Wild Horse Multifamily Project

Initial Study

May 21, 2021

Lead Agency:

City of Antioch
Planning Division
200 H Street
Antioch, CA 94509

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Acronyms and Abbreviations

°F.	degrees Fahrenheit
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AM	morning
APD	Antioch Police Department
APN	Assessor's Parcel Number
Applicant	CCP-Contra Costa Investor, LLC
AQP	air quality plan
AWS	Alameda Whipsnake
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BMPs	best management practices
CalEEMod	California Emissions Estimator Model
CALFIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
CAP	climate action plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCCFPD	Contra Costa County Fire Protection District
CCR	California Code of Regulations
CCWD	Contra Costa Water District
CDFW	California Fish and Wildlife Service
CEQA	California Environmental Quality Act
CH_4	methane
CHRIS	California Historical Resources Information System
City	City of Antioch
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CY	cubic yards
dB	decibel
dB(A)	A-weighted decibels
DDSD	Delta Diablo Sanitation District

DOC	California Department of Conservation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
ECC Subbasin	East Contra Costa Subbasin
EIR	Environmental Impact Report
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FTA	Federal Transit Administration
General Plan EIR	City of Antioch General Plan Environmental Impact Report
General Plan	City of Antioch General Plan
GIS	geographic information system
gpd	gallons per day
GSP	Groundwater Sustainability Plan
HB VMT	home-based vehicle miles traveled
HCP/NCCP	Habitat Conservation Plan/Natural Community Conservation Plan
HCP	habitat conservation plan
HRA	Health Risk Assessment
IS	Initial Study
ITE	Institute of Transportation Engineers
KBTU	kilo British thermal units
KWhr	kilowatt-hours
Ldn	day-night sound level
Leq	equivalent sound level
Lmax	maximum sound level
Lmin	minimum sound level
LOS	level of service
MEIR	maximally exposed individual receptor
mgd	million gallons per day
mgy	million gallons per year
MLD	most likely descendant
MM	Mitigation Measure
$MTCO_2e$	metric tons of carbon dioxide equivalent
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
N_2O	nitrous oxide
NAHC	Native American Heritage Commission

NCCP	Natural Community Conservation Plan
NOA	naturally occurring asbestos
NOI	Notice of Intent
NOx	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OPR	Governor's Office of Planning and Research
PC	project characteristics
PG&E	Pacific Gas and Electric Company
PM	afternoon
PM_{10}	particulate matter between 2.5 and 10 microns
$PM_{2.5}$	fine particulate matter
POTWs	publicly owned treatment works
PPV	peak particle velocity
PRC	Public Resources Code
proposed project	Wild Horse Multifamily Project
RCNM	Roadway Construction Noise Model
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan and Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SIP	State Implementation Plan
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TAZ	traffic analysis zone
UCMP	University of California Museum of Paleontology
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
WWTP	wastewater treatment plant
WMP	waste management plan

1.0 INTRODUCTION

1.1 PURPOSE OF INITIAL STUDY

An Initial Study (IS) is a preliminary analysis which is prepared to determine the relative environmental impacts associated with a proposed project. It is designed as a measuring mechanism to determine if a project will have a significant adverse effect on the environment, thereby triggering the need to prepare an Environmental Impact Report (EIR). This IS has been prepared consistent with California Environmental Quality Act (CEQA) Guidelines Section 15063, to determine if the proposed project may have a significant effect upon the environment. A Notice of Preparation of an EIR has been prepared along with this IS.

1.2 PROJECT SUMMARY

CCP-Contra Costa Investor, LLC (Applicant) is proposing the Wild Horse Multifamily Project (proposed project) in the City of Antioch (City). The proposed project involves the development of 126 multifamily residences in 25 buildings with related amenities on an approximately 12-acre site. The proposed project would also include parking, landscaping managed by a homeowner's association, and 1.6 acres of usable open space. The project site includes approximately 1.6 acres as an offer of dedication for construction of Wild Horse Road, a paved road near the property's southern boundary, of which construction began by another developer on September 1, 2020.

1.3 PROJECT TITLE

Wild Horse Multifamily Project

1.4 LEAD AGENCY

City of Antioch
200 H Street
Antioch, CA 94509-1285

1.5 LEAD AGENCY CONTACT

City of Antioch
Zoe Merideth, Associate Planner
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1.6 PROJECT APPLICANT

CCP-Contra Costa Investor, LLC
Phillip Su
893 Corporate Way
Fremont, CA 94539

1.7 PROJECT LOCATION

The proposed project is located in the City of Antioch in Contra Costa County, California. The approximately 12-acre project site is triangular in shape. The proposed project is on a vacant parcel identified as Assessor's Parcel Number (APN) 041-022-003. Figure 1.7-1 is a regional overview, Figure 1.7-2 is the Project Site Location, and Figure 1.7-3 is the Project Site Plan.

Figure 1.7-1. Regional Overview

Figure 1.7-2. Project Site Location

Figure 1.7-3. Project Site Plan

1.8 EXISTING SETTING

The project site is on a vacant parcel located in the City of Antioch. The project site is surrounded by State Route 4 to the east, residential development to the west, and Wild Horse Road, the Contra Costa Water District (CCWD) Antioch Service Center, and the Contra Costa Canal to the south. The property is primarily covered with annual grasslands and no trees are present on the project site. There are no natural drainages on the Property. The topography of the Property is mostly flat with a slight rise to the southwest corner. There is also a man-made circular depressional area that makes up a detention basin at the north end of the Property. The topography outside the Property boundary is elevated on both the east and west sides. Elevations on the Property range from 70 feet above sea level at the north end to 108 feet above sea level at the southern end. The center of the constructed detention basin has an elevation of 66 feet above sea level.

1.9 LAND USE DESIGNATIONS AND ZONING

1.9.1 Existing General Plan and Zoning

General Plan Land Use Designation

The City of Antioch's General Plan (General Plan) designates the project site as Low Density Residential, which is defined as follows:

> *"These areas are generally characterized by single-family homes in traditional subdivisions. Areas designated Low Density Residential are typically located on gently rolling terrain with no or few geological or environmental constraints. The residential neighborhoods of southeast Antioch reflect this residential density."*
>
> (City of Antioch 2003a)

Zoning District

The City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned Development District.

1.9.2 Proposed General Plan and Zoning

The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation. A Final Development Plan and a vesting tentative map for condo purposes would also be required.

Proposed General Plan Land Use Designation

The Applicant is proposing to change the General Plan designation of the project site to High Density Residential, and is defined as follows:

> *"High Density Residential densities may range up to thirty-five (35) dwelling units per gross developable acre, with density bonuses available for age-restricted, senior housing projects. Two-story apartments and condominiums with surface parking typify this density, although structures of greater height with compensating amounts of open space would be possible. This designation is intended primarily for multifamily dwellings. As part of mixed-use developments within the Rivertown area and designated transit nodes, residential development may occur on the upper floors of buildings whose ground floor is devoted to commercial use. Permitted densities and number of housing units will vary, depending on topography, environmental aspects of the area, geologic constraints, existing or nearby land uses, proximity to major streets and public transit, and distance to shopping districts and public parks. The Zoning Ordinance will establish specific density limits at or below 35 units per acre for zoning districts that correspond with the High Density Residential designation. Higher densities will be allowed where measurable community benefit is to be derived (i.e., provision of needed senior housing or low and moderate income housing units). In all cases, infrastructure, services, and facilities must be available to serve the proposed density, and the proposed project must be compatible with surrounding land uses.*
>
> *Appropriate Land Use Types: Medium Density Residential, High Density Residential, Rivertown Commercial, Mixed Use, and Mixed Use Medical Facility*

> *Maximum Allowable Density: Thirty-five (35) dwelling units per gross developable acre (35 du/ac) and up to a Floor Area Ratio of 1.5 within areas designed for mixed use or transit-oriented development.*
>
> *Anticipated Population per Acre: Forty (40) to seventy (70) persons per acre."*
>
> (City of Antioch 2015a)

Proposed Zoning District

The project would require a rezone to a new Planned Development District. The Planned Development District is described in the City's municipal code 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. Further-more, 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."*
>
> (City of Antioch 2003a)

1.10 DOCUMENT ORGANIZATION

This IS is organized as follows:

- Section 1.0: Introduction. This section introduces the proposed project and describes the purpose and organization of this document.
- Section 2.0: Project Description. This section describes the purpose and need for the proposed project, identifies project objectives, and provides a detailed description of the project.

- Section 3.0: Environmental Checklist and Environmental Evaluation. This section presents an analysis of the range of environmental issues identified in the CEQA Environmental Checklist and determines for each topic whether 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. If impacts are determined to be potentially significant after incorporation of applicable mitigation measures, an Environmental Impact Report would be required.
- Section 4.0: References. This section lists the references used in preparing this Initial Study.
- Section 5.0: List of Preparers. This section identifies the report preparers.

2.0 PROJECT DESCRIPTION

The project would involve development of multifamily residences on an approximately 12-acre site at the terminus of Wild Horse Road and State Route 4 in Antioch, California. The project site is currently vacant and consists of a single parcel identified as APN 041-022-003. The Applicant is proposing to develop 126 multifamily residences with 25 buildings each with 2 to 8 units. The applicant created design guidelines for a future development, but the Applicant is not proposing to develop the property at this time. The project design would be reviewed during the City's design review process in accordance with Section 9-5.2607 of the Antioch Code of Ordinances. The project site is inclusive of 1.6 acres as an offer of dedication for construction of Wild Horse Road near the property's southern boundary, of which construction began by another developer on September 1, 2020.

2.1 PROJECT CHARACTERISTICS

The Applicant is proposing to develop 126 multifamily residences with 25 buildings each with two to eight units. The units would range in size from approximately 1,120 to 1,900 square feet, with 2 to 4 bedrooms and 2 to 3.5 baths. Maximum height of buildings would be 45 feet. All units would have 2 car attached garages. The proposed project would also include parking, landscaping managed by a homeowner's association, and 1.6 acres of usable open space.

2.1.1 Architectural Styles

The proposed project would include one of four types of architectural styles: Spanish, Craftsman, Farmhouse, or Contemporary. Regardless of the architectural style chosen, unique architectural elements would be incorporated and would be required to meet the project's design guidelines, the City's architectural design requirements, and be subject to Design Review prior to the issuance of a building permit. The four potential architectural style options for the proposed project are described below:

- Spanish Style design characteristics are generally identified as low-pitched hipped or gable roof, S-tile or villa tile roof material, smooth finish or very little texture stucco, window shutters, and exposed wood posts and beams.

- Craftsman Style design characteristics are generally identified as low-pitched hipped or gable roof, wide-overhanging eaves, emphasis on horizontal lines,

board and batten or clapboard siding with various course exposures, decorative beams or braces commonly added under gables, porches that cover the length of the front elevation and often wrap onto side elevations, and stone and/or brick veneer is often used at the lower portion of the elevation.

- Contemporary design characteristics are generally identified as minimal ornamentation, use of strong, organized, geometric forms and massing, juxtaposition of different, and sometimes contrasting materials, use of natural textures such as wood, metal and stone, and austere elevations with high contrast in areas of entry or interest.

- Farmhouse design characteristics are generally identified as variable size entry porch with style specific detailing, prominent gable roof forms with occasional use of hip roof forms, horizontal siding with various exposures, vertical proportioned windows, steep gable roof pitches, and wide entry porch with separate shed roof and minimal detailing.

2.1.2 Landscaping

Landscaping for the proposed project would be required to meet the general design standards outlined in the City's Municipal Code, which states that "all landscaping and irrigation systems shall be designed, installed and maintained in accord with the standards and requirements of this section, which shall apply to all commercial, industrial, and residential projects requiring planned development, use permit and/or Design Review Board approval(s)" (City of Antioch 2003a).

According to the preliminary landscape plan prepared for the proposed project, landscaped areas would generally incorporate plantings utilizing a three- tier system: (1) grasses and ground covers, (2) shrubs and vines, and (3) trees. All plant materials for the landscaping plan would be selected from the California Department of Water Resources "Water-Use Classification of Landscape Species" and would emphasize water-efficient plants. A bioretention basin would be located in the northern corner of the proposed project, trees would line the private streets and property boundaries, and the Paseos would include trees, shrub, and ground cover areas. Entrances, walls, and fences would be landscaped to provide buffers for security and privacy. Community features such as plazas, interactive water features, and community gardens would be included.

2.1.3 Open Space Areas

The proposed project would include 1.6 acres of usable open space, that would serve as a central gathering place for the community. Buildings would be oriented to create courtyards and usable open space areas. The shared open space would include both active and passive recreational opportunities including a lawn, green landscaped areas, children's play equipment, four pedestal picnic tables, including two pedestal picnic tables in compliance with the American Disabilities Act, and grills. The Paseos would include entry arbors, paved pathways lined with trees, shrubs, and ground cover.

2.1.4 Vehicular Access

Primary site access would be via Wild Horse Road and onto two streets ("A" Street and "B" Street) within the project site. Shared open space would be designed with sidewalks, street trees, and pedestrian lighting. The proposed streets would be 26 feet wide to allow emergency vehicles to access the project site.

2.1.5 Parking

The proposed units would have two car attached garages, totaling 256 private parking spaces. The proposed project would include an additional 45 on street pull-in parking spaces. The proposed project would also include 10 common use bicycle racks for bicycle parking throughout the project. Each bicycle rack will accommodate two bicycles.

2.1.6 Lighting and Security

Lighting is a safety feature and shall be used to light all streets, pathways, and open areas. Street lighting interior to the site would be installed on both sides of the streets using a minimum 70-watt high pressure sodium light bulb. All lighting in parking areas would be arranged to provide safety and security for residents and visitors but prevent direct glare of illumination onto adjacent units. Pedestrian-scaled lighting would be located along all pedestrian routes of travel within multifamily communities. Pathway lighting is a safety feature and will be used to light all pathways and open areas including pathways from the parking lot to the building's entrance. All site entrances will be visible from a public street and well lighted.

As required by the City, all developments must provide adequate lighting and illumination of parking areas and is subject to design review. Lighting fixtures shall not shine directly onto an adjacent street or property.

2.1.7 Utilities

Water and sewer would be provided by the City and gas and electric would be provided by Pacific Gas and Electric Company. The proposed development plans would be required to meet the City criteria during the City's development review phase, prior to issuance of a building permit. The proposed project would also include curbs, gutters, catch basins, fire hydrants, flow lines, sidewalks, manholes, utility boxes.

Water

The proposed project would connect new 8-inch and 6-inch water main lines that would run along the new proposed project streets to the existing 10-inch water main located along Wild Horse Road on the southern perimeter of the proposed project.

Wastewater

The City maintains and owns the local wastewater collection system and is responsible for the collection and conveyance of wastewater for the project site. Delta Diablo Sanitation District (DDSD) is the agency physically treating the wastewater at their facility. The proposed project would construct lateral 8-inch diameter sewer lines to service the residences and would connect to the existing 8-inch public sanitary sewer main line located along Wild Horse Road. All sewer distribution improvements would be constructed and designed in accordance with the City's Design Standards.

Stormwater

The proposed project would include installation of new 18-inch and 24-inch storm drains and storm drain outfall. The storm drains would connect to the bioretention basin and existing 48-inch and 36-inch storm drain pipes along the western perimeter of the proposed project. The proposed project would create 214,032 square feet of impervious surface. It would also include 284,502 square feet of pervious surface consisting of landscaping and bioswale landscaping throughout the project site and a bioretention basin in the northern corner of the project site. This bioretention area would be used to treat runoff from the impervious roofs, roadways and landscaped areas. The project would also implement low impact development design strategies, such as optimizing

site layout to limit development envelope, preserve natural drainage features, minimize impervious surfaces, use drainage as a design element, dispersal of runoff to pervious areas, and bioretention facilities.

Electricity

Pacific Gas & Electric Company (PG&E) would provide electricity and natural gas services to the project site. The proposed project would connect to existing underground electric and natural gas lines on the project site and/or in adjacent roadways. Section 4.5, Energy, contains detailed information on the proposed project's energy usage.

2.2 PROJECT CONSTRUCTION

2.2.1 Schedule

It is anticipated that project construction would take approximately 13 months to complete, starting in January 2023. The proposed project would require up to 79 workers during the peak construction phase. Project construction activities would be consistent with the Antioch Municipal Code Section 5-17.05 and would occur on weekdays from 7:00 a.m. - 6:00 p.m., on weekdays within 300 feet of occupied dwellings, 8:00 a.m. - 5:00 p.m., and on weekends and holidays 9:00 a.m. - 5:00 p.m., irrespective of the distance from the occupied dwellings (City of Antioch 2020a). The construction worksite would be operated in accordance with applicable public health standards, including those required in response to the Coronavirus (COVID-19).

2.2.2 Construction Equipment, Access, and Staging Areas

The proposed project would require the use of heavy construction equipment for site work and construction of the multifamily residences. Construction equipment would include but not be limited to concrete/industrial saws, rubber-tired dozers, tractors/loaders/backhoes, graders, scrapers, cranes, forklifts, generator sets, welders, air compressors, cement and mortar mixers, pavers, paving equipment, and rollers. Construction workers would access the project site from Wild Horse Road. Project construction equipment and materials would be stored within the project site. Construction materials and equipment would be delivered using trucks during the daytime hours (between 7 a.m. and 6 p.m.). Road closures are not anticipated during project construction.

2.2.3 Construction Activities

Construction activities associated with the proposed project would require demolition, grading, utility connections, building construction, construction of the new streets, and landscaping on the project site. Construction of the proposed project would involve approximately 11,600 cubic yards (CY) of cut and 86,000 CY of fill, of which approximately 74,400 CY of soil would be import fill, as deemed appropriate by the geotechnical engineer. The maximum depth of ground disturbance would be 15 feet.

