a Priority 1 phone call, in progress crimes or life-threatening situations, the average response time for Beat-6 is nine minutes and 37 seconds, which does not meet the City's average response time (City of Antioch 2003). As such, the proposed project would be required to mitigate its impacts on police services due to the increase in demand, which is based on the number of individuals that are expected to reside in the proposed project.

Schools

The proposed project is located within the Brentwood Unified School District (BUSD) and Liberty Union High School District (LUHSD). The BUSD serves elementary and middle school students (Kindergarten through 8th grade), while the LUHSD serves high school students 9th through 12th grade students. The BUSD is comprised of eight elementary schools and three middle schools. The LUHSD is comprised of three high schools and one continuation school. The Loma Vista Elementary school, Kindergarten through 5th grade, would service the proposed project (MySchoolLocator 2015). The Loma Vista Elementary School reported an enrollment of 621 students in the 2014-2015 school year (California Department of Education 2014). Adams (J Douglas) Middle School, 6th through 8th grade, would service the proposed project (MySchoolLocator 2015). Adams (J Douglas) Middle School reported an enrollment of 1,106

students in the 2014-2015 school year (California Department of Education 2014). Heritage High School would service the proposed project (MySchoolLocator 2015). The High School reported an enrollment of 2,503 students in the 2014-2015 school year (California Department of Education 2014). Additionally, the Heritage Baptist Academy, a private school in Antioch, is within 0.25 mile of the project site. The Heritage Baptist Academy serves grades K-12th. During the 2014-2015 school year reported an enrollment of 84 students (Heritage Baptist Academy 2014).

Parks

The City's open space and recreation facilities are divided into four sections: parks and recreation facilities; recreation programs; special use facilities; and regional facilities and trails. City residents have access to a variety of active recreational lands and facilities, including: local parks, regional parks, and open space areas within the City (City of Antioch 2003). The City oversees the operations and maintenance of 33 neighborhood, community, and joint/school parks; providing residents with over 400 acres of recreational area (City of Antioch 2003).

The City also includes four regional parks, which are operated and maintained by the East Bay Regional Park District (EBRPD). These regional parks are the Antioch/Oakley Regional Shoreline, Black Diamond Mines Regional Preserve, Contra Loma Regional Park, and Morgan Territory Regional Preserve. The four regional parks provide the City with approximately 11,474 acres of additional recreational area and open space (City of Antioch 2003). The EBRPD also manages the Delta DeAnza Regional Trail, which spans over 15 miles of the planned 25 mile length from the City of Bay Point to the City of Oakley. The Delta DeAnza trail crosses the City's western boundary with the City of Pittsburg at Somersville Road.

There are two municipal parks, Heidorn Park, approximately 0.30 mile, and Chaparral Park, approximately 0.55 mile away from the proposed project. Additionally, the Mokelumne Trail, which extends from Buchanan Road to Hillcrest Avenue, is 0.25 mile north of the project site. The Mokelumne Trail is maintained by the EBRPD and is within an existing EBRPD easement (EBRPD 2007).

Both the General Plan and the City's Subdivision Ordinance set a standard of 5.0 acres of parks and open space per 1,000 residents (City of Antioch Municipal Code 2015). The City receives land for parks through land dedications or purchases funded through fee collection. All park requirements are based on the Quimby Act, the State law regulating park exactions. The Subdivision Ordinance requires either a dedication of land at the rate of 0.015 acres per single-family unit, or payment of \$1,050 per unit. The current fee is based on a land cost of \$70,000 per acre (City of Antioch 2003).

Other Public Facilities

The Antioch Public Library District is a member of the Contra Costa County Public Library System. The Contra Costa County Library System is comprised of 27 public libraries (Contra Costa County Library 2015). The City maintains a five year capital improvement program that lists projects, along with their costs and funding sources. The Capital Improvement Program identifies proposed capital improvements for parks, trails, roadways, traffic signal projects, water and wastewater system improvements, and community facilities projects; such as community

centers, police facilities, city hall, and libraries (City of Antioch 2003). This program defines priorities for public improvements throughout the community (City of Antioch 2003). The closest library location to the project site is the Prewett Library, 1.8 miles from the project site.

3.14.2 Methodology

The following analysis is based on a review of documents pertaining to the proposed project, including the General Plan, General Plan EIR, City of Antioch Municipal Code, California Department of Education School Enrollment Database, MySchoolLocator, and Section 2.0, Project Description, of this IS/MND. The following impact discussions consider the effects of the proposed project related to public services in the City.

3.14.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact PUB-1 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?
Police protection?
Schools?
Parks?
Other public facilities?