3.0 ENVIRONMENTAL CHECKLIST AND ENVIRONMENTAL EVALUATION

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Land Use and Planning
☐	Agriculture and Forestry Resources	☐	Mineral Resources
☐	Air Quality	☐	Noise
☐	Biological Resources	☐	Population and Housing
☐	Cultural Resources	☐	Public Services
☐	Energy	☐	Recreation
☐	Geology and Soils	☒	Transportation
☐	Greenhouse Gases	☐	Tribal Cultural Resources
☐	Hazards and Hazardous Materials	☐	Utilities and Service Systems
☐	Hydrology and Water Quality	☐	Wildfire

Evaluation of Environmental Impacts

This section presents the environmental checklist form found in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the project. A discussion follows each environmental issue identified in the checklist. Included in each discussion are project-specific mitigation measures, if needed.

For the 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 EIR must be prepared.
- Less Than Significant with Mitigation Incorporated: This designation applies when applicable and feasible mitigation measures have reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact" and, pursuant to Section 21155.2 of the PRC, those measures are incorporated into the Initial Study.
- 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.

DETERMINATION

Based on this initial evaluation:

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

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

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

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that are significant and unavoidable.

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

Zoe Merideth
Associate Planner City of Antioch

5/19/2021
Date

3.1 AESTHETICS

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

3.1.1 Environmental Setting

Visual Character of the Project Site

The proposed project is located on an approximately 12-acre vacant site in the City. The project site is surrounded by State Route 4 to the east, residential developments to the west, and Wild Horse Road, the CCWD Antioch Service Center, and the Contra Costa Canal to the south. The project site is located at the eastern end of Wild Horse Road and existing developments near the project site are mostly single-family homes. The project site does not contain any General Plan designated scenic resources.

Scenic Resources and Corridors

Most of the City's scenic resources are associated with open space and natural resources. Views of Mt. Diablo, the ridgelines, and the San Joaquin River are important resources to the City. Some historic and panoramic views of Mt. Diablo and the ridgelines that were once visible from roads and neighborhoods located at a distance from these features have now been obstructed due to new developments south of State Route (SR) 4, specifically those built on or near the ridgelines (City of Antioch 2003a). The General Plan designates landmarks within the City because they provide prominent visual features and focal points within the City. Designated landmarks within the City include the San Joaquin River, Mount Diablo, Antioch Bridge, and other historical buildings described in the General Plan. The General Plan designates important view corridors as public spaces. Natural ridgelines and landmarks, such as Mount Diablo and distant hills, local ridgelines, the San Joaquin River, and other water bodies, are also considered view corridors. The project site is visible from State Route 4. The City does not contain any officially designated scenic corridors or highways.

Light and Glare Conditions

The project site is vacant, and therefore, no substantial light and glare sources exist onsite. Nighttime lighting immediately surrounding the project site consists of street lighting, parking lot lighting, vehicle headlights on the adjacent streets and highways, and exterior lighting associated with the nearby developments. There are no electrical signs, billboards, or flashing or oscillating light sources in the project site.

3.1.2 Methodology

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 implementation of the proposed project. In determining the extent and implications of the visual changes, consideration was given to the existing visual quality of the affected environment; specific changes to the visual character and quality of the affected environment resulting from implementation of the proposed project; 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, their activities, and the extent to which these activities are related to the aesthetic qualities that would be affected by implementation of the

proposed project. The existing setting was based on a review of documents pertaining to the project site including the General Plan.

3.1.3 Environmental Impact Analysis

This section discusses the potential impacts on aesthetics 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 General Plan indicates that views of Mt. Diablo, the ridgelines, and the San Joaquin River are important scenic resources to the City. The project site is within an urban area that mostly consists of residential developments. Views of scenic resources from the project site are obscured due to existing developments and vegetation. The proposed project would construct 126 new multifamily residences with a maximum building height of 45 feet. Given the amount of separation between the project site and these important scenic resources, the development of the proposed project would not substantially alter views of any scenic vistas. As such, the impacts on scenic vistas would be less than significant. This impact will not be further addressed in the EIR.

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

There are no scenic resources designated by the City on the project site. The project site is vacant and does not contain vegetation, rock outcroppings, or historic buildings that are identified as scenic resources by the General Plan. There are no state-designated scenic highways in the City. However, SR 4 located east of the project site is listed as an eligible state scenic highway, but the segment has not been officially designated. Therefore, the proposed project would have no impact on scenic resources within a State scenic highway. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact AES-3	**In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

Impact Analysis

The project site is in an urbanized area, and therefore, this analysis focuses on whether the proposed project would conflict with applicable zoning and other regulations governing scenic quality.

The City's General Plan designates the project site as Low Density Residential, and the City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned Development District. This project-specific Planned Development District allows for uses such as housing developments which are appropriate as part of a specific planned development. The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation. The proposed General Plan land use designation and zoning allows for multifamily dwellings with densities up to 35 dwelling units per gross developable acre. The proposed project would be consistent with the proposed General Plan land use designation and new project specific Planned Development zoning district.

The project would also provide 1.6-acres of usable open space, landscaping managed by a homeowner's association, and parking. The project design would be reviewed during the City's design review process in accordance with Section 9-5.2607 of the Antioch Code of Ordinances. As such, the proposed project would not conflict with any applicable zoning or other regulations governing scenic quality, and impacts would be less than significant. This impact will not be further addressed in the EIR.

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 project site is vacant and does not currently contain any onsite source of light or glare. However, there are existing sources of light and glare from surrounding

developments and roadways consisting of exterior building lighting, parking lot lighting, street lighting and headlights from vehicles driving on SR 4 and other surrounding roadways.

The proposed project would include new sources of nighttime lighting at the project site. Lighting is a safety feature and shall be used to light all streets, pathways, and open areas. Street lighting interior to the site would be installed on both sides of the streets using a minimum 70-watt high pressure sodium light bulb. All lighting in parking areas would be arranged to provide safety and security for residents and visitors but prevent direct glare of illumination onto adjacent units. Pedestrian-scaled lighting would be located along all pedestrian routes of travel within multifamily communities. Pathway lighting is a safety feature and will be used to light all pathways and open areas including pathways from the parking lot to the building's entrance. All site entrances will be visible from a public street and well lighted. As required by the City, all developments must provide adequate lighting and illumination of parking areas and is subject to design review. Lighting fixtures shall not shine directly onto an adjacent street or property. Compliance with the City's requirements would ensure that light and glare impacts associated with the proposed project would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.2 AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, 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))?	☐	☐	☐	☒
d) Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒

3.2.1 Environmental Setting

Antioch 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 2003a). According to the City of Antioch General Plan Environmental Impact Report (General Plan EIR), there are agricultural lands located north of SR 4 as well as in the southern portion of the City.

The California Department of Conservation (DOC) Important Farmland Finder Map and the General Plan EIR classifies the project site as Farmland of Local Importance (DOC 2016, City of Antioch 2003b). The DOC defines Farmland of Local Importance as land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. However, the City's General Plan designates the project site as Low Density Residential, and the City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned Development District. This project-specific Planned Development District allows for uses such as housing developments which are appropriate as part of a specific planned development. The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation.

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 EIR, the DOC Important Farmland Map, and Contra Costa County 2016 Agricultural Preserves Map.

3.2.3 Environmental Impact Analysis

This section discusses potential impacts on agriculture and forestry resources 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

The project site is designated as Farmland of Local Importance. The City's General Plan designates the project site as Low Density Residential, and the City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned Development District. This project-specific Planned Development District allows for uses such as housing developments which are appropriate as part of a specific planned development. The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation. As such, the proposed project would not result in the conversion of prime, unique, or farmland of statewide importance and no impact would occur. This impact will not be further addressed in the EIR.

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 within the Planned Development Zoning District, which allows for a wide range of residential, commercial and industrial land uses. This district

accommodates 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 use or combination of uses which are appropriately a part of a planned development. The project site is not zoned for agricultural use and is currently not under a Williamson Act contract. Therefore, no impact would occur. This impact will not be further addressed in the EIR.

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 project site does not contain forestland (as defined in Public Resources Code [PRC] Section 12220[g]), or timberland (as defined by PRC Section 4526). Furthermore, the project site is not zoned Timberland Production (as defined by Government Code section 51104[g]). The project site is zoned as Planned Development District which allows for a wide range of residential, commercial and industrial land uses. The site would not require rezoning of forestland or timberland production. As such, the proposed project would not convert forestland or timberland to a non-agricultural use, and no impact would occur. This impact will not be further addressed in the EIR.

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 designated Low Density Residential and is located within a Planned Development Zoning District. There are no forestland resources on the project site. Therefore, the proposed project would not result in the loss of forestland or conversion of forestland to non-forest use. No impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

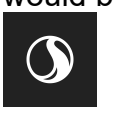
Level of Significance After Mitigation

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 project site is classified as Farmland of Local Importance by the DOC; however, it is substantially surrounded by urban development and the project size of 12 acres would be inadequate for agricultural use. The project site and surrounding area is



designated Planned Development/Low Density Residential by the General Plan, which indicates the City has contemplated urban development for vacant parcels in the vicinity of the project. The area surrounding the project site is not under agricultural use. Therefore, the proposed project would not cause changes to the existing environment that could result in conversion of Farmland outside the project site boundary to non-agricultural use. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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?	☐	☒	☐	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

The City of Antioch is in Contra Costa County, which is within the boundaries of the San Francisco Bay Area Air Basin 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 United States Environmental Protection Agency (EPA) to establish ambient air quality standards. These standards are divided into primary and secondary standards. The primary standards are set to protect human health, and the secondary standards 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, ground-level ozone, carbon monoxide (CO), sulfur oxides, oxides of nitrogen (NOx), and lead. 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 2016).

Toxic Air Contaminants

A toxic air contaminant (TAC) is an air pollutant not included in the California Ambient Air Quality Standards, but TACs are considered hazardous to human health. Toxic air contaminants are defined by CARB as those pollutants that, “may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health.”

The health effects associated with TACs are generally assessed locally rather than regionally. Toxic air contaminants can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; TACs can also cause short-term acute effects such as eye watering, respiratory irritation, running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and noncarcinogens. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and the cancer risk is expressed as excess cancer cases per one million exposed individuals (typically over a lifetime of exposure).

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases: gas and particle. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particle phase also has many different types of particles that can be classified by size or composition. The size of diesel particulates that are of greatest health concern are those that are in the categories of fine and ultra-fine particles. The composition of these fine and ultra-fine particles may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines, such as the on-road diesel engines of trucks, buses, and cars, and off-road diesel engines that include locomotives, marine vessels, and heavy-duty equipment (CARB 2019).

Asbestos

Asbestos is a fibrous mineral that both naturally occurs in ultramafic rock (a rock type commonly found in California) and is used as a processed component of building materials. Because asbestos has been proven to cause a number of disabling and fatal diseases, such as asbestosis and lung cancer, it is strictly regulated either based on its natural widespread occurrence or in its use as a building material. In the initial Asbestos National Emission Standards for Hazardous Air Pollutants rule promulgated in 1973, a distinction was made between building materials that would readily release asbestos fibers when damaged or disturbed (friable) and those materials that were unlikely to result in significant fiber release (non-friable). The EPA has since determined that, when severely damaged, otherwise non-friable materials can release significant amounts of asbestos fibers. Asbestos has been banned from many building materials under the Toxic Substances Control Act, the Clean Air Act, and the Consumer Product Safety Act. Naturally occurring asbestos (NOA) is known to occur in many parts of California and is commonly associated with ultramafic or serpentinite rock.

Sensitive Receptors

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.

Air Quality Standards

The Clean Air Act requires states to develop a general plan to attain and maintain the standards in all areas of the country and a specific plan to attain the standards for each area designated nonattainment. These plans, known as State Implementation Plans (SIPs), are developed by state and local air quality management agencies and submitted to EPA for approval.

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 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 Time	California Standard Concentration	National Standard Primary	National Standard Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m^3)	0.070ppm (137 µg/m^3)	
Respirable Particulate Matter	24 Hour	50 µg/m^3	150 µg/m3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	—	

Pollutant	Averaging Time	California Standard Concentration	National Standard Primary	National Standard Secondary
Fine Particulate Matter	24 Hour	—	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	12 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)
	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:
1. In 1989, the CARB 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 statewide and Lake Tahoe Air Basin standards, respectively.
µg/m3 =micrograms per cubic meter; CARB = California Air Resources Board; mg/m3 = milligrams per cubic meter; ppm = parts per million
Source: Bay Area Air Quality Management District Air Quality Standards and Attainment Status (BAAQMD 2017a)

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 particulate matter between 2.5 and 10 microns (PM_{10}) standards and for national ozone and $PM_{2.5}$ standards; however, they are listed as unclassified under national PM_{10} standards. The standards for CO, nitrogen dioxide, sulfur dioxide, and lead are being met in the Bay Area. The BAAQMD has developed its 2017 Clean Air Plan, Spare the Air, Cool the Climate (2017 Clean Air Plan) to update the most recent Bay Area ozone plan, the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health and Safety Code. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors—reactive organic gases (ROG) and NO_X—and reduce transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Clean Air Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of $PM_{2.5}$ and TACs (BAAQMD 2017b).

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

Criteria Pollutants	State Designation	National Designation
Ozone (1-hour)	Nonattainment	—
Ozone (8-hour)	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Nonattainment	Unclassified/Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	Attainment	—
Lead	Attainment	Attainment
Hydrogen Sulfide	Unclassified	—
Visibility Reducing Particles	Unclassified	—

Notes:
$PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} = particulate matter between 2.5 and 10 microns
Source: Bay Area Air Quality Management District Air Quality Standards and Attainment Status (BAAQMD 2017a)

Table 3.3-3. Bay Area Air Quality Management District Project-Level Air Quality California Environmental Quality Act Thresholds of Significance

Criteria Air Pollutants and Precursors (regional)	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tpy)
Reactive organic gas	54	54	10
Nitrogen oxide	54	54	10
Particulate matter 10 microns in diameter or less (PM_{10})	82 (exhaust)	82	15
Particulate matter 2.5 microns in diameter or less ($PM_{2.5}$)	54 (exhaust)	54	10
Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices	None	
Local carbon monoxide	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Greenhouse gases (projects other than stationary sources)	None	Compliance with qualified greenhouse gas reduction strategy OR 1,100 $MTCO_2e$/yr OR 4.6 $MTCO_2e$/SP/yr (residents + employees)	

Notes:
lbs/day = pounds per day; tpy= trips per year; ppm = parts per million; $MTCO_2e$/yr= metric tons of carbon dioxide equivalent per year; $MTCO_2e$/SP/yr= metric tons of carbon dioxide equivalent per service population per year
Source: Bay Area Air Quality Management District CEQA Air Quality Guidelines (BAAQMD 2017c)

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 8, Rule 3: Architectural Coatings

This rule governs the manufacture, distribution, and sale of architectural coatings and limits the 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.

BAAQMD manages a naturally occurring asbestos program that administers the requirements of CARB's naturally occurring asbestos air toxic control measures, as discussed above. The BAAMQD provides an exemption application, notification form for road construction and maintenance operations, and asbestos dust mitigation plan applications for projects to submit prior to the start of construction, or upon discovery of asbestos, ultramafic rock, or serpentine during construction. Forms must be submitted to the BAAQMD in accordance with the procedures detailed in the BAAQMD Asbestos Air Toxic Control Measures Inspection Guidelines Policies and Procedures.

City of Antioch

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

- 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 Bay Area Air Quality Management District.

Stationary Sources

- Provide physical separation between (1) proposed new industries having the potential for emitting toxic air contaminants and (2) existing and proposed sensitive receptors (e.g., residential areas, schools, and hospitals).

3.3.2 Methodology

Construction and operational emissions for the proposed project were modeled using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (Appendix A).

3.3.3 Environmental Impact Analysis

This section discusses potential impacts related to air quality 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

The BAAQMD's 2017 Clean Air Plan is the regional air quality plan (AQP) for the Air Basin. It identifies strategies to bring regional emissions into compliance with federal and State air quality standards. The BAAQMD's Guidance provides two criteria for determining if a plan-level project is consistent with the current AQP control measures. However, the BAAQMD does not provide a threshold of significance for project-level consistency analysis. Therefore, the following criteria will be used for determining a project's consistency with the AQP.

- Criterion 1: Does the project support the primary goals of the AQP?
- Criterion 2: Does the project include applicable control measures from the AQP?
- Criterion 3: Does the project disrupt or hinder implementation of any AQP control measures?

Criterion 1

The primary goals of the 2017 Clean Air Plan, the current AQP, are to:

- Protect public health through the attainment air quality standards
- Protect the climate

As discussed in impact discussions AIR-2, AIR-3, and AIR-4 the proposed project would not significantly contribute to cumulative nonattainment pollutant violations, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people after implementation of Mitigation Measure

AIR-1. Therefore, the project is consistent with criterion 1 with incorporation of Mitigation Measure AIR-1, which would require all construction contractors to implement the basic construction mitigation measures recommended by the BAAQMD to reduce fugitive dust emissions.

Criterion 2

The 2017 Clean Air Plan contains 85 control measures aimed at reducing air and climate pollutants in the Bay Area. For purposes of consistency with climate planning efforts at the state level, the control strategy in the Clean Air Plan is based upon the same economic sector framework used by the CARB for its 2014 update to the Assembly Bill (AB) 32 Scoping Plan. The sectors are as follows:

- Stationary Sources
- Transportation
- Energy
- Buildings
- Agriculture
- Natural and Working Lands
- Waste Management
- Water
- Super-GHG (Greenhouse Gas) Pollutants

The proposed project's potential to conflict with each of these measures is discussed below.

Stationary Source Control Measures. The Stationary Source Measures, which are designed to reduce emissions from stationary sources such as metal melting facilities, refineries, and glass furnaces, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Since the proposed project is residential in nature would not include any stationary sources of emissions, the Stationary Source Measures of the Clean Air Plan are not applicable to the proposed project.