Impact Analysis

Fire protection

Development of the proposed project would result in an increased demand for fire protection. As required by the California Fire Code, the proposed project would be required to include site specific design features such as ensuring appropriate emergency access, and requiring structures to be built with approved building materials. Conformance with this code reduces risks associated with fire hazards. Based on the California Department of Finance average household size for the City, the proposed project is anticipated to generate approximately 98 persons.

Fire service is currently provided to the project site by the CCCFPD. Prior to the issuance of building permits, the Development Plan would be reviewed and approved by the CCCFPD to ensure the proposed project is accessible in case of an emergency. Additionally, in accordance with the City Municipal Code, the applicant would be required to pay development impact fees for fire services (City of Antioch Municipal Code 2015). Development impact fees would

contribute to the maintenance and construction of future fire facilities in the City. Therefore, fire facilities would not need to be expanded with implementation of the proposed project. Impacts would be less than significant.

Police protection

Based on the City's ratio of 3.25 residents per unit, the proposed would house approximately 98 residents. The General Plan identifies a performance ratio which is 1.2 to 1.5 police officers per 1,000 individuals.

In order to reduce the proposed project's potential impact to police services, the proposed project would be required to participate in a Community Facilities District or other funding mechanism deemed acceptable by the City pertaining to police services. The City would require that the financing mechanism be established prior to the issuance of a building permit for the proposed project. The applicant would be required to establish the Community Facilities District or pay the City's costs to establish such mechanism. Therefore, through the establishment of such mechanism the proposed project would not result in the need to expand police facilities. Impacts would be less than significant.

Schools

The proposed project is located within the BUSD and the LUHSD. The closest schools students would likely attend are the Loma Vista Elementary school, Kindergarten through 5th grade, Adams (J. Douglas) Middle School, 6th through 8th grade, and Heritage High School. However, these school districts have the potential ability to redirect school children to specific schools (potentially further away) in order to maximize the effectiveness of existing resources and facilities.

Additionally, the Leroy F. Greene School Facilities Act of 1998, or Senate Bill 50 (SB 50), restricts the ability of local agencies to deny project approvals on the basis that public school facilities are inadequate. Therefore, school impact fees would be collected at the time building permits are issued. Pursuant to SB 50, the BUSD and LUHSD collect development impact fees on each new square foot of residential construction within their respective districts. Since the proposed project is located within the BUSD and LUHSD, the proposed project would be subject to the school's development impact fees. Assuming payments of fees pursuant to SB 50 are complete, the proposed project's level of impact to schools would be less than significant.

Parks

The proposed project would result in the development of a maximum of 30 new single-family residential dwelling units, generating 98 persons. The proposed project would be required to comply with the City's Municipal Code Subdivision Ordinance, Title 9 Section 4.1004, which sets forth a parkland dedication requirement of 5.0 acres per 1,000 people. The dedication of land is determined by the average number of persons per du multiplied by the standard of five acres per 1,000 persons. However since the proposed project is less than 50 parcels the applicant would have the option to pay an in-lieu fee established by Section 9-4.1007; rather than dedicating land. The in-lieu fee would be paid by the applicant and used to construct and

maintain new park facilities in the City. Therefore, with the dedication of land or collection of in-lieu fees, the proposed project's increase in population would not result in the need for other new parks and recreation facilities. Impacts would be less than significant.

Other public facilities

The proposed project would allow the development of a maximum of 30 new single-family residential dwelling units, an estimated population increase of 98 persons. The proposed project is subject to the payment of development impact fees, a portion of which is directly related to public services, such as public libraries. Therefore, with the payment of development impact fees impacts associated with other public facilities, such as public libraries, would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.15 RECREATION

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

3.15.1 Environmental Setting

Parks

City residents have access to a variety of active recreational lands, including: local parks, recreational facilities, regional parks, and open space areas within the City. The City oversees the operations and maintenance of 33 neighborhood, community, and joint/school parks; providing residents with over 400 acres of recreational area (City of Antioch 2003). There are two municipal parks, Heidorn Park, approximately 0.30 mile, and Chaparral Park, approximately 0.55 mile away from the proposed project.

The City also includes four regional parks, which are operated and maintained by the East Bay Regional Park District (EBRPD). These regional parks are the Antioch/Oakley Regional Shoreline, Black Diamond Mines Regional Preserve, Contra Loma Regional Park, and Morgan Territory Regional Preserve. The four regional parks provide the City with approximately 11,474 acres of additional recreational area and open space (City of Antioch 2003). The EBRPD also manages the Delta DeAnza Regional Trail, which begins in the City of Bay Point and spans over 15 miles of the planned 25 mile length to the City of Oakley. The Delta DeAnza trail crosses the City's western boundary with the City of Pittsburg at Somersville Road. The Delta DeAnza Regional Trail provides access to Antioch Community Park, as well as, to Contra Loma Regional Park, and Black Diamond Mines Regional Preserve (City of Antioch 2003). The Mokelumne Trail extends from Buchanan Road to Hillcrest Avenue, and is 0.25 mile north of the project site. The Mokelumne Trail is maintained by the EBRPD and is within an existing EBRPD easement.

The City has seven special-use facilities dispersed throughout the City and, requires 5.0 acres of parkland per 1,000 residents, as set forth by the City Municipal Code. This standard is above the

National Park and Recreation Commission Standard of approximately 4.00 acres per 1,000 people.

Both the General Plan and the City's Subdivision Ordinance set a standard of five acres of parks and open space per 1,000 residents. The City receives land for parks through land dedications or purchases funded through fee collection (City of Antioch 2003). All park requirements are based on the Quimby Act, the State law regulating park exactions. The Subdivision Ordinance requires either a dedication of land at the rate of 0.015 acres per single-family unit, or payment of \$1,050 per/unit. The current fee is based on a land cost of \$70,000 per acre (City of Antioch 2003).

3.15.2 Methodology

The following analysis is based on a review of the General Plan, General Plan EIR, City's Municipal Code, and Project Description, Section 2.0 of this IS/MND. The following impact discussions consider the effect of the proposed project as it relates to recreation.

3.15.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact REC-1 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?

Impact Analysis

The proposed project would involve the development of a maximum of 30 single-family residential dwelling units, generating approximately 98 residents based on the Department of Finance 2015 average household size figure of 3.25 for the City. The proposed project would be annexed into a Streetlight and Landscape District (LLD), specifically within the Lone Tree District No. 9. As such, for each du of the proposed project the applicant would be subject to payment of the LLD development impact fees. Payment of the LLD development impact fees would contribute toward the maintenance of existing facilities and would offset any increase in use that might result from the proposed project, which would potentially deteriorate a recreation facility. Therefore, impacts to recreational parks or facilities associated with implementation of the proposed project are less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact REC-2 Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact Analysis

Both the General Plan and the City's Subdivision Ordinance set a standard of five acres of parks and open space per 1,000 residents. According to Title 9, Section 4.1004, of the City's Municipal Code, determining the necessary land dedication per du is determined by the average number of persons per du multiplied by the standard of 5.0 acres per 1,000 persons. As such, the proposed project would be required to either dedicate land or pay a fee in-lieu of dedicated land, established by Title 9 Section 4.1007. With the dedication of land or payment of an in-lieu fee the proposed project would be compliant with the City's Subdivision Ordinance. As such, with the implementation of the proposed project, recreational facilities would not be required to be expanded. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.16 TRANSPORTATION AND TRAFFIC

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.16.1 Environmental Setting

Regional Roadway Network

SR 4 and State SR 160 provide direct access to the City. SR 4 runs east to west, connecting Antioch with Oakley, Brentwood, Pittsburg, Interstate-680 (I-680), Martinez, Pinole, and I-80. SR 4 is a divided freeway from I-680 east through Concord, Pittsburg, and Antioch, and is currently a two-lane roadway through Oakley and Brentwood. SR 4 has been one of the more congested

freeways in Contra Costa County, and is in the process of being widened. On and off-ramps between SR 4 and Antioch's local street network occur at East Eighteenth Street, Hillcrest Avenue, "A" Street/Lone Tree way, "G" Street/Contra Loma Boulevard, and Somersville Road.

SR 160 begins at the East Eighteenth Street/ SR 4 junction, and continues north over the San Joaquin River via the Antioch Bridge to Rio Vista and Sacramento (City of Antioch 2003). Access to and from SR 160 and Antioch's local street network occurs at Wilbur Avenue south of the Antioch Bridge. Primary arterials provide access to Pittsburg to the west, Oakley, and Brentwood to the east, and rural Contra Costa County to the south (City of Antioch 2003).

The City of Antioch participates in the East Contra Costa Regional Fee and Financing Authority (ECCRFFA). The ECCRFFA was formed by the Cities of Antioch, Brentwood, Pittsburg, and Contra Costa County. Transportation impact fees are collected from new development of help fund projects reduce the impact of that development on the regional transportation system. The collected fees contribute toward a series of regional transportation improvements, primarily the SR 4 Bypass and the widening of SR 4 through Pittsburg and Antioch (Fehr & Peers 2003).