Transportation Control Measures. The BAAQMD identifies Transportation Measures as part of the Clean Air Plan to decrease emissions of criteria pollutants, TACs, and greenhouse gases (GHGs) by reducing demand for motor vehicle travel, promoting efficient vehicles and transit service, decarbonizing transportation fuels, and electrifying

motor vehicles and equipment. The proposed project would develop new multifamily residences that would locate residents near existing and planned residential uses, commercial, office, and retail space uses, and public parks. The proposed project includes pedestrian access connections within and adjacent to the project site. The proposed project would be constructed in accordance with City standards and would be consistent with the BAAQMD's effort to encourage planning for bicycle and pedestrian facilities.

Energy Control Measures. The Clean Air Plan also includes Energy Control Measures, which are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the Energy Control Measures of the Clean Air Plan are not applicable to the proposed project. However, the project applicant would be required to conform to the energy efficiency requirements of the California Building Standards Code, also known as Title 24. Specifically, the project must implement the requirements of the most recent Building Energy Efficiency Standards, which is the current version of Title 24.

Building Control Measures. The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the strategies in the control measures for this sector focus on working with local governments that do have authority over local building codes, to facilitate adoption of best GHG control practices and policies. The proposed project would be required to comply with the latest California Green Building Standards Code (CALGreen) standards. Therefore, the Building Control Measures of the Clean Air Plan are not applicable to the proposed project.

Agriculture Control Measures. The Agriculture Control Measures are designed to primarily reduce emissions of methane. Since the proposed project does not include any agricultural activities, the Agriculture Control Measures of the Clean Air Plan are not applicable to the proposed project.

Natural and Working Lands Control Measures. The Natural and Working Lands Control Measures focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to ordinances that promote urban-

tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the Natural and Working Lands Control Measures of the Clean Air Plan are not applicable to the proposed project.

Waste Management Control Measures. The Waste Management Measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the proposed project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Water Control Measures. The Water Control Measures focus on reducing emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the Water Control Measures are not applicable to the proposed project.

Super-GHG Control Measures. The Super-GHG Control Measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the Super-GHG Control Measures are not applicable to the proposed project.

As discussed above, most of the measures contained in the Clean Air Plan would not be appliable to the proposed project. The proposed project would not impede implementation of any measures contained in the Clean Air Plan and would be consistent with applicable measures outlined in the Clean Air Plan. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan.

Criterion 3

If the approval of a project would not cause a disruption, delay, or otherwise hinder the implementation of any clean air plan control measure it would be considered consistent with the 2017 Clean Air Plan. Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path or proposes excessive parking beyond parking requirements. The project

will not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementation of any AQP control measures. As shown above, the project incorporates several AQP control measures as project design features.

Conclusion

The proposed project would be consistent with the criteria of the AQP with incorporation of Mitigation Measure AIR-1. As such, with the incorporation of this mitigation measure this impact would be less than significant after incorporation of mitigation.

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AIR-1: Implement Construction Best Management Practices

The applicant shall require all construction contractors to implement the basic construction mitigation measures recommended by the BAAQMD to reduce fugitive dust emissions. Emission reduction measures will include, at a minimum, the following measures. Additional measures may be identified by the BAAQMD or contractor as appropriate:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day
- All haul trucks transporting soil, sand, or other loose material off-site will be covered
- All visible mud or dirt track-out onto adjacent public roads will 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 miles per hour

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

- Idling times shall be minimized either by shutting equipment off when not in use or by 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; clear signage shall be provided for construction workers at all access points

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications

- All equipment shall be checked by a certified visible emissions evaluator or checked by a certified mechanic and determined to be running in proper condition prior to operation

- Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person will respond and take corrective action within 48 hours. The Bay Area Air Quality Management District's phone number will also be visible to ensure compliance with applicable regulations.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

Impact AIR-2	**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?**

Impact Analysis

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Project construction and operational impacts are assessed separately below.

Construction Emissions

Construction activities associated with development of the proposed project would include site preparation, grading, building construction, paving and architectural coatings. Emissions from construction-related activities are generally short-term in duration but may still cause adverse air quality impacts. During construction, fugitive dust would be generated from earth-moving activities. Exhaust emissions would also be generated from off-road construction equipment and construction-related vehicle trips. Emissions associated with construction of the proposed project are discussed below.

Construction Fugitive Dust (PM_{10} and $PM_{2.5}$)

During construction (grading), fugitive dust (PM_{10} and $PM_{2.5}$) would be generated from site grading and other earth-moving activities. Most of this fugitive dust will remain localized and will be deposited near the project site.

The BAAQMD does not have a quantitative threshold for fugitive dust. The BAAQMD's Air Quality Guidelines recommend that projects determine the significance for fugitive dust through application of best management practices (BMPs). Mitigation Measure AIR-1 requires the implementation fugitive dust control measures that are consistent with BMPs established by the BAAQMD, which reduce the project's construction-generated fugitive dust impacts to a less than significant level.

Construction Emissions: ROG, NO_X, PM_{10} (exhaust), $PM_{2.5}$ (exhaust)

Table 3.3-4 provides the construction emissions estimate for the proposed project. Please refer to Appendix A for details regarding assumptions used to estimate construction emissions. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as require pursuant to CEQA guidelines. The construction emissions in each year are well below the recommended thresholds of significance. The project would implement Mitigation Measure (MM) AIR-1 as recommended by the BAAQMD. The emissions from construction would be less than significant.

Table 3.3-4. Construction Annual and Daily Average Emissions (Unmitigated Average Daily Rate)

Parameter	Air Pollutants			
	ROG	**NO_X**	**PM_{10} (Exhaust)**	**$PM_{2.5}$ (Exhaust)**
2023 Construction Year (tons/year)	0.40	4.04	0.13	0.12
2024 Construction Year (tons/year)	1.79	0.37	0.01	0.01
Total Emissions (tons/year)	*2.19*	*4.41*	*0.14*	*0.13*
Total Emissions (pounds/year)	4,386	8,820	281	263
Average Daily Emissions (pounds/day)[1]	**11.54**	**23.21**	**0.74**	**0.69**
Significance Threshold (pounds/day)	**54**	**54**	**82**	**54**
Exceeds Significance Threshold?	**No**	**No**	**No**	**No**

Notes:
[1] Calculated by dividing the total number of pounds by the total 380 working days of construction for the entire construction period.
Calculations use unrounded numbers.
lbs = pounds; NO_X = oxides of nitrogen; PM_{10} = particulate matter 10 microns in diameter; $PM_{2.5}$ = particulate matter 2.5 microns in diameter; ROG = reactive organic gases
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

Operational Emissions

As previously discussed, the pollutants of concern include ROG, NO_X, PM_{10}, and $PM_{2.5}$. Full buildout of the project is anticipated to occur in 2024, immediately following the completion of construction. Emissions were assessed for full buildout operations in the 2024 operational year as summarized in Tables 3.3-5 and 3.3-6. The BAAQMD Criteria Air Pollutant Significance thresholds were used to determine impacts.

Table 3.3-5. Operational Annual Emissions for Full Buildout (Unmitigated)

Emissions Source	Tons per Year			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Area	1.16	0.01	0.01	0.01
Energy	0.01	0.11	0.01	0.01
Mobile (Motor Vehicles)	0.20	0.82	0.80	0.22
Total Project Annual Emissions	**1.37**	**0.95**	**0.81**	**0.23**
Thresholds of Significance	**10**	**10**	**15**	**10**
Exceeds Significance Threshold?	**No**	**No**	**No**	**No**

Notes:
NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; ROG = reactive organic gases
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

Table 3.3-6. Operational Average Daily Emissions (Unmitigated)

Emissions Source	Tons per Year			
	ROG	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Total Project Annual Emissions[1] (tons/year)	1.37	0.95	0.81	0.23
Total Project Annual Emissions[2] (lbs/year)	2,731	1,891	1,625	465
Average Daily Emissions[3] (lbs/day)	**7.48**	**5.18**	**4.45**	**1.28**
BAAQMD Average Daily Emission Thresholds (lbs/day)	**54**	**54**	**82**	**54**
Exceeds Significance Threshold?	**No**	**No**	**No**	**No**

Notes:
[1] Tons per year are shown in 3.3-5.
[2] Pounds per year were calculated using the unrounded annual project operational emissions.
[3] The average daily operational emissions were estimated based on the total annual emissions divided by 365 days.
lbs = pounds; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; ROG = reactive organic gases
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Mitigation Measure AIR-1 is required. Refer to Impact AIR-1 for complete details pertaining to this mitigation measure.

Mitigation Measures

Less Than Significant Impact with Mitigation.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-3 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

This discussion addresses whether the proposed project would expose sensitive receptors to substantial pollutant concentrations. The localized pollutants that could impact sensitive receptors include: NOA, construction-generated fugitive dust (PM_{10} and $PM_{2.5}$), construction generated DPM, CO hotspots and operational-related TACs. Project construction and operational impacts are assessed separately below.

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, the following are land uses where sensitive receptors are typically located:

- Long-term health care facilities
- Rehabilitation centers
- Convalescent centers
- Hospitals
- Retirement homes
- Residences
- Schools, playgrounds, and childcare centers

As a residential development project, the proposed project itself would be considered a sensitive receptor once operational. Most emissions during construction are generated during the site preparation and grading phases when heavy equipment is used to prepare the land for construction. As site preparation and grading are anticipated to occur for the entire project site prior to the completion of ground-up construction, emissions from grading and site preparation would not overlap with project operation. Earliest residential occupancy is expected to occur in 2024, following the completion of construction. If built in phases, construction activities following site preparation and grading would primarily include building construction, paving, painting, and landscaping. Relative to site preparation and grading activities, limited amounts of diesel equipment are used during these construction activities, which would not contribute substantially to the health risk during construction. Therefore, for the purposes of the Health Risk Assessment (HRA), sensitive receptors associated with future on-site residences were not included as part of the construction HRA. Planned off-site residential receptors were included as part of the construction HRA to provide a conservative estimate of impacts.

Project as a Source - Construction

Construction Fugitive Dust

During construction (grading), fugitive dust (PM_{10} and $PM_{2.5}$) is generated. As detailed in Impact AIR-1, the project would result in a less than significant dust impact after incorporation of Mitigation Measure AIR-1. Therefore, the proposed project would not expose adjacent receptors to significant amounts of construction dust after incorporation of mitigation.

Construction-Generated Diesel Particulate Matter

Construction activity using diesel-powered equipment emits DPM, a known carcinogen. DPM includes exhaust $PM_{2.5}$. A 10-year research program (CARB 2015) demonstrated that DPM (exhaust $PM_{2.5}$) from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. Health risks from TACs are a function of both concentration and duration of exposure. Construction diesel emissions are temporary, affecting an area for a period of weeks or months. Additionally, construction-related sources are mobile and transient in nature.

The health risk assessment evaluated DPM (represent as exhaust $PM_{2.5}$) and $PM_{2.5}$ (exhaust $PM_{2.5}$ and fugitive $PM_{2.5}$) emissions generated during construction of the

proposed project and the related health risk impacts for sensitive receptors located within 1,000 feet of the project boundary. According to the BAAQMD, a project would result in a significant impact if it would individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in one million, an increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 micrograms per cubic meter. As shown in Table 3.3-7 below, the health risk from these sources is determined to be less than significant.

The project site is located within 1,000 feet of existing and planned sensitive receptors that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including DPM), a dispersion model was used to translate an emission rate from the source location to concentrations at the receptor locations of interest (i.e., receptors at a nearby hospital). The maximally exposed individual receptor (MEIR) was found to be planned residence located approximately 34 feet west the of the project site.

Table 3.3-7. Unmitigated Health Risks from Project Construction to Off-Site Receptors

Health Impact Metric	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index[1]	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Risks and Hazards at the MEIR[2]			
Risks and Hazards at the MEIR: Infants	7.41	0.009	0.06
Risks and Hazards at the MEIR: Infants	8.60	0.009	0.06
Risks and Hazards at the MEIR: Child	1.35	0.009	0.06
Risks and Hazards at the MEIR: Adult	0.15	0.009	0.06
BAAQMD Significance Threshold	10	1.0	0.3
Exceeds Individual Source Threshold?	No	No	No

Notes:
[1] Chronic non-cancer hazard index was estimated by dividing the annual DPM concentration (as $PM_{2.5}$ exhaust) by the REL of 5 $\mu g/m^3$.
[2] The MEIR is located at a planned residence located approximately 34 feet west the of the project site.
$\mu g/m^3$ = micrograms per cubic meter; DPM = diesel particulate matter; MEIR = maximally exposed individual receptor; $PM_{2.5}$ = particulate matter less than 2.5 microns
Source: Health Risk Assessment (Appendix B)

Naturally Occurring Asbestos

The California DOC and the United States Geological Survey (USGS) have published a guide for generally identifying areas that are likely to contain NOA. There are no NOA areas located in in the immediate vicinity of the project site. Therefore, there is no impact.

Project as a Source – Operation

Carbon Monoxide Hotspot

Localized high levels of CO (CO hotspots) are associated with traffic congestion and idling or slow-moving vehicles. The BAAQMD recommends a screening analysis to determine if a project has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is necessary. The project would result in a less than significant impact to air quality for local CO if any of 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, 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)

Implementation of the proposed project would not conflict with the applicable congestion management program established by the Contra Costa Transportation Authority. According to the Traffic Study Scope prepared for the project by Stantec Consulting Services, the project would generate approximately 58 net new trips during the a.m. peak hour and 71 net new trips during the p.m. peak hour and would not substantially increase traffic volumes on nearby roadways above 44,000 vehicles per hour. Furthermore, the adjacent roadways are not located in an area where vertical and/or horizontal mixing, or the free movement of the air mass, is substantially limited by

physical barriers such as bridge overpasses or urban or natural canyon walls. Therefore, the project would not significantly contribute to an existing or projected CO hotspot. Impacts are less than significant.

Toxic Air Contaminants

The proposed project would develop 126 dwelling units and would not generate substantial on-site TAC emissions during operation. Residential land uses are not land uses that are typically associated with TAC emissions and the proposed project does not include any features that would include more than usual TAC emission. As described in the Traffic Impact Study, the project is expected to generate a net increase of 7.32 daily vehicle trips per dwelling unit or 922 average daily trips. The proposed project would primarily generate trips associated with residents and visitors traveling to and from the project site. The daily travel trips to and from the project site would primarily be generated by passenger vehicles. Because nearly all passenger vehicles are gasoline-combusted, the proposed project would not generate significant amount of DPM emissions during operation. Therefore, the proposed project would not result in significant health impacts to nearby sensitive receptors during operation.

Cumulative Health Risk Assessment

The BAAQMD recommends assessing the potential cumulative impacts from sources of TACs within 1,000 feet of a project. For a project-level analysis, the BAAQMD provides three tools for use in screening potential sources of TACs. The BAAQMD-provided tools that were used to assess the potential cumulative impacts from TACs are described below.

- **Stationary Source Risk and Hazard Screening Tools.** The BAAQMD prepared a geographic information system (GIS) tool with the location of permitted sources. For each emissions source, the Bay Area Air Quality Management District (BAAQMD) provides conservative estimates of cancer risk and $PM_{2.5}$ concentrations. Based on information from the GIS tool, there are three BAAQMD-permitted stationary sources within 1,000 feet of the project site.

- **Health Risks for Local Roadways.** The BAAQMD pre-calculated concentrations and the associated potential cancer risks and $PM_{2.5}$ concentration increases for each county within their jurisdiction for roadways that carry at least 30,000 average daily trips. For certain areas, the BAAQMD also included local roadways

that meet BAAQMD's "major roadway" criteria of 10,000 vehicles or 1,000 trucks per day. The latest available screening tool is in the form of a GIS raster file.

- **Freeway Screening Analysis Tool.** The BAAQMD prepared a GIS raster file that contains pre-estimated cancer risk and $PM_{2.5}$ concentration increases for highways within the Bay Area.
- **Rail Screening Tool.** The BAAQMD prepared a GIS raster file that contains estimated cancer risks and $PM_{2.5}$ concentrations from railroad operations at any point within the Air Basin.

Cumulative Health Risk Assessment at the Maximum Impacted Receptor During Project Construction

The cumulative health risk results, including health risks from the existing TAC sources, are summarized during project construction in Table 3.3-8. Cumulative health risk results shown therein are representative of the health risks to the MEIR which would experience the highest concentration of pollutants.

Table 3.3-8. Summary of the Cumulative Health Impacts at the Maximally Exposed Individual Receptor during Project Construction

Source	Cancer Risk in One Million	Chronic Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Project Construction			
Project Construction	8.60	0.009	0.06
Existing Sources[1]			
Ironhouse Sanitary District (FACID 1463)	33.11	0.110	0.04
Contra Costa Water District Antioch Service Center (FACID 14038)	5.17	0.010	0.01
Verizon Wireless (Oakley) (FACID[3] 18888)	1.59	<0.001	<0.01
Existing Major Local Roadways	0.32	ND	0.01
Existing Highways	2.12	ND	0.05
Existing Railways	1.04	ND	<0.01
Cumulative Health Risks at the MEIR[2]			
Cumulative Total with Unmitigated Project Construction	51.95	0.129	0.17

Source	Cancer Risk in One Million	Chronic Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Bay Area Air Quality Management District's Cumulative Thresholds of Significance	100	10	0.8
Threshold Exceedance in Unmitigated Scenario?	No	No	No

Notes:
[1] No adjustments were made to reduce the cancer risk and hazard associated with sources that can be expected with farther distances from the source of emissions. This presents a conservative estimate.
[2] The MEIR is located at a planned residence located approximately 34 feet west the of the project site.
$PM_{2.5}$ = particulate matter of 2.5 microns or less; $\mu g/m^3$ = micrograms per cubic meter; FACID = Facility Identification Number; MEIR = maximally exposed individual receptor; ND = no data available
Source: Health Risk Assessment (Appendix B)

As noted in Table 3.3-8, the cumulative impacts from the project construction and existing sources of TACs would be less than the BAAQMD's cumulative thresholds of significance. Thus, the cumulative health risk impacts from project construction would be less than significant.

Cumulative HRA at the Project Site During Operations

The project would locate new sensitive receptors (residents) that could be subject to existing sources of TACs at the project site. However, the California Supreme Court concluded in California Building Industry Association v. BAAQMD that agencies subject to CEQA are not required to analyze the impact of existing environmental conditions on a project's future users or residents. Although impacts from existing sources of TAC emissions on sensitive receptors on the project site are not subject to CEQA, the BAAQMD recommends assessing the potential cumulative impacts from sources of TACs within 1,000 feet of a project when siting new sensitive land uses. Therefore, for informational purposes and in the spirit of CEQA's full disclosure, the potential TAC risks to the project's future residents were analyzed. The BAAQMD's various screening tools, which quantify health risks from existing stationary and permitted sources, were used to estimate the health risks (associated with TAC sources within 1,000 feet of the project site) on future residents within the proposed project.

The cumulative health risk results for future receptors at the project site are summarized at project buildout in Table 3.3-9.

Table 3.3-9 Summary of the Cumulative Health Impacts at the Project Site at Project Buildout

Source	Cancer Risk in One Million	Chronic Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Existing Sources[1]			
Ironhouse Sanitary District (FACID 1463)	33.11	0.110	0.04
Contra Costa Water District Antioch Service Center (FACID 14038)	5.17	0.010	0.01
Verizon Wireless (Oakley) (FACID 18888)	1.59	<0.001	<0.01
Existing Major Local Roadways	0.32	ND	0.01
Existing Highways	2.12	ND	0.05
Existing Railways	1.04	ND	<0.01
Cumulative Health Risks at the MEIR[2]			
Cumulative Total with Unmitigated Project Construction	43.35	0.12	0.11
BAAQMD's Cumulative Thresholds of Significance	100	10	0.8
Threshold Exceedance in Unmitigated Scenario?	No	No	No

Notes:
[1] No adjustments were made to reduce the cancer risk and hazard associated with sources that can be expected with farther distances from the source of emissions. This presents a conservative estimate.
[2] The MEIR is located at a planned residence located approximately 34 feet west the of the project site.
$PM_{2.5}$ = particulate matter of 2.5 microns or less; $\mu g/m^3$ = micrograms per cubic meter; FACID = Facility Identification Number; MEIR = maximally exposed individual receptor; ND = no data available
Source: Health Risk Assessment (Appendix B)

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Mitigation Measure AIR-1 is required. Refer to Impact AIR-1 for complete details pertaining to this mitigation measure.

Mitigation Measures

Less Than Significant Impact with Mitigation.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Impact Analysis

As stated in the BAAQMD 2017 Air Quality Guidelines, odors are generally regarded as an annoyance rather than a health hazard and the ability to detect odors varies considerably among the populations and overall is subjective. The BAAQMD does not have a recommended odor threshold for construction activities. However, BAAQMD recommends screening criteria that are based on distance between types of sources known to generate odor and the receptor. For projects within the screening distances, the BAAQMD has the following threshold for project operations:

- An odor source with five (5) or more confirmed complaints per year averaged over three years is considered to have a significant impact on receptors within the screening distance shown in the BAAQMD's guidance (see Table 3.3-3).

The BAAQMD's 2017 Air Quality Guidelines provide a table with odor screening distances recommended by BAAQMD for a variety of land uses. Projects that would site an odor source or a receptor farther than the applicable screening distance, shown in Table 3.3-10 below, would not likely result in a significant odor impact.

Table 3.3-10. Screening Levels for Potential Odor Sources

Odor Generator	Distance
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile

Odor Generator	Distance
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/Dairy	1 mile
Green Waste and Recycling Operations	1 mile

Source: Bay Area Air Quality Management District CEQA Air Quality Guidelines (BAAQMD 2017c)

Project Construction and Project Operation

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies. Project operations would not be anticipated to produce odorous emissions. Construction activities associated with the proposed project could result in short-term odorous emissions from diesel exhaust associated with construction equipment. However, these emissions would be intermittent and would dissipate rapidly from the source. In addition, this diesel-powered equipment would only be present onsite temporarily during construction activities. Therefore, construction would not create objectionable odors affecting a substantial number of people, and the impact would be less than significant.

This impact will not be further addressed in the EIR.

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 Impact	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?	☐	☒	☐	☐
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?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

3.4.1 Environmental Setting

The 12-acre project site consists of a single parcel identified as APN 041-022-003. The currently vacant site is an annual grassland and located within a suburban residential area. It is bordered by single-family residences to the west and south, and Highway 4 to the northeast. The project site has signs of past and ongoing disturbance. The property primarily extends over generally flat terrain with the site elevation ranging from approximately 70 feet above mean sea level at the north end to approximately 108 feet above mean sea level at the southern end. The center of the constructed detention basin has an elevation of ~66 feet above sea level. Regionally, the project site has a Mediterranean climate characterized by hot, dry summers and moderate winters, with average annual temperatures ranging from approximately 46 to 75 degrees Fahrenheit (°F). Historical data used to describe the climate was collected at the Antioch Pumping Plant #3 Station, located directly south of the project site. Precipitation in the study area occurs as rain. Average annual rainfall is 11.2 inches and occurs primarily from October through April. The growing season (i.e., 50 percent probability of air temperature 32ºF or higher) in the study area is around 304 days and occurs between mid-February and early December (Western Regional Climate Center 2021).

3.4.2 Methodology

This section summarizes the methods used to identify and analyze potential impacts on sensitive habitats and effects on special-status plants and animals that may occur on the project site. As described below, biologists began their research with database searches and literature reviews to determine which rare natural communities and special-status species have the potential to occur on the project site. A more detailed description of these methods is provided in the project's Biological Resources Technical Report prepared by Olberding Environmental, Inc. in February 2021 (Appendix C).

Background Research

This analysis is based on a review of existing information about sensitive biological resources known to occur near the project site and followed by field surveys to determine whether biological resources are absent, present, and/or are likely to be present.

For the purpose of this evaluation, special-status plant species include plants that fall into one of the following categories:

- Listed as threatened or endangered under the California Endangered Species Act or federal Endangered Species Act
- Proposed for federal listing as threatened or endangered
- State or federal candidate species
- Designated as rare by the California Department of Fish and Wildlife
- California Rare Plant Rank (CRPR) 1A, 1B, 2A or 2B species

For the purpose of this evaluation, special-status animal species include species that fall into one of the following categories:

- Listed as threatened or endangered under the California Endangered Species Act or federal Endangered Species Act
- Proposed for federal listing as threatened or endangered
- State or federal candidate species
- Identified by the California Department of Fish and Wildlife as species of special concern or fully protected species

Sensitive natural communities are those communities that are highly limited in distribution and may or may not contain rare, threatened, or endangered species. The California Natural Diversity Database (CNDDB) ranks natural communities according to their rarity and endangerment in California. Habitats are considered sensitive if they are identified on the California Department of Fish and Wildlife (CDFW) List of Vegetation Alliances and Associations as being highly imperiled or classified by CDFW in the CNDDB as natural communities of special concern – Ranks S1 to S3.

The potential for special-status species to occur within the study area were classified under one of four categories, as described below. Only those special-status species that have been determined to “may occur” are evaluated in detail.

- **Present:** The species has been recorded by CNDDB or other literature as occurring on the Property and/or was observed on the Property during the reconnaissance survey or protocol surveys.

- **May Occur:** The species has been recorded by CNDDB or other literature as occurring within five miles of the Property, and/or was observed within five miles

of the Property, and/or suitable habitat for the species is present on the Property or its immediate vicinity.

- **Not Likely to Occur:** The species has historically occurred on or within five miles of the Property but has no current records. The species occurs within five miles of the Property, but only marginally suitable habitat conditions are present. The Property is likely to be used only as incidental foraging habitat or as an occasional migratory corridor.

- **Presumed Absent:** The species will not occur on the Property due to the absence of suitable habitat conditions, and/or the lack of current occurrences. Alternatively, if directed or protocol-level surveys were done during the proper occurrence period and the species was not found, it is presumed absent.

Prior to conducting a reconnaissance-level biological field survey, Olberding Environmental completed a desktop analysis to identify sensitive biological resources (wildlife species, plant species, and their habitats) that may occur within the proposed project site and region, as defined by the CDFW, U.S. Fish and Wildlife Service (USFWS), and California Native Plant Society (CNPS). The following resources were used to identify those potentially occurring biological resources:

- California Fish and Wildlife Service California Natural Diversity Database records search of special status species and habitat observations in the proposed project site and in for the Antioch North, Jersey Island, Bouldin Island, Antioch South, Brentwood, Woodward Island, Tassajara, Byron Hot Springs, and Clifton Court Forebay USGS 7.5-minute quadrangles (CDFW 2021a-c)

- CNPS online Inventory of Rare and Endangered Plants of California (CNPS 2020)

- USFWS list of endangered, threatened, and candidate species that may occur in the proposed project site (USFWS 2018a) (Appendix C)

- USFWS Designated Critical Habitat data for federally threatened and endangered species (USFWS 2018a)

Based on this background research, a list of special-status species that have the potential to occur or are known to occur in the project site and vicinity was developed.

The list was refined based on reconnaissance-level biological field surveys to determine the potential for those species to occur in the project site.

Reconnaissance Survey

A reconnaissance-level biological survey was conducted by an Olberding Environmental biologist on January 28, 2019 and again on August 21, 2020. The survey was performed on foot, walking meandering transects throughout the entire project site to survey for existing conditions, observed plants and wildlife, adjacent land use, soils and potential biological resource constraints. The objectives of the field survey were to determine the potential presence or absence of special-status species habitat listed in the CNDDB database report and to identify any wetland areas that could be potentially regulated by the United States Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), and/or CDFW (CDFW 2021a-c). In addition, the Olberding Environmental biologist looked for other potential sensitive species or habitats that may not have been obvious from background database reports or research. Based on information from the above sources, Olberding Environmental developed a target list of special-status plants and animals with the potential to occur within or in the vicinity of the Property (Attachment 2, Table 2).

Vegetation Communities

Habitat types in the study area were classified based on descriptions provided in the *California Natural Community List* (CDFW 2021a), which is adapted from the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation* (Sawyer et al. 2009). The habitat community present in the study area includes non-native annual grassland and ruderal areas. A potential seasonal wetland was observed in the project site. Descriptions of the habitat is provided below.

Upland Habitat Type

<u>Non-native Annual Grassland</u>

The extent of the Property, approximately 12 acres, is dominated by non-native annual grassland habitat. Dominant vegetation observed within this habitat type includes but is not limited to wild oat (*Avena fatua*), bristly oxtongue (*Helminthotheca echioides*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), yellow star thistle (*Carduus pycnocephalus*), and Italian rye grass (*Festuca perennis*). The project site is bound by roadway on one side and developed property to the south and west.

Aquatic Habitats

No perennial streams were observed within the project site that would be covered under the jurisdiction of CDFW, the Corps or RWQCB; however, there are potential seasonal wetlands within the project site. The USFWS National Wetland Inventory database shows a linear seasonal wetland feature that crosses the northern corner of the Property and flows through the constructed detention basin feature, then along the base of the SR 4 embankment. This feature was not observed on the surface within the project site. The Property contains two artificially created features in the form of a concrete v-ditch with an associated storm drain outlet, and one constructed stormwater detention basin with associated utilities near the northern end of the parcel.

Special-Status Species

Plants

Regionally occurring special-status plant species were identified based on a review of pertinent literature, the USFWS species list, CNDDB and CNPS database records, and the reconnaissance-level biological field survey results. For each species, habitat requirements were assessed and compared to the habitats in the project site and immediate vicinity to determine if potential habitat occurs in the project site. The special-status plant species identified by the CNDDB as potentially occurring on the project site are known to grow only from specific habitat types. The specific habitats necessary for many of the plant species to occur are not found within the boundaries of the project site. Occurrences of special-status plants within a five-mile radius of the point roughly representing the center of the project site are described in detail in the Biological Resources Analysis Report (Appendix C), the project site does not provide suitable habitat for special-status plants.

Wildlife

Current agency status information was obtained from USFWS (2018a) for species listed as Threatened or Endangered, as well as Proposed and Candidate species for listing, under the federal Endangered Species Act; and from CDFW (2021a-c) for species listed as Threatened or Endangered by the state of California under the California Endangered Species Act or listed as “species of special concern” by CDFW. From the above sources, a list of special-status wildlife species with potential to occur in the project vicinity was developed (Appendix C, Table 2).

For each species, habitat requirements were assessed and compared to the habitats in the project site and the immediate vicinity to determine the species' potential to occur in or near the project site. As described in the Biological Resources Analysis Report (Appendix C), the project site provides moderate suitable habitat for 13 special-status animal species, as discussed below in the impact analysis.

Critical Habitat

The project site lies within Critical Habitat for Delta Smelt; however, no streams or waterways are present in the project site and therefore, there is no suitable habitat for Delta Smelt.

3.4.3 Environmental Impact Analysis

This section discusses potential impacts on biological resources 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

There is no potential habitat in the project site for special-status plant species. Although the reconnaissance-level biological surveys were conducted on January 28, 2019 and August 21, 2020 (i.e., outside of bloom period and late bloom period for the region, respectively), is outside the blooming period for most of the plants known to occur within five miles of the project site, the site is frequently disturbed. Historical aerial imagery indicates that this has been occurring over the course of several years, thereby limiting the opportunity for native vegetation to establish. Based on the lack of suitable habitat, the project site does not provide suitable potential habitat for special-status plant species to occur, and there would be no impacts to special-status plants.

Special-Status Wildlife Species

From the results of the literature and database review, Olberding developed a list of special-status wildlife species to be evaluated (Appendix C, Table 2). Following the reconnaissance-level survey, the potential for these species to occur within the project site was assessed based on the habitats present within and adjacent to the project site, the proximity of known species occurrences, and knowledge of the species' range and/or mobility. The following special-status species may occur on the project site: burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), pallid bat (*Antrozous pallidus*), Townsend's Big-eared bat (*Corynorhinus townsendii*), Western red bat (*Lasiurus blossevillii)*, hoary bat (*Lasiurus cinereus*), little brown bat (*Myotis lucifugus*), Yuma myotis (*Myotis yumanensis*), American Badger (*Taxidea taxus*), Alameda whipsnake (*Masticophis lateralis euryxanthus*) and San Joaquin Kit Fox (*Vulpes macrotis mutica*). The other special-status species that were in the literature searches are not likely to occur or presumed absence on the project site due to the absence of suitable habitat, and these species are not discussed further. The special-status species that may occur onsite are discussed in more detail in the Biological Resources Analysis Report (Appendix C).

Because special-status wildlife species may occur on the project site, there is potential for a substantial adverse effect on species as regulated by CDFW and/or the USFWS. With the implementation of MM BIO-1, through MM BIO-6, impacts to special-status wildlife species would be less than significant.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM BIO-1: Avoid Disturbance of Nesting Birds and Pre-Construction Nesting Bird Surveys.

If project activities occur during the nesting season for native birds (February 15 to August 31), the following measures shall be implemented to avoid or minimize the potential for adverse impacts on nesting migratory birds and raptors:

- Pre-construction nesting bird survey for species protected by the Migratory Bird Treaty Act and California Fish and Game Code shall be conducted by a qualified biologist within a 100-foot radius of proposed construction activities for passerines and a 300-foot radius for raptors no more than 14 days prior to the start of construction activities.

- If active nests are found, a qualified biologist shall determine the size of the buffers based on the nesting species and its sensitivity to disturbance. The size of the buffers may be reduced at the discretion of a qualified biologist, but no construction activities shall be permitted within the buffer if they are demonstrated to be likely to disturb nesting birds. Active nest sites shall be monitored periodically to determine time of fledging.

MM BIO-2: Pre-construction Swainson's Hawk Surveys

If project construction-related activities would take place during the nesting season (February through August), pre-construction surveys for nesting Swainson's hawks within 0.5-mile radius of the project shall be conducted within 14 days prior to construction activity. Surveys shall be conducted in a manner that maximizes the potential to observe the adult Swainson's hawks, as well as the nest/chicks second. To meet the California Department of Fish and Game's recommendations for mitigation and protection of Swainson's hawks, surveys shall be conducted for a 0.5-mile radius around all project activities, and if active nesting is identified within the 0.5-mile radius, consultation is required. Methodology for surveys can be found in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley – Swainson's Hawk Technical Advisory Committee (2000).

MM BIO-3: Pre-construction Burrowing Owl Surveys

A burrowing owl pre-construction survey shall take place before any construction activities commence. They shall be conducted whenever burrowing owl habitat or sign is encountered on or adjacent to (within 150 meters) of a project site. If a burrowing owl or sign is present on the Property, three additional protocol level surveys shall be initiated.

Once these surveys have been completed to identify the owl's location, disturbance buffers shall be placed around each active burrow. No disturbance shall occur within 200 meters (approximately 655 feet) of occupied burrows during the breeding season

(February 1 through August 31) and/or within 50 meters (approximately 165 feet) of occupied burrows during non-breeding season (September 1 through January 31). Preconstruction surveys shall be completed no more than 14 days prior to initiating ground disturbing activities.

MM BIO-4: Avoidance and Minimization Measures for Alameda Whipsnake

In order to prevent Alameda Whipsnake (AWS) from entering construction areas during project development, a wildlife exclusion fence shall be placed along the property boundary prior to ground disturbing activities. The avoidance and minimization measures for AWS are as follows:

- The wildlife exclusion fence shall be at least three feet high and entrenched three to six inches into the ground.
- Exclusion funnels shall be included in the fence design so that terrestrial species are able to vacate the project Site prior to disturbance.
- Monofilament netting, which is commonly used in straw wattle and other erosion preventatives, shall not be used on the project site in order to prevent possible entrapment of both common and special status terrestrial wildlife species.
- Trenches shall be backfilled, covered, or left with an escape ramp at the end of each workday. Trenches left open overnight shall be inspected each morning for trapped wildlife species.
- Immediately prior to initial ground disturbance (i.e., the morning of ground disturbance), a qualified biologist shall perform a preconstruction survey in order to ensure no AWS are present. The biologist shall remain on site for initial ground disturbance if suitable AWS refugia will be disturbed, i.e., small mammal burrows, foundations, large woody debris.
- Prior to the initiation of work activities, the qualified biologist shall also provide worker education regarding AWS. The training shall cover identification of AWS and what to do if an AWS is discovered in the project site.