Proposed Project Roadways

The proposed project would be accessible by two access points, one via Prewett Ranch Drive, west of the project site, and the other one on Heidorn Ranch Road via the proposed Prewett Ranch Drive extension, which would extend from the current eastern terminus of Prewett Ranch Drive, east to Heidorn Ranch Road. The Prewett Ranch Drive extension was surveyed and approved as part of the Heidorn Village Subdivision Project, directly north of the project site.

Prewett Ranch Drive begins west of Dallas Ranch Road and extends through Hillcrest Avenue to the western boundary of the project site where it terminates. Between Hillcrest Avenue and Cedar Point Way, there is a raised landscaped median. Street parking is prohibited in the portions of Prewett Ranch Drive that include the median. From Cedar Point Way to Summerfield Road, Prewett Ranch Drive is a 40 foot wide, two-lane residential collector street with on-street parking. If extended from its present terminus to Heidorn Ranch Road as is proposed, the Prewett Ranch Drive extension would provide direct access to the project site (Heidorn Subdivision Project 2015).

Heidorn Ranch Road extends in a north to south direction between Lone Tree Way and Old Sand Creek Road. Between Lone Tree Way and Lone Tree Plana Drive, Heidorn Ranch Road is a four-lane arterial street with raised, landscaped medians, left-turn storage lanes, Class II bike lanes, pedestrian sidewalks and/or pedestrian paths. In this area, the roadway provides access to residential and retail-commercial uses.

Transit conditions

The Tri Delta Transit provides transit service to the City as well as to Shore Acres, Bay Point, Pittsburg, Oakley, and Brentwood. The Tri Delta Transit would provide local service to the project site, with transfer service to and from the East Bay by Bay Area Rapid Transit (BART) and Contra Costa County Transit Authority (CCCTA). Four bus routes, Rotes 380, Route 383, Route 385 and Route 395, currently operate along Lone Tree Way and Hillcrest Avenue, approximately 0.50 mile

north of the project site, connecting the project site to the Pittsburg BART station, Hillcrest Park and Ride, Brentwood Park and Ride, and Antioch Park and Ride. In addition route 395 operates along Highway 4, approximately one mile east of the project site, connecting the project site to Brentwood and Antioch Park and Ride during Saturdays.

Bicycle and Pedestrian Facilities

Existing and proposed bikeway facilities in Antioch are distributed throughout the City. Class I facilities are bike paths that exclude motor vehicle access (City of Antioch 2003). Class II facilities are designated bike lanes that provide a space in the road for bicycle travel. Class III facilities are bicycle routes that provide signage to alert bicyclists and motorists that bicycle route exists (City of Antioch 2003). Pedestrian access is available throughout the developed areas of the City, including sidewalks, wheelchair ramps, and crosswalks (City of Antioch 2003). Many outlying areas are still rural in character, and do not have sidewalks, including Wilbur Avenue between Viera Avenue and SR 160, and Lone Tree Way east of Heidorn Ranch Road (City of Antioch 2003).

There are no specific bike facilities (bike path, bike lane, or bike route), in the immediate project vicinity. Bicyclists would need to share the travel lanes with automobiles. The Mokelumne Bicycle trail is located approximately 0.25 mile north of the project site.

Levels of Service

Level of Service (LOS) is a qualitative assessment of the perceptions of the traffic conditions by motorists or passengers. LOS generally reflects driving conditions such as travel time, speed, freedom to maneuver, and traffic interruptions. LOS uses quantifiable traffic measures such as average speed, intersection delays, and volume-to-capacity ratios to determine driver satisfaction (City of Antioch 2003).

LOS measures differ by roadway type because a driver's perception and expectations also vary by roadway type. Individual LOS are designated by letters "A" for most favorable to "F" for the least favorable (City of Antioch 2003). Each letter designation represents a range of conditions. LOS A represents free flow conditions, while LOS F indicates excessive delays and jammed conditions (City of Antioch 2003).

The roadway segments which were identified as having the potential of being affected by construction impacts are shown below in Table 3.16-1. Given the urban nature, the intersections presented are those which were identified as being impacted by construction activities and existing LOS were identified based on the General Plan. As shown in Table 3.16-1 the intersection operates at LOS C. LOS C is considered to provide stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream (City of Antioch 2003). According to the General Plan, the City's goal is to maintain a "mid-range D" LOS within residential areas, and on arterial roadways in non-regional commercial areas (City of Antioch 2003).