MM BIO-5: Pre-construction Surveys for San Joaquin Kit Fox

Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact the San Joaquin kit fox. Surveys shall identify kit fox habitat features on the project site and evaluate use by kit fox and, if possible, assess the potential impacts to the kit fox by the proposed activity. The status of all dens shall be determined and mapped (USFWS 2011). Written results of pre-construction surveys must be received by the Service within five days after survey completion and prior to the start of ground disturbance and/or construction activities. If a natal/pupping den is discovered within the project site or within 200-feet of the project boundary, the Service shall be immediately notified and under no circumstances shall the den be disturbed or destroyed without prior authorization. If the pre-construction survey reveals an active natal pupping or new information, the project applicant shall contact the Service immediately to obtain the necessary take authorization/permit.

MM BIO-6: Pre-construction American Badger Surveys

A qualified biologist shall survey for American badger concurrent with the pre-construction survey for burrowing owl. If badgers are detected, the biologist shall passively relocate badgers out of the work area prior to construction if feasible. If an active den is detected within the work area, the project proponent shall avoid the den, if feasible, until the qualified biologist determines the den is no longer active. Dens that are determined to be inactive by the qualified biologist shall be collapsed by hand to prevent occupation of the burrow between the time of the survey and construction activities.

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 and Wildlife or U.S. Fish and Wildlife Service?**

Impact Analysis

The project site does not contain any riparian habitat or other sensitive natural communities. Results of the biological resource analysis survey conducted by Olberding Environmental indicate that the project site contains two artificially created drainage features in the form of a concrete ditch, but these features do not contain any riparian habitat. Therefore, the proposed project would have no impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS.

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 state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

Impact Analysis

Results of the jurisdictional delineation survey conducted on February 23, 2021 did not identify the presence of waters/wetlands subject to Corps or RWQCB jurisdiction within the survey boundary. The Property contains two artificially created features in the form of a concrete ditch with an associated storm drain outlet, and one constructed stormwater detention basin with associated utilities near the northern end of the parcel. These features are not likely subject to the Corps or RWQCB jurisdiction and do not

entail the placement of dredge or fill material into federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption or by other means. As such, the potential impacts to wetlands are considered less than significant.

Level of Significance Before Mitigation

Less than Significant.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than Significant.

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

Habitat corridors are segments of land that provide linkages between different habitats while also providing cover. On a broader level, corridors also function as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas. Habitat corridors often consist of riparian areas along streams, rivers, or other natural features. Habitat corridors have been recognized by federal agencies such as the USFWS and the State as important habitats worthy of conservation. In general, movement corridors consist of areas of undisturbed land cover that connect larger, contiguous habitats. The project site does not act as a corridor for species dispersal or provide migration habitat connectivity to adjacent habitat and is not part of any defined essential connectivity areas as identified in the California Essential Habitat Connectivity Project (Spencer et al. 2010); therefore, the 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 BIO-5	**Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Impact Analysis

The project site does not contain any trees or involve the removal of any trees; therefore, no tree preservation policies apply. As such, there would be no impact with respect to conflicting with local tree policies or local ordinances protecting biological resources such as a tree preservation policy or ordinance.

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 City is excluded from the jurisdiction of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). It is not within the jurisdiction of any adopted Habitat Conservation Plans (HCPs). The City is currently underway with the development of their own HCP/NCCP. The project site is within the draft HCP boundaries and designated an Urban Development area (East Contra Costa County Habitat Conservancy 2020). However, because this HCP/NCCP is still within the development stage, it is not applicable to the project. The project would not conflict with any adopted HCPs or other approved local, regional, or state habitat conservation plan. Therefore, there would be no impacts.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

The project site is located in the City of Antioch in Contra Costa County, California. Antioch is located in the Sacramento/San Joaquin Delta region to the south of the San Joaquin River. Regionally, the project site has a Mediterranean climate characterized by hot, dry summers and moderate winters.

3.5.2 Methodology

To determine the presence or absence of cultural resources within the project site and vicinity, Stantec prepared a Cultural Resources Assessment. The cultural resources assessment was conducted to satisfy the requirements of CEQA and follows CEQA Appendix G Guidelines. The Stantec Consulting Services Inc. 2021 Cultural Resources Assessment is provided in Appendix D.

Records Search and Literature Review

As part of the cultural resource review, a records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) on January 11, 2021 (CHRIS 2021) for the project site and a quarter of a mile around it. The record search included a review of all previously recorded cultural resources and studies. Other sources reviewed include the Office of Historic Preservation Historic Property Data File, Determination of Eligibility, National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) listings,

California Inventory of Historical Resources, California State Historical Landmarks, Points of Historic Interest, Caltrans Bridge Inventory, and Historic Maps. No NRHP or CRHR eligible sites are within or adjacent to the project site. A record search of the Native American Heritage Commission (NAHC) Sacred Lands File was completed for the project and the results were negative.

No cultural resources have been recorded in the project site. Two previously recorded historic-era resources (P-07-000813 and P-07-002695) are within a quarter mile of the project site. P-07-000813 is the Sothern Pacific Railroad and is across Highway 4 and approximately 500 feet to the north and east of but not visible from the project site. P-07-002695 is the Contra Costa Canal which is approximately 55 feet south of the project site. The Contra Costa Canal is eligible to both the NRHP and CRHR. However, as the Contra Costa Canal is already surrounded by housing developments and the resource is outside the project site, the project would not change the significance of this resource. Six previous studies have been completed within the project site and thirteen previous studies have been completed within a quarter mile of, but outside of, the project site. Appendix D includes the complete NWIC records search results.

Field Survey

A pedestrian archaeological survey of the project site was conducted by a Stantec archaeologist on January 28, 2021. The archaeologist took photographs of the survey area and ground surface visibility and used a Geographic Positioning System unit with sub-meter accuracy during the survey. Survey transects were spaced at intervals no greater than 15 meters. Ground visibility was good, with patches of exposed soil were visible throughout the lot. Regardless, periodic trowel and boot scrapings were employed to clear small patches of vegetation in areas with poor ground visibility due to ground vegetation cover in some areas. The lot appears to have been heavily modified in the last 20 years.

During the survey, all areas were examined closely for evidence of prehistoric archaeological site indicators such as obsidian or chert flakes; grinding and mashing implements (such as groundstone, mortars, and pestles); bone, and discolored soils (which could contain lithics, bone, shell, and/or fire-affected rocks). The areas were also examined closely for evidence of historic period-site indicators such as glass and ceramic fragments; metal objects; milled and split lumber, and structure or feature

remains such as building foundations, fence posts, and discrete trash deposits such as wells, privy pits, or dumps.

No cultural resources were identified as a result of the survey.

Assembly Bill 52 (AB 52) and Senate Bill 18 (SB 18)

On January 19, 2021, the City mailed letters to all tribes who requested to be consulted on City projects under AB 52 and Senate Bill (SB) 18. Follow up phone calls were made to these tribes on February 2, 2021. The tribes contacted are listed below:

- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Chicken Ranch Rancheria of Me-Wuk Indians
- Confederated Villages of Lisjan
- Guidiville Indian Rancheria
- Indian Canyon Mutsun Band of Costanoan
- Muwekma Ohlone Indian Tribe of the SF Bay Area
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- North Valley Yokuts
- Ohlone Indian Tribe
- Tule River Indian Tribe
- Wilton Rancheria

On February 2, 2021, Chairperson Zwierlein of the Amah Mutsun Tribal Band of Mission San Juan Bautista did not have concerns with the project but recommended the construction crew be given a cultural resource awareness training. On February 3, 2021, the Confederated Villages of Lisjan requested the NWIC cultural resource records search results and NAHC Sacred Lands File results. These results were sent to the Confederated Villages of Lisjan. After review of these materials, the Confederated Villages of Lisjan, did not have any further comment on the project but requested to be contacted should there be any inadvertent finds during project construction.

On March 23, 2021, the Indian Canyon Band of Costanoan Ohlone People sent an email recommending Native American and Archaeological monitoring during project construction because the project overlapped or was near a cultural site. The email also discussed ways to bring about public awareness of the history of indigenous communities.

On March 24, 2021, the City replied via email to the Indian Canyon Band of Costanoan Ohlone People email and requested additional information and further discussion with the tribe to confirm if a cultural site is within the project site.

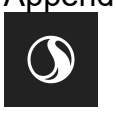
On April 5, 2021, the City followed up with the Indian Canyon Band of Costanoan Ohlone People to make sure they had received the previous email on March 24, 2021.

On April 5, 2021, the Indian Canyon Band of Costanoan Ohlone People replied to the City's email and requested a zoom or phone call meeting on the morning of April 14, 2021.

On April 14, 2021, the City, Indian Canyon Band of Costanoan Ohlone People, and the City's project archaeological consultant met via a Zoom meeting to discuss the project. During the meeting, the tribe did not identify any cultural resources or sensitivity for cultural resources within or adjacent to the project site but said to be conservative, they recommended monitoring during construction. There were also discussions of recent construction adjacent to the project site and the City said they would follow up with a list development completed within the last 20 years. During the meeting, the City and the tribe also discussed ways to bring about public awareness of the history of indigenous communities.

On April 20, 2021, the City sent an email to the Indian Canyon Band of Costanoan Ohlone People as a follow-up to the Zoom meeting. The City provided a list of construction in the last 20 years adjacent to the project site. All of the construction was recent enough to have gone through the State environmental review process and no cultural resources were found during construction of these projects. Additionally, a desktop geologic sensitivity analysis indicated the project site has a low sensitivity for buried cultural resources. Based on these factors, the City does not think cultural monitoring is necessary. However, to ensure any potentially sensitive resources are protected, the City would implement mitigation measures requiring worker awareness training and inadvertent discovery procedures. The City also invited the tribe to participate in the upcoming comprehensive General Plan update so the tribe can participate in Citywide policy on how to bring about public awareness of the history of indigenous communities.

The other tribes contacted either did not respond or did not have any concerns with the proposed project. An AB 52 and SB 18 correspondence record can be found in Appendix D.



Buried Site Sensitivity

Assessing the sensitivity for an area to contain buried archaeological sites takes into consideration the potential for the presence of buried cultural deposits by examining past use of a project location, factors that support human occupations such as access to resources and water, slope, and the underlying geomorphology of the area. This section summarizes the archaeological buried site sensitivity for the project site. Generally speaking, a large proportion of archaeological sites are located within 150 meters of a water source and on relatively flat ground. Portions of the project that exhibit these parameters have an increased potential to contain buried cultural resources and buried stable land surfaces that may have supported prehistoric and/or historic human use.

According to the Geologic Map of California (DOC 2015), the project site is underlain by nonmarine (continental) sedimentary rocks dating to the Pliocene-Pleistocene characterized as Pliocene and/or Pleistocene sandstone, shale, and gravel deposits; mostly loosely consolidated. The geologic deposits predate human occupation of the project site. The project site is composed soils consisting of Capay clay, 0 to 3 percent slopes with a parent material of clayey alluvium derived from sedimentary rock, Diablo clay, 5 to 25 percent slopes, Diablo clay, 15-30 percent slopes, and Diablo clay, 30-50 percent slopes with a parent material of Residuum weathered from calcareous shale (USDA 2021). Slope is also highly variable on the lot, ranging between 2 and 13 degrees. Based on the information provided above, the project site appears to have a low sensitivity for buried cultural resources.

3.5.3 Environmental Impact Analysis

This section discusses potential impacts on cultural resources 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

No historic resources (eligible or likely eligible under state, federal, or local historic preservation criteria) were identified within or adjacent to the project site that would be impacted by the proposed project. Thus, the proposed project is not anticipated to have

an impact on any known or potential historical resources. Therefore, there would be no impacts to historical resources. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

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

An archival record search and literature review, AB 52 and SB 18 consultations, and pedestrian survey were performed as part of the cultural resources assessment for the proposed project. No archaeological resources were identified within the project site. The proposed project is therefore not anticipated to have an impact on any known or potential archeological resources. However, subsurface construction activities associated with the proposed project could potentially damage or destroy previously undiscovered unique archaeological resources. The proposed project would be required to implement Mitigation Measure CUL-1 which would require a worker awareness training for cultural resources and Mitigation Measure CUL-2 in the event previously undiscovered subsurface unique archaeological resources are found at the project site. The implementation of Mitigation Measures CUL-1 and CUL-2 would be in accordance with the standard worker awareness training and inadvertent discovery procedures to reduce potential impacts to previously undiscovered subsurface unique archaeological resources. Therefore, with the implementation of Mitigation Measures CUL-1 and CUL-2 potential impacts to undiscovered archaeological resources would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-1: Workers Awareness Training

Prior to the start of any ground disturbing activities, a cultural resources awareness training shall be provided for all construction personnel involved in project implementation. The training shall be provided by a qualified cultural resources specialist and if they choose to participate, a representative of the Indian Canyon Band of Costanoan Ohlone People. The training program shall include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The worker cultural resources awareness program shall also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and shall outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program shall also underscore the requirement for confidentiality and culturally appropriate treatment for any find of significance to Native Americans and behaviors, consistent with Native American tribal values. A sign-in sheet shall be distributed to all participants of the training program and submitted to the City within two weeks of program completion.

MM CUL-2: Cultural Materials Discovered During Construction

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 523 series forms. All forms and associated reports will be submitted to the NWIC of the 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 CRHR as a unique archaeological resource as defined in PRC Section 15064.5, the archaeologist shall develop a plan for the treatment of the resource. The plan shall contain appropriate mitigation measures,

including avoidance, preservation in place, data recovery excavation, or other appropriate measures outlined in PRC Section 21083.2.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation.

Impact CUL-3 Disturb any human remains, including those interred outside of dedicated cemeteries?

Impact Analysis

There are no known human remains within the project site and no indications that the project site has been used for burial purposes in the past. Therefore, it is unlikely that human remains would be encountered during construction. However, ground disturbance and subsurface construction activities associated with the proposed project could potentially disturb previously undiscovered human burial sites. If previously undiscovered human burial sites are found on the project site, the proposed project would be required to implement Mitigation Measure CUL-3 in accordance with Section 7050.5 of the California Health and Safety Code and PRC 5097.98. Implementation of Mitigation Measure CUL-3 would require all work to stop within 50 feet of the remains and to contact the County Coroner and the appropriate City contact to evaluate the discovery. If the human remains are of Native American origin, the County Coroner must notify the NAHC within 24 hours of this identification. The NAHC would identify a Native American most likely descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains within 48 hours. As such, implementation of Mitigation Measure CUL-3 would reduce impacts to a less than significant level. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM CUL-3: Human Burials Encountered During Construction

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 County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project area and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 5097.98, 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 that 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 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 landowner 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 ENERGY

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

3.6.1 Environmental Setting

Pacific Gas and Electric Company provides electricity and natural gas service to the City. Upon buildout of the project site, electricity to the project site would be provided by PG&E. All electricity infrastructure would be located underground and would tie-in to existing infrastructure.

In February 2018, PG&E announced that it had reached California's 2020 renewable energy goal 3 years ahead of schedule, and now delivers nearly 80 percent of its electricity from GHG-free resources. Approximately 33 percent of PG&E's electricity came from renewable resources including solar, wind, geothermal, biomass and small hydroelectric sources in 2017. Additionally, approximately 78.8 percent of PG&E's total electric power mix is from GHG-free sources including nuclear, large hydro and renewable sources of energy (PG&E 2018).

3.6.2 Methodology

The energy requirements for the proposed project were determined using the construction and operational estimates generated from the Air Quality Analysis (refer to Appendix A). The calculation worksheets for diesel fuel consumption rates for off-road construction equipment and on-road vehicles are provided in Appendix E. Short-term construction energy consumption is discussed below.

Short-Term Construction

Off-Road Equipment

The proposed project is anticipated to be constructed during 2023 and 2024, breaking ground in January 2023 and planned to be completed by March 2024. Table 3.6-1 provides estimates of the project's construction fuel consumption from off-road construction equipment.

Table 3.6-1. Construction Off-Road Fuel Consumption

Project Component	Phase	Fuel Consumption (gallons)
Wild Horse Multifamily Project Construction	Site Preparation	703.78
	Site Grading	3,880.36
	Building Construction	15,923.33
	Paving	843.63
	Architectural Coating	116.02
Total		**21,467.12**

Source: Energy Consumption Summary (Appendix E)

As shown in Table 3.6-1, construction activities associated with the proposed project would be estimated to consume 21,467.12 gallons of diesel fuel. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of the state. Therefore, it is expected that construction fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region.

On-Road Vehicles

On-road vehicles for construction workers, vendors, and haulers would require fuel for travel to and from the site during construction. Table 3.6-2 provides an estimate of the total on-road vehicle fuel usage during construction. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of the state. Therefore, it is expected that construction fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region.

Table 3.6-2. Construction On-Road Fuel Consumption

Project Component	Total Annual Fuel Consumption (gallons)
Wild Horse Multifamily Project Construction	69,837
Total	**69,837**

Source: Energy Consumption Summary (Appendix E)

Long-Term Operations

Transportation Energy Demand

Table 3.6-3 provides an estimate of the daily and annual fuel consumed by vehicles traveling to and from the proposed project. These estimates were derived using the same assumptions used in the operational air quality analysis for the proposed project.

Table 3.6-3. Long-Term Operational Vehicle Fuel Consumption

Vehicle Type	Percent of Vehicle Trips[1]	Daily Vehicle Miles Traveled	Annual Vehicle Miles Traveled	Average Fuel Economy (miles/ gallon)[2]	Total Daily Fuel Con-sumption (gallons)	Total Annual Fuel Con-sumption (gallons)
Passenger Cars (LDA)	59.4%	3,453	1,260,398	33.14	104.2	38,035
Light Trucks and Medium Duty Vehicles (LDT1, LDT2, MDV)	33.8%	1,964	716,852	23.26	84.4	30,819
Light-Heavy to Heavy-Heavy Diesel Trucks (LHD1, LHD2, MHDT, HHDT)	5.6%	323	118,066	9.46	34.2	12,482
Motorcycles (MCY)	0.7%	31	11,244	36.88	0.8	305
Other[3] (OBUS, UBUS, SBUS, MH)	0.5%	40	14,491	6.73	5.9	2,153
Total	**100%**	**5,811**	**2,121,051**	-	**229.5**	**83,794**

Notes:
[1]Percent of Vehicle Trips and VMT provided by California Emissions Estimator Model.
[2]Average fuel economy is provided by United States Department of Transportation, Bureau of Transportation Statistics and reflects fuel economy of overall fleet, not just new vehicles.
[3]"Other" definitions are OBUS = other buses except school buses and urban buses; UBUS = Urban transit buses; SBUS = School bus; MH = Mobile Home
Source: Energy Consumption Summary (Appendix E)

As shown above, daily vehicular fuel consumption is estimated to be 229.5 gallons of both gasoline and diesel fuel. Annual consumption is estimated at 83,794 gallons.

In terms of land use planning decisions, the proposed project would constitute development within an established community and would not be opening a new geographical area for development such that it would draw mostly new trips or substantially lengthen existing trips. The proposed project would be well positioned to accommodate existing population. For these reasons, it would be expected that vehicular fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than for any other similar land use activities in the region.

Building Energy Demand

As shown in Tables 3.6-4 and 3.6-5, the proposed project is estimated to demand 1,222,632 kilowatt-hours (KWhr) of electricity and 2,359,099.26 kilo British thermal units (KBTU) of natural gas, respectively, on an annual basis.

Table 3.6-4. Long-Term Electricity Usage

Land Use	Size (ksf)	Title 24 Electricity Energy Intensity (KWhr/ size/ year)	Nontitle 24 Electricity Energy Intensity (KWhr/ size/ year)	Lighting Energy Intensity (KWhr/ size/ year)	Total Electricity Energy Demand (KWhr/ size/ year)	Total Electricity Demand (KWhr/ year)
Condo/Townhouse	239.4	249.32	3,795.01	1,001.1	2,655	635,724
Attached Garages	102.4	3.92	0	1.75	5,670	580,608
Parking Lot	18	0	0	0.35	350	6,300
Total						**1,222,632**

Notes:
ksf = 1,000 square feet; KWhr= kilowatt hour
Source: Energy Consumption Summary (Appendix E)

Table 3.6-5. Long-Term Natural Gas Usage

Land Use	Size (ksf)	Title 24 Natural Gas Energy Intensity (KBTU/size/year)	Nontitle 24 Natural Gas Energy Intensity (KBTU/size/year)	Total Natural Gas Energy Demand (KBTU/size/year)	Total Natural Gas Demand (KBTU/year)
Condo/Townhouse	239.4	15,568.01	3,155	9,854	2,359,099.26
Attached Garages	102.4	0	0	0	0
Parking Lot	18	0	0	0	0
Total					**2,359,099.26**

Notes:
The proposed project could potentially include a variety of uses consistent with the development standards, however the land use selections above were based on estimating the "worst-case" scenario demand for electricity.
ksf = 1,000 square feet; KBTU= kilo British thermal units
Source: Energy Consumption Summary (Appendix E)

3.6.3 Environmental Impact Analysis

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

Impact EN-1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact Analysis

This impact addresses the energy consumption from both the short-term construction and long-term operations are discussed separately below.

Construction Energy Demand

As summarized in tables 3.6-1 and 3.6-2, the proposed project would require 21,467.12 gallons of diesel fuel for construction off-road equipment and 69,837 gallons of gasoline and diesel for on-road vehicles during construction. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of the state.

Therefore, it is expected that construction fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region, and as such, impacts would be less than significant.

Long-Term Energy Demand

Building Energy Demand

Buildings and infrastructure constructed pursuant to the proposed project would comply with the versions of California Code of Regulations (CCR) Titles 20 and 24, including CALGreen, that are applicable at the time that building permits are issued. The proposed project is estimated to demand 1,222,632 KWhr of electricity per year and 2,359,099.26 KBTU of natural gas per year. This would represent an increase in demand for electricity and natural gas.

It would be expected that building energy consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than for any other similar buildings in the region. Current state regulatory requirements for new building construction contained in the 2016 CALGreen and Title 24 standards would increase energy efficiency and reduce energy demand in comparison to existing commercial structures, and therefore would reduce actual environmental effects associated with energy use from the proposed project. Additionally, the CALGreen and Title 24 standards have increased efficiency standards through each update.

Therefore, while the proposed project would result in increased electricity and natural gas demand, the electricity and natural gas would be consumed more efficiently and would be typical of townhome development. Compliance with future building code standards would result in increased energy efficiency.

Based on the above information, the proposed project would not result in the inefficient or wasteful consumption of electricity or natural gas, and impacts would be less than significant.

Transportation Energy Demands

The daily vehicular fuel consumption is estimated to be 229.5 gallons of both gasoline and diesel fuel. Annual consumption is estimated at 83,794 gallons. The proposed project would constitute development within an established community and would not

be opening a new geographical area for development such that it would draw mostly new trips or substantially lengthen existing trips. The proposed project would be well positioned to accommodate existing population and reduce vehicle miles traveled (VMT). For these reasons, it would be expected that vehicular fuel consumption associated with the proposed project would not be any more inefficient, wasteful, or unnecessary than for any other similar land use activities in the region, and impacts would be less than significant.

This impact will not be further addressed in the EIR.

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 EN-2	**Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

Impact Analysis

The City's General Plan includes an Energy Objective 10.8.1 to reduce the reliance on nonrenewable energy sources in existing and new commercial, industrial, and public structures through implementation of energy resource policies to encourage the use of renewable energy and decrease energy demand. Additionally, General Plan Objective 7.4.1 includes the Non-Motorized Transportation Objective to maintain a safe, convenient, and continuous network of pedestrian sidewalks, pathways, and bicycle facilities to facilitate bicycling and walking as alternatives to the automobile. The City's Climate Action Plan (CAP) also includes strategies focused on green building, renewable energy, transportation and land use, education, and waste management. The proposed project would not conflict with the energy objectives of the General Plan nor the strategies in its CAP. The proposed project would constitute development within an established community and would not be opening a new geographical area for

development such that it would draw mostly new trips, or substantially lengthen existing trips. The proposed project would be well positioned to accommodate existing population and reduce VMT. The proposed project would comply with the versions of CCR Titles 20 and 24, including CALGreen, that are applicable at the time that building permits are issued and with all applicable City measures.

For the above reasons, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and impacts would be less than significant.

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.7 GEOLOGY AND SOILS

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

Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

3.7.1 Environmental Setting

Regional Setting

The City of Antioch is in Contra Costa County and is characterized as a geologically young region. The City is defined by two general topographic areas: Lowland Area and Upland Area. The Lowland area includes the estuarine and flatland soils near the San Joaquin River and the low-lying areas the western and eastern portions of the City, and the Upland Area includes the hillside soils in the southern portion of the City. The Lowland Area is underlain by alluvium and consists of unconsolidated floodplain deposits with sand, silt, gravel, and clay. Soils in the Lowland Area include well drained Rincon clay loam with moderate shrink-swell potential and Delhi Sand with low shrink-swell potential. The Upland Area consists primarily of tilted sedimentary rocks, sandstone, siltstone, and surficial deposits (City of Antioch 2003b). Native soils in the Upland Area consist of clay, clay loam, loam, and loamy sand. The shrink-swell potential of these soils ranges from low to high depending on the soil type (City of Antioch 2003b).

Eastern Contra Costa County and the Bay Area are in a seismically active region. Major earthquakes have occurred near Antioch in the past and can be expected to occur in the near future (City of Antioch 2003b). The California Geological Survey defines an active fault as one that has had surface displacement in the last 11,000 years or has experienced earthquakes in recorded history. Although there are no active faults in the City, there are several major faults located within a few miles including, the Hayward Fault, Calaveras Fault, Concord-Green Valley Fault, and Marsh Creek-Greenville Fault (City of Antioch 2003b). The San Andreas Fault is located approximately 45 miles west of the City. The intensity of ground shaking that would occur in Antioch because of an earthquake in the Bay Area depends on the size, distance, and response of the geologic materials in the area (City of Antioch 2003b). Strong ground shaking that occurs during earthquakes can induce other geologic hazards such as liquefaction,

landslides, subsidence, lateral spreading, or collapse. The potential for these geologic hazards ranges from low to very high and depends on soil conditions, groundwater levels, and slope stability.

The 1972 Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to establish regulatory Earthquake Fault Zones around the surface ruptures of active faults to reduce the hazard of surface fault rupture to structures built for human occupancy. There are no Alquist-Priolo Earthquake Fault Zones in the City (City of Antioch 2003b). However, the City is located within a seismically active region, and earthquakes have the potential to cause ground shaking of significant magnitude.

Project Site Setting

The project site's topography consists of hills and slopes to a low point at the northern portion of the site. The existing site is vacant with the exception to the Wild Horse Road improvements. According to the Hydrologic & Hydraulic Analyses Report prepared by DK Engineering for the project site, elevations range from 70 feet above mean sea level at the north corner of the project site to 115 feet above mean sea level and the southwest corner of the project site (DK Engineering 2020). The site consists mainly of clay soils and is presumed to be hydrologic soil group C. According to Figure 4.5.4 in the EIR prepared for the General Plan, the project site is in an area with liquefaction risk ranging from very low, to moderate susceptibility in the southwest corner of the site, and high susceptibility in the northern and western portions of the site (City of Antioch 2003b, USGS 2021a, DOC 2019). The project site and surrounding area are located in a generally stable to marginally stable slope stability and is not located in a landslide hazard zone (City of Antioch 2003b, USGS 2021b, DOC 2019).

3.7.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, USGS earthquake seismic hazard maps, USGS land subsidence in California Map, and the University of California Museum of Paleontology (UCMP) database for mammal fossils. The following impact discussions consider the effects of the proposed project related to geology and soils in the City.

Paleontological Resources

According to the General Plan EIR, numerous fossils have been collected from within the City. A fossil locality search at the Cultural Access Services identified marine fossils collected from almost all the sedimentary formations located in Antioch. Literature review also indicated that all the formations north of Mt. Diablo contain fossils. There are at least eight fossil localities within and immediately adjacent to the City's Planning Area and another five are within a 1-mile radius of the City's Planning Area. Fossils in the City's Planning Area identified by the California Museum of Paleontology, UC Berkeley include mammoths, primitive horses, bison, rats, beaver-type creatures, and sloths (City of Antioch 2003b). A search of the UCMP database for mammal fossils did not identify any paleontological resources within the project site (UCMP 2021).

3.7.3 Environmental Impact Analysis

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

Impact GEO-1	**Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:** **i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.** **ii) Strong seismic ground shaking?** **iii) Seismic-related ground failure, including liquefaction?** **iv) Landslides?**

Impact Analysis

i. Fault Rupture

There are no Alquist-Priolo Earthquake Fault Zones in the City. The nearest Alquist-Priolo Earthquake Fault Zones are the Concord-Green Valley Fault, located 15 miles

southwest of the project site, and the Marsh Creek-Greenville Fault, located approximately 11 miles south of the project site (USGS 2021c). Due to the lack of Alquist-Priolo fault zones in the project site, the risk of surface rupture near the project site is low and the potential for damage to structures at the project site due to rupture of a known earthquake fault is low. Thus, the proposed project would not exacerbate existing conditions by bringing people or structures into areas potentially susceptible to substantial effects, including fault rupture, that could result in substantial damage to proposed structures or infrastructure, or expose people to substantial risk of injury. Impacts associated with surface rupture from a known earthquake fault would be less than significant. This impact will not be further addressed in the EIR.

ii. Ground Shaking

The project site is in a seismically active region and earthquake-related ground shaking is expected to occur during the design life of the proposed project. According to the USGS Fault Activity Map of California and the USGS National Seismic Hazard Maps—Source Parameters indicates the nearest major active fault is the Greenville Fault, located approximately 11 miles southwest of the project site (USGS 2021c). In addition, other faults in the San Francisco Bay Area may cause strong seismic ground shaking at the project site. The proposed project would be constructed in conformance with the latest edition of the California Building Code, which includes engineering standards appropriate to withstand anticipated ground accelerations at the project site. Conformance with the earthquake design parameters of the California Building Code would be subject to City review as part of the building site plan review and building permit review process. Furthermore, the proposed project would be required to comply with the General Plan Policy 11.3.2-a, which requires geologic and soils reports to be prepared for proposed development sites and incorporate the findings and recommendations of the studies into project development requirements and a site-specific assessment will be prepared to ascertain potential ground shaking impacts on new development, and General Plan Policy 11.3.2-k, which requires specialized soils reports (City of Antioch 2003a). The recommendations and findings identified in the site-specific geotechnical analysis would be incorporated into the proposed project as part of Mitigation Measure GEO-1. Therefore, impacts related to ground shaking at the project site would be less than significant with implementation of Mitigation Measure GEO-1. This impact will not be further addressed in the EIR.

iii. Ground Failure, including Liquefaction

According to Figure 4.5.4 in the EIR prepared for the General Plan, the project site is in an area risk ranging from very low susceptibility in the eastern portion of the site, to moderate susceptibility in the southwest corner of the site, and high susceptibility in the northern and western portions of the site (City of Antioch 2003b, USGS 2021a). Buildout of the proposed project and adjacent off-site areas would potentially place buildings and structures on areas potentially susceptible to liquefaction. Therefore, the project could potentially expose people and structures to substantial adverse effects associated with ground shaking, ground failure, and liquefaction. Ground failure due to liquefaction or lateral spreading could compromise the structural stability of the buildings if they are not designed to accommodate liquefaction or lateral spreading.

As described above, the project design would be required to conform to the latest edition of the California Building Code, City Municipal Code (Section 9-4.513), and General Plan Policies 11.3.2-a, 11.3.2-k, which requires site-specific soil reports to be prepared for all new developments in the City. The project design would also be required to comply with General Plan Policy 11.3.2.l, which requires the project to implement adequate and appropriate measures to reduce potential liquefaction hazards where development is proposed within an identified or potential liquefaction hazard area (City of Antioch 2017; 2003a). The recommendations indicated in the site-specific soil report would be incorporated into the project design as part of Mitigation Measure GEO-1. Additionally, the project will implement the recommendations indicated in a design-level geotechnical engineering report and measures to address to mitigate, at a minimum, slope stability, liquefiable soils, and ground shaking as part of Mitigation Measure GEO-2. Therefore, impacts related to liquefaction would be less than significant with Mitigation Measures GEO-1 and GEO-2 incorporated. This impact will not be further addressed in the EIR.

iv. Landslides

According to the Hydrologic & Hydraulic Analyses Report prepared by DK Engineering for the project site, elevations range from 70 feet above mean sea level at the north corner of the project site to 115 feet above mean sea level and the southwest corner of the project site. The project site is mapped in an area that is mapped as generally stable and with low potential for landslides to occur (City of Antioch 2003b, USGS 2021d). Therefore, the potential for a landslide to occur is low. No impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-1: Implement Geotechnical Design Recommendations.

Prior to issuance of grading permits, the applicant shall incorporate all design specifications and recommendations contained within the geotechnical investigation report into relevant project plans and specifications. These specifications pertain to but are not limited to expansive soils, building foundations, foundation drainage, and backfill of excavations. The project site plans shall be submitted to the City and reviewed as part of the building permit review process.

MM GEO-2: Implement Potential Liquefaction Hazard Recommendations

Prior to the issue of building permits, the project applicant shall submit to the City of Antioch Building Department, for review and approval, a design-level geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The design-level report shall include measures to address construction requirements to mitigate, at a minimum, slope stability, liquefiable soils, and ground shaking. Recommendations of adequate and appropriate measures will be implemented, including, but not limited to designing foundations in a manner that limits the effects of liquefaction; the placement of an engineered fill with low liquefaction potential; and the alternative siting of structures in areas with a lower liquefaction risk.

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 proposed project would require demolition, grading, utility connections, building construction, construction of the new streets, development of 126 multifamily residences, and landscaping on the 12-acre project site. Construction of the proposed project would involve approximately 11,600 CY of cut and

86,000 CY of fill. These activities could expose unprotected soils to stormwater runoff, causing erosion and loss of topsoil. Projects that disturb 1 acre or more of soils during construction are required to comply with the National Pollutant Discharge Elimination System (NPDES) permitting program and implement a Stormwater Pollution Prevention Plan (SWPPP) that identifies BMPs to control the discharge of sediment and other pollutants during construction. As described in Section 3.10, Hydrology and Water Quality, the proposed project would implement a SWPPP and associated BMPs as part of Mitigation Measure HYD-1 to reduce erosion impacts. Therefore, soil erosion impacts associated with construction impacts would be less than significant with implementation of Mitigation Measure HYD-1. This impact will not be further addressed in the EIR.

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 a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?**

Impact Analysis

The project site and surrounding area contains generally flat relief and is in an area where slopes are considered stable (City of Antioch 2003b). The project site is not designated in an area where historic or current groundwater pumping, oil extraction, or mining operations have occurred (City of Antioch 2003b, USGS 2021d). Furthermore, the project site is not adjacent to a stream bank, levee, or other open face that would be susceptible to lateral spreading.