Table 3.16-1: Existing Volume and Levels of Service

Intersection	Number of Lanes Combined	ADT	v/c	Type of Arterial	LOS
Heidorn Ranch Road/ south of Lone Tree Way	4	680	0.05	Major	C
Notes: V/C= Volume- Demand-to-Capacity-Ratio Source: City of Antioch 2003					

3.16.2 Methodology

The transportation analysis is based on a Traffic Impact Study, prepared by Stantec on August 11, 2015 (Appendix I), the General Plan, General Plan EIR, and Project Description, Section 2.0, of this IS/MND. Trip generation and qualitative traffic analysis for the proposed project was estimated based on rates provided in the Trip Generation, 9th Edition, published by the Institute of Transportation Engineers.

Traffic impacts are evaluated by determining the number of new trips that the proposed project would be expected to generate, distributing these trips to the surrounding street system based on existing or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments.

3.16.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact TRANS-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Impact Analysis

Traffic Trip Generation

The proposed project's trip generation during the weekday a.m. and p.m. peak hours are presented in Table 3.16-2. As shown, a total of 368 weekday daily trips would accompany these uses. Of that total, 32 trips (8 inbound and 24 outbound) would be generated during the a.m. peak hour and 38 (24 inbound and 14 outbound) trips would be generated during the p.m. peak hour.

Table 3.16- 2: Trip Generation Summary

Land Use (ITE Code)	Size		Daily		a.m. Peak Hour			p.m. Peak Hour				
			Rate/Equ	Total	Rate/Equ	In	Out	Total	Rate/Equ	In	Out	Total
Single-Family Detached Housing (210)	32	units	Equ A	368	Equ B	8	24	32	Equ C	24	14	38
TOTAL			-	368	-	8	24	32	-	24	14	38
Notes: Equ A: $\text{Ln (T)} = 0.80 \text{ Ln (X)} + 1.57$ Equ B: $T = 0.70 (X) + 9.74$ Equ C: $\text{Ln (T)} = 0.90 \text{ Ln (X)} + 0.51$ Source: ITE Trip Generation, 9th Edition; Stantec August 2015												

The proposed project trips were distributed to the two access points at the existing Prewett Drive west of the project site and Heidorn Ranch Road via the proposed Prewett Ranch Drive extension. The trip distribution was based on the closeness of the lots to each access point and the existing traffic patterns.

According to the General Plan, Heidorn Ranch Road is currently operating at LOS C or better, which is an acceptable LOS according to the General Plan. Therefore, due to the location of the project site, located in a suburban residential area with vacant land to the south of the project site, it is expected that the traffic volume generated on Heidorn Ranch Road and the Prewett Ranch Drive extension would be low. Therefore, based on the trip generation calculations the proposed project inbound and outbound trips during both the a.m. and p.m. peak hours, are not expected to cause a significant impact (Stantec 2015).

Additionally, the project site is served by both local and regional public transit. As described above, the Tri Delta Transit buses would provide local transit service to the project area. The Tri Delta Transit bus service provides residents a connection to BART, and multiple Park and Ride locations within the City. Due to the relatively small size of the proposed project, the project generated transit person trips would be accommodated by the existing transit system (Stantec 2015).

Furthermore, there are no specific bike facilities; bike path, bike lane or bike route, in the immediate project vicinity. The nearest bicycle facility to the proposed project is the Mokelumne Bicycle Trail, 0.25 mile north of the project site. However, due to the relatively small size of the proposed project, the project generated bike trips are not expected to be high enough to bring any significant impact to the existing bicycle conditions in the project vicinity (Stantec 2015).

As such, the proposed project would not conflict with the established performance standards of the existing circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact TRANS-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact Analysis

The CCTA serves as the Congestion Management Agency (CMA) for Contra Costa County. As the CMA, the CCTA must, under State law, prepare a Congestion Management Program (CMP) and update it every two years. The CMP is meant to outline the CCTA's strategies for managing the performance of the regional transportation within the County. A CMP must contain several components: traffic LOS standards for State highways and principal arterials; multi-modal performance measures to evaluate current and future systems; a seven-year capital program of projects to maintain or improve the performance of the system or mitigate the regional impacts of land use projects; a program to analyze the impacts of land use decisions; and a travel demand element that promotes transportation alternatives to the single-occupant vehicle.