The proposed project would be required to comply with the latest edition of the California Building Code, City Municipal Code (Section 9-4.513), General Plan Policies

11.3.2-a and 11.3.2-k, which requires site-specific soil reports to be prepared for all new developments in the City, and General Plan Policy 11.3.2.l, which requires the project to implement adequate and appropriate measures to reduce potential liquefaction hazards where development is proposed within an identified or potential liquefaction hazard area (City of Antioch 2017; 2003b). The recommendations indicated in the site-specific soil report would be incorporated into the project design as part of Mitigation Measure GEO-1. The City would review the project design plans during the building permit approval process to confirm these recommendations are incorporated into the proposed project. Additionally, the project will implement the recommendations indicated in a design-level geotechnical engineering report and measures to address to mitigate, at a minimum, slope stability, liquefiable soils, and ground shaking as part of Mitigation Measure GEO-2. As such, impacts related to unstable soils would be less than significant with Mitigation Measures GEO-1 and GEO-2 incorporated. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measures GEO-1 and GEO-2 are required.

Level of Significance After Mitigation

Less-Than-Significant Impact with Mitigation.

Impact GEO-4	**Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

Impact Analysis

The soils at the project site are comprised of Diablo Clay and Capay Clay. Diablo Clay soil is characterized as well drained, slow runoff when soil is dry, medium to rapid when soils are moist, and slow permeability. Capay Clay Moderately well and somewhat poorly drained; negligible to high runoff, slow to very slow permeability (USDA 2021). The proposed project would be required to comply with the latest edition of the California Building Code, City Municipal Code (Section 9-4.513), and General Plan

Policies 11.3.2-a and 11.3.2-k, which requires site-specific soil reports to be prepared for all new developments in the City (City of Antioch 2003a). The recommendations indicated in the site-specific soil report would be incorporated into the project design as part of Mitigation Measure GEO-1. Therefore, impacts related to expansive soil would be less than significant with Mitigation Measure GEO-1 incorporated. This impact will not be further addressed in the EIR.

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 would connect directly to the City's municipal sewer system and would not require the construction of septic tanks or any other alternative wastewater disposal system. Therefore, no impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact GEO-6 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact Analysis

According to the General Plan EIR, numerous fossils have been collected from within the City. A fossil locality search at the Cultural Access Services identified marine fossils collected from almost all the sedimentary formations located in Antioch. Literature review also indicated that all the formations north of Mt. Diablo contain fossils. There are at least eight fossil localities within and immediately adjacent to the City's Planning Area and another five are within a 1-mile radius of the City's Planning Area. Fossils in the City's Planning Area identified by the California Museum of Paleontology, UC Berkeley include mammoths, primitive horses, bison, rats, beaver-type creatures, and sloths (City of Antioch 2003b). A search of the UCMP database for mammal fossils did not identify any paleontological resources within the project site (UCMP 2021). However, the proposed project would include ground disturbance during construction which could potentially directly or indirectly destroy an unknown unique paleontological or unique geologic feature. If unknown unique paleontological resources are discovered onsite during construction, all activities would be stopped within a 50-foot radius of the identified resource until a qualified paleontologist evaluates the finding as required by Mitigation Measure GEO-3. Therefore, impacts to paleontological or unique geologic features would be less than significant with implementation of Mitigation Measure GEO-3. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM GEO-3 Procedures for Paleontological Resources Discovered During Construction

If any paleontological resources are encountered during ground-disturbing or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50-foot radius of the identified resource shall cease. and the City shall immediately be notified. The applicant shall retain a qualified paleontologist (as approved by the City) to evaluate the find and recommend appropriate treatment of the inadvertently discovered paleontological resource. The appropriate treatment of an

inadvertently discovered paleontological resource shall be implemented to ensure that impacts to the resource are avoided.

Level of Significance After Mitigation
Less-Than-Significant Impact with Mitigation.

3.8 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?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.8.1 Environmental Setting

The issue of combating climate change and reducing GHG emissions has been the subject of State legislation (AB 32 and Senate Bill 375). The Governor's Office of Planning and Research (OPR) has adopted changes to CEQA Guidelines and the environmental checklist which is used for Initial Studies such as this one. The changes to the checklist, which were approved in 2010, are incorporated above in the two questions related to a project's GHG impact.

Greenhouse Gases

Greenhouse gases and climate change are cumulative global issues. The CARB and EPA regulate GHG emissions within the State of California and the U.S., 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 into the atmosphere as infrared radiation (heat). Greenhouse gases 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 [CO_2], methane [CH_4], and oxides of nitrogen [NOx]), while others are exclusively human made (like gases used for aerosols).

The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere are listed below:

Carbon Dioxide

CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane

CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide

N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases

Hydrofluorocarbons, perfluorinated chemicals, and sulfur hexafluoride are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high global warming potential gases.

Emissions Inventories and Trends

According to the CARB's recent GHG inventory for the state, released 2019, California produced 424 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2017 (CARB 2019). The major source of GHGs in California is transportation, contributing approximately 40.1 percent of the state's total GHG emissions in 2017.

California uses the annual statewide GHG emission inventory to track progress toward meeting statewide GHG targets. In 2018, emissions from routine GHG emitting activities statewide were 425 $MMTCO_2e$, 0.8 MMTCO2e higher than 2017 levels. This puts total emissions at 6 $MMTCO_2e$ below the 2020 target of 431 million metric tons (CARB 2020). California statewide GHG emissions dropped below the 2020 GHG limit in 2016 and have remained below the 2020 GHG limit since then.

Potential Environmental Impacts

For California, climate change in the form of warming has the potential to incur and 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.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial and 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.

Regulatory Requirements

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The governor has also issued several executive orders related to the state's evolving climate change policy. Of particular importance are AB 32 and SB 32, which outline the state's GHG reduction goals of achieving 1990 emissions levels by 2020 and a 40 percent reduction below 1990 emissions levels by 2030.

In the absence of federal regulations, control of GHGs is generally regulated at the state level and is typically approached by setting emission reduction targets for existing

sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans.

In 2009, the City approved Resolution 2009/57 adopting GHG reduction targets to reduce overall City-wide carbon emissions by 25 percent of the 1990 levels by 2020 and 80 percent by 2050. The reduction targets adopted by the City are consistent with the statewide GHG reduction targets established by AB 32. On May 24, 2011, the City Council approved the Community and Municipal CAPs. The plan included potential programs and actions the City could implement to reach the reduction targets established by Resolution 2009/57. The City of Antioch Climate Action and Resilience Plan was adopted on May 12, 2020. The City's Plans include City-wide goals and strategies, but not a project-specific threshold for determining the significance of GHG emissions.

3.8.2 Methodology

Thresholds

BAAQMD provides multiple options for project-level GHG thresholds in its 2017 CEQA Guidelines. BAAQMD does not presently provide a construction-related GHG generation threshold but recommends that construction-generated GHGs be quantified and disclosed. BAAQMD also recommends that lead agencies (in this case, the City of Antioch) make a determination on the level of significance of construction-generated GHG emissions in relation to meeting AB 32 GHG reduction goals. The lead agency is also encouraged to incorporate BMPs to reduce GHG emissions during project construction, as feasible and applicable.

The project is located within the BAAQMD; therefore, the BAAQMD thresholds are the most appropriate to use for the project. The thresholds suggested by BAAQMD for project-level operational GHG generation are as follows:

- Compliance with a qualified Greenhouse Gas Reduction Strategy, or
- 1,100 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year, or
- 4.6 $MTCO_2e$ per service population (employees plus residents)

BAAQMD's CEQA Guidelines state that if annual emissions of GHG exceed the thresholds, the project would result in a cumulatively considerable significant impact to global climate change. Therefore, if the project is less than any one of the thresholds

identified above, then the project would result in a less than significant cumulative impact to global climate change.

Methodology

Construction and operational emissions were estimated using CalEEMod version 2016.3.2 (Appendix A).

3.8.3 Environmental Impact Analysis

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

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 CO_2, CH_4, and nitrous oxide (N_2O) from the exhaust of equipment, construction hauling trips, and worker commuter trips.

Constructions Emission Inventory

Construction emissions would be generated from the exhaust of equipment and the exhaust of construction equipment and material delivery trips and worker commuter trips. Detailed construction assumptions are provided in Appendix A. The BAAQMD does not presently provide a construction-related GHG generation threshold but recommends that construction-generated GHGs be quantified and disclosed. $MTCO_2e$ emissions during construction of the project are presented in Table 3.8-1.

Table 3.8-1. Construction Greenhouse Gas Emissions

Construction (2023-2024)	$MTCO_2e$
Project Construction (2023)	1,142
Project Construction (2024)	99
Total Construction $MTCO_2e$	**1,241**
Emissions Amortized Over 30 Years[1]	**41**

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalent
[1] Construction GHG emissions are amortized over the 30-year lifetime of the project.
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

During the construction of the proposed project, approximately 1,241 $MTCO_2e$ would be emitted. Neither the City nor the BAAQMD have an adopted threshold of significance for construction-related GHG emissions. Because impacts from construction activities occur over a relatively short-term period, they contribute a relatively small portion of the overall lifetime project GHG emissions. In addition, GHG emission reduction measures for construction equipment are relatively limited. Therefore, a standard practice is to amortize construction emissions over the anticipated lifetime of a project, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. In the absence of a construction emission threshold and in order to evaluate construction-related GHG emissions against a threshold, the total emissions generated during construction were amortized based on the life of the development (30 years) and added to the operational emissions to determine the total emissions from the project, as shown below.

Operational Emission Inventory

Operational or long-term emissions occur over the life of the project. The operational emissions for the proposed project are shown in Table 3.8-2. Sources for operational emissions include the following:

- Motor Vehicles: These emissions refer to GHG 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 GHG 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 GHG emissions produced by decomposing waste generated by the project. These include waste removed from car interiors during the cleaning process; waste generated in the restrooms; and waste generated from the operations of the facility.

The CalEEMod default assumptions were used for each of these sources of emissions except where applicant usage estimates exceeded the CalEEMod default value. Detailed modeling results and more information regarding assumptions used to estimate emissions are provided in Appendix A. The operational emissions are shown in Table 3.8-2.

Table 3.8-2. Operational Greenhouse Gas Emissions at Project Buildout

Source Category	$MTCO_2e$
Area	4
Energy Consumption	242
Mobile	767
Solid Waste Generation	29
Water Usage	14
Amortized Construction Emissions[1]	41
Total	*1,098*
Service Population (Residents + Employees)	**413**
Project Emission Generation ($MTCO_2e$/service population/year)	**2.66**
BAAQMD Operational Threshold ($MTCO_2e$/service population/year)[2]	**3.4**
Significant Impact?	**No**

Notes:
[1] Construction GHG emissions are amortized over the 30-year lifetime of the project.
[2] Value was calculated using the standard equation for linear interpolation between the data points for 2020 and 2030. An appropriate value was determined for the year 2024 based on interpolation of known data.
$MTCO_2e$ = metric tons of carbon dioxide equivalent; BAAQMD = Bay Area Air Quality Management District
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

During operation of the proposed project, approximately 1,056 $MTCO_2e$ would be emitted. The proposed project is estimated to serve approximately 413 residents once fully operational using the Department of Finance factor of 3.28 persons per household for the City (State of California Department of Finance 2020). As shown in Table 3-8.2, the project would result in a generation of 2.66 $MTCO_2e$ per service person per year. Estimated operational emissions would not exceed the BAAQMD recommended significance thresholds; therefore, impacts would be less than significant.

Post-2020 Emissions Impact

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

The BAAQMD has developed a bright-line threshold of 1,100 $MTCO_2e$ for determining whether projects would generate significant GHG emissions. While it is understood that this threshold was developed for projects operational prior to 2020, the BAAQMD has not yet updated their GHG significance thresholds past this date. As shown above in Table 3.8-2, the total GHG emissions generated by the proposed project would be 2.66 $MTCO_2e$/service population/ year and would not exceed the BAAQMD threshold of 4.6 $MTCO_2e$/service population/year. Many California air quality management districts are currently updating their GHG thresholds to meet GHG reduction goals pursuant to 2050 targets; therefore, in the absence of Beyond 2020 thresholds, consistency with 'substantial progress' along a post-2020 trajectory was used as a significance determination for the proposed project. The service population threshold of significance (4.6 $MTCO_2e$/service population/year) was adjusted to a substantial progress threshold that was calculated based on the GHG reduction goals of SB 32/Executive Order B-30-15 and the projected 2030 Statewide population and employment levels (Association of Environmental Professionals 2016). An adjusted efficiency threshold of 2.6

$MTCO_2e$/service population/year is estimated to be needed by the land use sector for California to meet the 2030 target.[1] The estimated total net annual GHG emissions generated by the proposed project in the year 2030 were compared with the applicable threshold of 2.6 $MTCO_2e$/service population/year as shown in Table 3.8-3.

Table 3.8-3. Operational Greenhouse Gas Emissions in the 2030 Operational Year

Source Category	$MTCO_2e$
Area	4
Energy Consumption	234
Mobile	653
Solid Waste Generation	29
Water Usage	13
Amortized Construction Emissions[1]	41
Total	*975*
Service Population (Residents + Employees)	**413**
Project Emission Generation ($MTCO_2e$/service population/year)	**2.36**
Applicable Operational Threshold ($MTCO_2e$/service population/year)[2]	**2.6**
Significant Impact?	**No**

Notes:
[1] Construction GHG emissions are amortized over the 30-year lifetime of the project.
[2] Adjusted to Reflect Post-2020 GHG Emissions Reduction Targets
$MTCO_2e$ = metric tons of carbon dioxide equivalent; BAAQMD = Bay Area Air Quality Management District; GHG = Greenhouse Gas
Source: Criteria Pollutants and Greenhouse Gas Emissions Estimation Summary (Appendix A)

Due to being below the significance threshold adjusted to reflect post-2020 GHG emissions reduction targets, the project would be assumed to meet or fall below trajectory, and impacts would be less than significant.

This impact will not be further addressed in the EIR.

[1] The adjusted efficiency threshold was calculated for California using the GHG reduction goals per SB 32 and an adjusted service population that was updated using projected 2020 Statewide population and employment levels. The emissions used in calculating the threshold are assumed to be 40 percent 1990 emissions to meet SB 32 needed for 2030.

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 CAPs, 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 GHG 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 Climate Action and Resilience Plan was adopted by City Council on May 12, 2020, with the goal to provide tools for the City and community to build community resilience to climate challenges (City of Antioch 2020b). The Climate Action and Resilience Plan outlines proposed actions that aim to benefit the community in the following broad categories: adaptation to climate related changes, mitigation of GHG emissions, and community development for building strong communities that can withstand the climate challenge. Although implementation of the proposed actions outlined in the Climate Action and Resilience Plan would reduce the community's reliance on carbon-based energy sources, the plan has no mandatory provisions that would apply to the proposed project.

The State of California has adopted regulations that apply to the proposed project that would help the City 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

GHG emissions. The proposed project would comply with CALGreen, which includes requirements to increase recycling, reduce waste, reduce water use, increase bicycle use, and other measures that would reduce GHG 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 proposed project would be reduced as the electric utility complies with the Renewables Portfolio Standard, which requires utilities to increase its mix of renewable energy sources to 50 percent by 2030. In 2018, SB 100 was signed into law, which again increases the Renewables Portfolio Standard to 60 percent by 2030 and requires all the state's electricity to come from carbon-free resources by 2045 (California Public Utilities Commission 2021). The proposed project would not conflict with the City's Community CAP or regulations adopted by the State of California to reduce GHG emissions; 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.

3.9 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?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to *Government Code Section 65962.5* and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 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?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) 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?	☐	☐	☒	☐

3.9.1 Environmental Setting

Hazardous materials, as defined by CCR, 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 of, 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.

California Government Code Section 65962.5 requires the California EPA to compile, maintain, and update specified lists of hazardous material release sites. The required lists of hazardous material release sites are commonly referred to as the “Cortese List,” which are contained on internet websites, including the online EnviroStor database from the Department of Toxic Substances Control (DTSC) and the online GeoTracker database from 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. A search of EnviroStor and GeoTracker databases in February 2021 revealed the project site is not listed as a hazardous material release site and identified one site within 1 mile of the project site (DTSC 2021a, SWRCB 2021a). The Oakley Road Metering Station (SL0601346154), located 0.89 mile northwest of the project site, is listed on EnviroStor and GeoTracker Database as a “Cleanup Program Site.” “Cleanup Program Sites” includes all "non-federally owned" sites that are regulated under the SWRCB’s Site Cleanup Program. The Oakley Road Metering Station is owned by Standard Pacific Gas Lines, Pacific Gas and Electric Company, and Chevron Corporation. The site, until the mid-1970s, was utilized for routine operations associated with the handling of natural gas well liquids. These liquids consist of water and petroleum hydrocarbons. Currently, the site is used as a storage area for the Pacific Gas and Electric Company's natural gas pipeline

equipment. (DTSC 2021b). The cleanup site is status is “OPEN – REMEDIATION” as of November 20, 2013 on the GeoTracker database, which means that an approved remedy has been selected for the impacted media at the site and the responsible party is implementing one or more remedy under an approved cleanup plan for the site. Since 1991, quarterly groundwater monitoring is performed in accordance with Monitoring and Reporting Program # R5-2005-0813 issued on April 11, 2005. Annual reports summarizing groundwater sampling results are provided to the Central Valley Water Board. (SWRCB 2021b).

There are no public or private airports within two miles of the City limits, and there are no lands in the City that are within an airport land use plan (City of Antioch 2003b). The nearest public airports to the project site are the Byron Airport and the Buchanan Field Airport, located approximately 12 miles southeast and 16.75 miles west of the project site, respectively. The nearest private airport is the Funny Farm Airport, approximately 6 miles southeast of the project site in the City of Brentwood (Tollfree Airline 2021). According to the California Department of Forestry and Fire Protection, the City is not located in a local or state fire hazard severity zone (CALFIRE 2020).