As addressed in Impact TRANS-1 and the Traffic Study (Appendix I), the proposed project would not generate a significant increase in traffic volume during construction or operation of the proposed project. Therefore, Heidorn Ranch Road and Prewett Ranch Drive extension would maintain an acceptable LOS. As such, the proposed project would not conflict with the provisions of a CMP, and impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact TRANS-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Impact Analysis

The Byron Airport is located approximately 11.0 miles southeast of the project site. As such, the proposed project would not result in any changes to air traffic patterns and would not result in any associated safety risks. No impact would occur as the proposed project would not involve use of air transit, nor is it expected to cause any change in air traffic patterns.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact TRANS-4 Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact Analysis

The proposed project does not propose to make changes to a roadway that would create road hazards or alter design features developed to mitigate such hazards. Vehicular access to the project site would be from two access driveways on Heidorn Ranch Road and the proposed Prewett Ranch Drive extension, therefore the only new circulation improvements would be from project-related driveway approaches in order to access the project site. No impact would occur.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact TRANS-5 Result in inadequate emergency access?

Impact Analysis

Construction and operation of the proposed project would not affect streets or otherwise affect emergency access routes. The proposed project would be designed to incorporate all required CCCFPD standards to ensure that implementation of the proposed project would not result in hazardous design features or inadequate emergency access to the project site or areas surrounding the project site. Furthermore, the proposed project would not generate significant traffic volumes during construction or operation. Therefore impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact TRANS-6 Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Impact Analysis

Tri Delta Transit provides public transit service throughout the City. There are four bus routes, Rotes 380, Route 383, Route 385 and Route 395, currently operate along Lone Tree Way and Hillcrest Avenue, approximately 0.50 mile north of the project site, connecting the project site to the Pittsburg BART station, Hillcrest Park and Ride, Brentwood Park and Ride, and Antioch Park and Ride. There are no existing bicycle facilities in the immediate project vicinity. The Mokelumne Bicycle Trail is the nearest bicycle trail to the project site, located 0.25 mile north of the project site. Due to the relatively small size of the proposed project, the generated transit person trips would be accommodated by the existing transit system. Therefore, impacts related to alternative transportation would be less than significant.

Additionally, all dwelling units would have garages and other interior spaces suitable for storing bicycles. The internal streets within the proposed project would be suitable for travel by bicycle. The proposed project would provide an internal pedestrian network that would connect to existing sidewalks along Colchico Drive and the proposed Prewett Ranch Drive extension. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.17 UTILITIES AND SERVICE SYSTEMS

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the proposed project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, State, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.17.1 Environmental Setting

The City is responsible for collection of wastewater and maintenance of the sewer lines located primarily underground in the City. The Delta Diablo Sanitation District (DDSD) provides treatment service to Antioch, Pittsburg, and Bay Point. The DDSD is responsible for conveyance of wastewater from the point of discharge from City pipes to interceptor stations, which convey the sewage to the Bridgehead and Antioch pump stations. Stormwater collection in the City is overseen by the Contra Costa County Flood Control and Water Conservation District (Flood Control District). The stormwater trunk lines discharge to channels maintained and owned by the City and Flood Control District. Pleasant Hill Bayshore Disposal provides solid waste collection, disposal, recycling, and yard waste services to the City. Solid waste and recyclables are transported to the Contra Costa Transfer and Recovery Station located in Martinez. Recyclables are separated out and stored at the Transfer and Recovery Station, while solid waste is transferred to the Keller Canyon Landfill in Pittsburg.

Pacific Gas and Electric (PG&E) supplies electricity and natural gas services to the City. Pacific Bell is the provider of residential and commercial telecommunication services for the City.

3.17.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, City of Antioch 2010 Urban Water Management Plan (UWMP), and Section 2.0, Project Description, of this IS/MND. The following impact discussions consider the effects of the proposed project related to utilities and service systems in the City.

3.17.3 Environmental Impact Analysis

This section discusses potential impacts associated with the proposed project and provides mitigation measures where necessary.

Impact UTIL-1 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Impact Analysis

The DDSD is responsible for treating and discharging treated wastewater for the Cities of Antioch and Pittsburg and the unincorporated community of Bay Point located in Contra Costa County. The DDSD operates according to regulations administered by the RWQCB and Clean Water Act of 1972. The DDSD operates under NPDES Permit No. CA0038547. According to the 2010 UWMP the region collects an estimated 14,700 acre feet per year (AFY) of wastewater per year. Approximately 42 percent of the wastewater is used for recycled supply for various uses. The Antioch Wastewater Treatment Plant (AWWTP) has a rated average dry weather flow capacity of 16.5 million gallons per day (mgd). According to the DDSD the average daily wastewater flow is 13.5 million gallons. The DDSD uses the standard multiplier for residential base wastewater flow of 220 gallons per day (gpd). With the proposed addition of 30 new single-family residential dwelling units, the proposed project wastewater flow is anticipated to be 22,880 gpd. The

AWWTP operates below the flow capacity with approximately three mgd in unused capacity. Therefore, the AWWTP would be able to accommodate increased flows associated with the proposed project within existing permit conditions. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-2 Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

The AWWTP has an average dry weather flow of 16.5 mgd. According to the DDSD's most recent Annual Financial Report in 2013, the AWWTP was treating an average of 13.4 mgd. The AWWTP has an average dry weather flow of 16.5 mgd. According to the General Plan EIR, the standard multiplier for residential base wastewater flow is 220 gpd. The proposed project would develop 30 single-family residential units. Therefore, it is anticipated that the proposed project wastewater flow would be 22,880 gpd. The AWWTP has approximately 3.1 mgd in unused capacity, and would be able to support the proposed project.

As discussed in Section 2.0, Project Description, the proposed project includes the extension of a 10 inch water line from the eastern terminus of Prewett Ranch Drive to Heidorn Ranch Road. The southern terminus of the Heidorn Ranch Road line is then required to be extended to Prewett Ranch Drive to complete the looped water system. An 8 inch water line would branch off at the proposed intersection of Colchico Drive and Prewett Ranch Drive, extend south to Chamberlain Street, and then extend west to the Chamberlain Street cul-de-sac. The proposed project would also require the extension of a 12 inch sewer line from the eastern terminus of Prewett Ranch Drive to Heidorn Ranch Road. The southern terminus of the Heidorn Ranch Road line is then required to be extended to Prewett Ranch Drive to complete looped sewer system. An 8 inch sewer line would branch off at the proposed intersection of Colchico Drive and Prewett Ranch Drive, extend south to Chamberlain Street, and then extend west to the Chamberlain Street cul- de-sac.

Additionally, the City presently has a contracted water supply of 49,149 AFY. Proposed project water consumption would represent 0.045 percent of the City's potable water supply. Therefore, the incremental water consumption by the proposed project would be sufficient and not require new or expanded water facilities and impacts would be less than significant.

In conclusion, these improvements have been determined adequate by the City to serve the proposed project and maintain the looped wastewater and water systems. Therefore, impacts to the existing wastewater and water systems with implementation of the proposed project would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-3 Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

Impact Analysis

The proposed project would include landscaped areas and bioretention basins that would retain and treat their own runoff. The runoff from roofs, asphalt, pavement, concrete curbs, driveways, and other permeable surfaces would be collected and conveyed to the 17,639 sf bioretention basin (Parcel A) in the northeastern portion of the proposed project, fronting the proposed Prewett Ranch Drive, between lots 6 and 7. Treated runoff would be required to comply with C.3 requirements in the California Water Quality Control Boards' Municipal Regional Permit. In addition, the applicant would be required to construct storm drain facilities to adequately collect and convey stormwater entering or originating within the project site and convey it to the bioretention basin, per Title 9 of the County Ordinance Code. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-4 Have sufficient water supplies available to serve the proposed project from existing entitlements and resources, or are new or expanded entitlements needed?

Impact Analysis

The City receives water from two sources. The CCWD, supplies the City with raw water obtained from the Sacramento-San Joaquin Delta and delivers it to the City via the Contra Costa Canal (City of Antioch 2003). In addition, to the water supplied by the CCWD, the City has rights to divert water directly from the San Joaquin River. In order to obtain water from the San Joaquin River, the City pumps water for this purpose (City of Antioch 2003). In the last several years, the City has increased the amount of water pumped from the San Joaquin River, to approximately 9,000 acre-feet, a level that is approaching the amount purchased annually from the CCWD (City of Antioch 2003).

Per 2010 UWMP, the CCWD does not anticipate any water supply deficits through 2030 for normal years, single-year droughts, and the first year of multiple year droughts. In 2004 residential uses accounted for 76 percent of water demands. The City estimates future water use demand based on housing projections, using a water use factor of 190 gallons per capita per day. The potential water consumption for the proposed project, assuming 3.25 residents per du, would be approximately 19,760 gpd, which is equivalent to 7,212,400 gallons per year or 22.13 AFY.

The City presently has a contracted water supply of 49,149 AFY. Proposed project water consumption would represent 0.045 percent of the City's potable water supply. Therefore, the incremental water consumption by the proposed project would be sufficient and not require new or expanded entitlements. Impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-5 Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impact Analysis

The DDSD's Water Pollution Control Facility (WPCF) has secondary and partial tertiary treatment capabilities with a rated average dry weather flow capacity of 16.5 mgd. Currently the DDSD's flow rate is approximately 13.5 mgd, providing three mgd of unused capacity.

The proposed project would require the extension of a 12 inch wastewater line from the eastern terminus of Prewett Ranch Drive to Heidorn Ranch Road. The southern terminus of the Heidorn Ranch Road line is then required to be extended to Prewett Ranch Drive to complete looped wastewater system. An 8 inch wastewater line would branch off at the proposed intersection of Colchico Drive and Prewett Ranch Drive, extend south to Chamberlain Street, and then extend west to the Chamberlain Street cul-de-sac.

Future wastewater demands from the proposed project would not exceed the design or permitted capacity of the WPCF serving the proposed project. As a result from the plans to expand the wastewater line and the adequate capacity available to treat wastewater generated by the proposed project, a less than significant impact would occur.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-6 Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Impact Analysis

Solid waste from the project site would be transferred to the Keller Canyon Landfill in Pittsburg. The Keller Canyon Landfill is permitted to handle 19,000 tons of solid waste per day (City of Antioch 2003). The transfer station currently handles 13,000 tons per day and is operating at 68 percent capacity. The Keller Canyon Landfill is approximately 1,399 acres, 244 acres is the actual current disposal acreage. The landfill is permitted to accept 3,500 tons of waste per day and is currently receiving an average of 2,600 tons per day of waste. The Keller Canyon Landfill has a lifetime capacity of 64 million cubic yards, however the actual site capacity is estimated at over 70.2 million cubic yards. The Keller Canyon Landfill estimates its lifespan to be 68 additional years, which accounts for expected growth in Contra Costa County.

According to the General Plan EIR, the City uses a standard multiplier of 8.2 pounds of solid waste per day per resident. Based off of the California Department of Finance January 1, 2015 estimated average household size of 3.25 persons the proposed project would dispose of 852.8 pounds of solid waste per day, or approximately 0.43 tons per day. The proposed project would represent approximately 0.016 percent of daily capacity. In addition, the actual percentage would probably be less as the City has implemented several waste diversion programs in order to encourage the diversion of solid waste from landfills. The waste diversion programs have led to a reduction of solid waste by 50 percent. However, even with or without implementation of waste diversion programs the proposed project impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact UTIL-7 Comply with federal, State, and local statutes and regulations related to solid waste?

Impact Analysis

The proposed project would be served with curbside solid waste, recycling, and green waste collection service, which are standard services for residential uses in Antioch. California State Assembly Bill 939 (AB 939) mandates the reduction of solid waste disposal in landfills by 50 percent in 2000 and by 75 percent in 2020. The City's General Plan Policy 8.6.2(h) indicates that the City shall follow State regulations of maintaining a 50 percent reduction in solid waste disposal. Therefore, the City offers multiple programs to help residents reach the goal of reducing waste by 75 percent in 2020. The proposed project would also comply with the Title 6, Chapter 3, of the City's Municipal Code, which requires City residents to participate in the City's mandatory service of solid waste and recycling. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

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3.18 MANDATORY FINDINGS OF SIGNIFICANCE

Would the Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental impacts of a project are considerable when viewed in connection with the impacts of past projects, the impacts of other current projects, and the effects of probable future Projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental impacts which will cause substantial adverse impacts on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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, 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?

Impact Analysis

As evaluated in this IS/MND, the proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory. Mitigation measures have been included herein to lessen the significance of potential impacts to special-status species and habitats through the incorporation of Mitigation Measures BIO-1 through BIO-3 and Mitigation Measures CUL-1 through CUL-3 would be included herein to reduce potential impacts to cultural resources as less than significant. The City has agreed to implement all required mitigation measures; therefore, impacts from the proposed project would be less than significant.

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

Impact Analysis

As described in the impact analysis in Sections 3.1 through 3.17 of this IS/MND, any potentially significant impacts of the proposed project would be reduced to a less than significant level following incorporation of the mitigation measures listed herein. Projects completed in the past have also implemented mitigation measures as necessary. Similarly, future projects would be required to implement mitigation measures for potential impacts. Accordingly, the proposed project would not otherwise combine with impacts of related development to add considerably to any cumulative impacts in the region, and impacts would be considered less than significant.

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

Impact Analysis

The proposed project would not directly or indirectly cause substantial adverse effects on human beings. Air quality, greenhouse gases, hazardous materials, and/or noise would have the only potential to cause substantial effects on human beings. However, all potential effects of the proposed project related to air quality, greenhouse gases, noise, and hazardous materials are identified as less than significant or less than significant with the implementation of mitigation. For

all other resource sections included in this IS/MND, the environmental impact analysis indicates the proposed project would either have no impact or a less than significant impact on human beings.

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