3.9.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, and online regulatory compliance databases.

3.9.3 Environmental Impact Analysis

This section discusses potential impacts related to hazards and hazardous materials 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 the development of the 12-acre vacant project site as 126 multifamily residences in 25 buildings with related amenities. 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. The project contractor would be required to comply with all applicable federal, state, and local laws related to the transport, use, or disposal of hazardous materials, as overseen by the California EPA and DTSC. Hazardous materials used post construction would be those commonly found in other residential uses such as cleaning products, paints, oils, and pesticides for landscaping maintenance activities. These common household hazardous materials would be used in limited quantities and would not create a substantial hazard to the public or the environment. Therefore, impacts related to the routine transport, use, and disposal of hazardous materials during project construction and operation would be less than significant. This impact will not be further addressed in the EIR.

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

As discussed in Impact HAZ-1, project construction and operation activities would involve limited use of common hazardous materials, including paints, solvents, fuels, oils, cleaners, and pesticides. 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. The proposed project would be required to comply with applicable

federal, state, and local laws pertaining to the safe handling, storage, and transport of hazardous materials. In addition, during construction activities, the applicant would be required to implement a SWPPP to prevent contaminated runoff from leaving the project site. The implementation of the SWPPP would be incorporated into the proposed project as Mitigation Measure HYD-1. Therefore, impacts related to the release of hazardous materials into the environment would be less than significant with the implementation of Mitigation Measure HYD-1. This impact will not be further addressed in the EIR.

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 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

The project site is not located within 0.25 mile of an existing or proposed school. The nearest school is the Mino Grant Elementary School, approximately 0.94 mile west of the project site. In addition, Orchard Park Elementary is approximately 1 mile northeast of the project site. The proposed project does not involve the development of a use that would emit hazardous materials, substances, or waste during operation. The use of heavy equipment and activities involving hazardous materials would be limited to the construction phase and confined to construction areas and within existing roadways. The use of hazardous materials would also be regulated by health and safety requirements under federal, state, and local laws, including handling, storage, and disposal of the materials, as well as emergency spill response. As such, the proposed project would have a less-than-significant impact related to the emission or handling of hazardous materials near a school. This impact will not be further addressed in the EIR.

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

The project site is not included on a list of hazardous materials sites pursuant to Government Code Section 65962.5 (DTSC 2021a, SWRCB 2021a). Therefore, the proposed project would not create a significant hazard to the public or the environment and no impact would occur. This impact will not be further addressed in the EIR.

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 project site is not located within 2 miles of a public airport. The nearest public airports to the project site are the Byron Airport and the Buchanan Field Airport, located approximately 12 miles southeast and 16.75 miles west of the project site, respectively. As such, the project site does not fall within an airport land use plan and would not result in a safety hazard for people residing or working in the project site. No impact would occur. This impact will not be further addressed in the EIR.

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-6	**Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Impact Analysis

If the proposed project resulted in the complete or partial closure of roadways, interfered with identified evacuation routes, restricted access for emergency response vehicles, or restricted access to critical facilities such as hospitals or fire stations, then it would interfere with an adopted emergency response plan or emergency evacuation plan. The proposed project would not involve permanent modification of existing roadways. Construction equipment and materials would be stored within the project site. There are no identified evacuation routes that would be potentially impacted by the construction of the project. Construction activities are anticipated to be confined to the project site, and no road closures or detours are anticipated. Therefore, project construction and

operation activities would not interfere with an emergency evacuation or response plan, and impacts would be less than significant. This impact will not be further addressed in the EIR.

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-7	**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

The California Department of Fire and Forestry Protection does not identify the City in a local or state very high fire hazard severity zone (CALFIRE 2020). According to the General Plan EIR, the southern and unincorporated portions of the City are the most susceptible to wildland fire hazards because these areas contain rural, hilly terrain, and are adjacent to natural grasslands and brush (City of Antioch 2003b). The project site is in the northeast portion of the City and located in an urban area near other residential uses. In addition, any dry, potentially-flammable, vegetation currently on-site would be removed with development of the proposed project. As such, the proposed project is not expected to be exposed to risks associated with wildland fires. As discussed in Section 2.20 Wildfire, primary access to the project site would be via Wild Horse Road and onto two streets within the project site which would be 26 feet wide to allow emergency vehicles access to the project site. All utilities needed for the new development would be located underground and also includes installation of fire hydrants on the project site to mitigate fire hazards. The proposed project would be required to implement General Plan policies along with the implementation of the Uniform Fire Code and the Uniform Building Code which will reduce effects of development on wildland fire hazard impacts

to a less than significant level (City of Antioch 2003a). As such, the proposed project is not expected to be exposed to risks associated with wildland fires, and impacts would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.10 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 or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or offsite;	☐	☒	☐	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff	☐	☒	☐	☐
iv) Impede or redirect flood flows	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒	☐	☐

3.10.1 Environmental Setting

Climate and Precipitation

Regionally, the project site has a Mediterranean climate characterized by hot, dry summers and moderate winters, with average annual temperatures ranging from 46.6 to 75°F. Historical data used to describe the climate was collected at the Antioch Pumping Plant #3 Station, located directly south of the project site. Precipitation in the study area occurs as rain. Average annual rainfall is 11.2 inches and occurs primarily from October through April. The growing season (i.e., 50 percent probability of air temperature 32ºF or higher) in the study area is around 304 days and occurs between mid-February and early December (Western Regional Climate Center 2021).

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 proposed project site is located in the San Joaquin Delta watershed (USGS 2020). In general, the creeks flow from the hills southwest of Antioch to the north and ultimately drain into the Delta, located north of the project site. The existing drainage system in Antioch is comprised primarily of channelized creeks fed by groundwater, surface runoff, and underground storm drains.

Groundwater

The City is located within the East Contra Costa Subbasin (ECC Subbasin), which is part of the larger San Joaquin Valley Groundwater Basin. The ECC Subbasin is drained by the San Joaquin River and Marsh Creek. The San Joaquin River flows northward into the Sacramento and San Joaquin Delta, which ultimately discharges into the San Francisco Bay. The City does not pump groundwater for municipal water supplies (City of Antioch 2003b). The state has designated the ECC Subbasin as a medium-priority basin per the Sustainable Groundwater Management Act. Therefore, preparation of a Groundwater Sustainability Plan (GSP) is required by January 31, 2022. In May 2017, the City formed a Groundwater Sustainability Agency to manage groundwater resources beneath and within City limits. Accordingly, the City is working with other local agencies to prepare a GSP (East Contra Costa Irrigation District 2018).

Water Quality

Water quality refers to the chemical, biological, and physical characteristics of water. The water quality within a watershed is influenced by surrounding land uses, geographic features, rainfall intensity, vehicle traffic, and percentage of impervious surfaces. During the seasonal dry period between May to September, pollutants such as vehicle exhaust, oil and gasoline spills, and atmospheric fallout accumulate within the watershed. During the seasonal wet period between October to April, precipitation can displace these pollutants into stormwater runoff and increase pollutant concentrations at the beginning of the season.

Flooding

Flood hazard zones are identified on official Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA). The project site is designated as Zone X. Zone X is defined as areas outside of the 100-year floodplain zone that also have a 0.2-percent probability of flooding in a given year (FEMA 2021).

Seiches, Dam Inundation, and Tsunamis

Seiches are standing waves oscillating in a landlocked body of water, typically caused by strong winds or seismic ground shaking. Tsunamis are tidal waves created by undersea fault movement. These waves are fast moving, create large swells of water, and upon reaching the coast can sweep inland with a large amount of force. Portions of the City located adjacent to Suisun Bay are susceptible to potential tsunami or seiche inundation. However, projected wave height and tsunami run-up is expected to be small in the interior portions of the San Francisco Bay. Some coastal inundation and damage could occur if a tsunami or seiche coincided with very high tides or an extreme storm.

A dam can pose a potential risk of failure particularly during seismic events or ground shaking, which can threaten the area below the dam with inundation. The City is not in the line of any flooding from dam or reservoir inundation (DWR 2015).

3.10.2 Methodology

The evaluation of potential hydrologic and water quality impacts was based on a review of City documents, including the General Plan and 2015 Urban Water Management Plan (UWMP). Mapping tools provided by FEMA were also reviewed. The information obtained from these sources are 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.

3.10.3 Environmental Impact Analysis

This section discusses potential impacts related to hydrology and water quality associated with the proposed project and provides mitigation measures where necessary.

Impact HYD-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Impact Analysis

Construction activities would include site clearing, grading, utility connections, building construction, frontage improvements (e.g., sidewalk and driveway construction), and landscaping onsite. Construction activities would involve grading of the entire project site and the permanent disturbance of the site. These activities have the potential to generate stormwater runoff and to discharge pollutants, such as fuel, solvents, oil, paints, and trash, into the City's storm drain system. The proposed project would comply with the NPDES General Construction Permit. The NPDES General Construction Permit includes the preparation of a SWPPP and incorporation of BMPs to control sedimentation, erosion, and hazardous materials from contacting stormwater, with the intent of keeping all products of erosion from moving offsite into receiving waters. The SWPPP and applicable BMPs have been incorporated into Mitigation Measure HYD-1 to reduce potential water quality impacts to a less than significant level.

The City has adopted the Contra Costa County's C.3 Stormwater Standards, which require new development and redevelopment projects that create or alter 10,000 or more square feet of impervious area to contain and treat all stormwater runoff from the project site. Given that the proposed project would create approximately 214,032 square feet of impervious area, the proposed project would be subject to the requirements of the SWRCB and the Regional Water Quality Control Board (RWQCB), including the C.3 Standards, which are included in the City's NPDES General Permit. This increase in impervious surface at the project site would alter the type and level of pollutants in stormwater runoff from the project site. Stormwater runoff from building

rooftops, parking lot areas, sidewalks, access roads, and landscaped areas would potentially contain oils, grease, fuels, byproducts of combustion, pesticides, fertilizers, and herbicides. Compliance with the C.3 Standard requirements would ensure that impacts to water quality standards or waste discharge requirements would not occur during operation of the proposed project.

To control stormwater runoff, the proposed project would include the storm drains connecting to the bioretention basin and existing 48-inch and 36-inch storm drainpipes along the western perimeter of the proposed project. The proposed project would also include approximately 284,502 square feet of pervious surface, consisting of landscaping and bioswales, along the project site boundary. Stormwater generated at the project site would be directed and treated in the landscaped areas and the bioswales. As such, the proposed project would incorporate BMPs to prevent, control, and reduce the volume of pollutants in stormwater runoff. The proposed drainage system improvements would be designed and constructed in accordance with the City's Standard Specifications and General Plan. As such, operation of the proposed project would have a less-than-significant impact with mitigation related to water quality degradation. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM HYD-1: Prepare and Implement a SWPPP

Prior to the issuance of any construction-related permits, the applicant shall prepare and submit a Notice of Intent (NOI) to the SWRCB and prepare a SWPPP in compliance with the NPDES General Construction Permit. The SWPPP shall include a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills); description of the type and location of erosion and sediment control BMPs to be implemented at the project site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the project site. A copy of the SWPPP must be current and remain onsite. Water quality BMPs identified in the SWPPP could include but are not limited to the following:

- Surface water runoff shall be controlled by directing flowing water away from critical areas and by reducing runoff velocity. Diversion structures, such as terraces, dikes, and ditches, shall collect and direct runoff water around vulnerable areas to prepared drainage outlets.

- Surface roughening, berms, check dams, hay bales, or similar devices shall be used to reduce runoff velocity and erosion.

- Sediment shall be contained when conditions are too extreme for treatment by surface protection. Temporary sediment traps, filter fabric fences, inlet protectors, vegetative filters and buffers, or settling basins shall be used to detain runoff water long enough for sediment particles to settle out. Construction materials, including topsoil and chemicals, shall be stored, covered, and isolated to prevent runoff losses and contamination of groundwater.

- Topsoil removed during construction shall be carefully stored and treated as an important resource. Berms shall be placed around topsoil stockpiles to prevent runoff during storm events.

- Fuel and vehicle maintenance areas shall be established away from all drainage courses, and these areas shall be designed to control runoff.

- Temporary erosion control measures, such as silt fences, staked straw bales, and temporary revegetation, shall be employed for disturbed areas. No disturbed surfaces will be left without erosion control measures in place during the winter and spring months.

- A spill prevention and countermeasure plan shall be developed to identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used onsite. The plan will also require the proper storage, handling, use, and disposal of petroleum products.

- Construction activities shall be scheduled to reduce land disturbance during peak runoff periods and to the immediate area required for construction. Soil conservation practices shall be completed during the fall or late winter to reduce erosion during spring runoff. Existing vegetation will be retained where possible. To the extent feasible, grading activities shall be limited to the immediate area required for construction.

Level of Significance After Mitigation

Less Than Significant with Mitigation.

Impact HYD-2	**Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

Impact Analysis

The City currently does not rely on groundwater for water supplies. Therefore, any water demand associated with the proposed project would not result in a depletion of groundwater in the proposed project site.

The proposed project would create 214,032 square feet of impervious surface at the project site, which would potentially impact groundwater because areas currently available for the infiltration of rainfall would be reduced. The proposed project would incorporate 284,502 square feet of pervious surface at the project site consisting of landscape planters and bioswales along the project boundaries. Therefore, the proposed project would not substantially interfere with local groundwater recharge. In addition, the drainage system improvements would be designed and constructed in accordance with the City's Standard Specifications and General Plan. Impacts would be less than significant. This impact will not be further addressed in the EIR.

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 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 or through the addition of impervious surfaces, in a manner which would:**

- **i) Result in substantial erosion or siltation on- or offsite;**
- **ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;**
- **iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;**
- **iv) Impede or redirect flood flows**

Impact Analysis

i. Result in substantial erosion or siltation on- or offsite

Construction of the proposed project would include ground-disturbing work that would involve grading of the entire project site, and the permanent disturbance of the 12-acre site. As a result, construction activities could result in erosion-related impacts. The proposed project would implement Mitigation Measure HYD-1, including preparation of a SWPPP in accordance with the NPDES General Construction Permit. The SWPPP would include BMPs, which would be implemented during construction activities to reduce the potential of erosion.

The proposed project would create 214,032 square feet of impervious surface at the project site, which would potentially impact groundwater because areas currently available for the infiltration of rainfall would be reduced. The proposed project would incorporate 284,502 square feet of pervious surface at the project site consisting of landscape planters and bioswales along the project boundaries. These features would collect impervious surface runoff prior to entering the piped storm drain system and would provide treatment, retention, and/or detention at the project site to reduce the volume of stormwater runoff and erosion impacts. With implementation of Mitigation Measure HYD-1, the impact would be less than significant. This impact will not be further addressed in the EIR.

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

The proposed project involves the development of a vacant lot with multifamily residences. As a result, the proposed project would create 214,032 square feet of impervious surface at the project site. This increase in impervious surface at the project site would increase the amount of stormwater runoff from the project site. To control stormwater runoff, the proposed project includes connecting the storm drains to the bioretention basin and existing 48-inch and 36-inch storm drainpipes along the western perimeter of the proposed project. The proposed project would also include approximately 284,502 square feet of pervious surface consisting of landscaping and bioswales along the project site boundary. Stormwater at the project site would be diverted to the landscaped areas and bioswales, which would control the volume of stormwater at the project site to reduce the potential for flooding. Therefore, the proposed project would not result in on- or offsite flooding, and the impact would be less than significant. This impact will not be further addressed in the EIR.

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

As described above, construction activities would have the potential to generate stormwater runoff and to discharge pollutants, such as fuel, solvents, oil, paints, and trash, into the City's storm drain system. In addition, the increase in impervious surface resulting from project implementation would alter the type and level of pollutants in stormwater runoff from the project site. During construction activities, the proposed project would conform to the requirements of the NPDES General Construction Permit, which involves the preparation and implementation of a SWPPP. The SWPPP would specify BMPs to incorporate during construction to prevent, control, and reduce polluted runoff from entering the City's storm drain system and waterways. Implementation of these BMPs would be part of Mitigation Measure HYD-1.

In addition, stormwater generated at the project site would be directed and treated in the landscaped areas and the bioswales prior to entering the piped storm drain system. With implementation of such a plan, the facilities would continue to properly manage runoff long after completion of construction activities. The impacts would be less than

significant with Mitigation Measure HYD-1 incorporated. This impact will not be further addressed in the EIR.

iv. Impede or redirect flood flows

The project site is designated as Zone X. Zone X is defined as areas outside of the 100-year floodplain zone that have a 0.2-percent probability of flooding in a given year (FEMA 2021). The project is not located within a dam inundation zone; therefore, the proposed project would not impede or redirect flood flows, and there would be no impact. This impact will not be further addressed in the EIR.

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-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Impact Analysis

The project site would not be susceptible to seiche, tsunami, or mudflow. Seiches affect 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 more than 50 miles from the Pacific Ocean and miles from Suisun Bay, substantially reducing the potential for impacts from tsunamis. As noted above, the project site is not located within a flood hazard zone. As a result, there would be no impact. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact HYD-5 Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Impact Analysis

The State Department of Water Resources identified the ECC Subbasin as a medium-priority basin. The City formed a Groundwater Sustainability Agency in May 2017 to manage groundwater resources beneath and within City limits. Accordingly, the City is working with other local agencies to prepare a GSP by January 31, 2022 (East Contra Costa Subbasin 2018). The GSP for the ECC Subbasin is still under development and has not been approved. Therefore, the proposed project would not conflict with or obstruct implementation of a sustainable groundwater management plan.

As discussed above, the proposed project does not plan to draw groundwater from the site and would not substantially deplete groundwater supplies. The proposed project is required to comply with the policies and objectives of the Water Quality Control Plan for the Central Valley RWQCB. As required by Mitigation Measure HYD-1, the proposed project would obtain coverage under the NPDES General Construction Permit and Industrial General Permit. Compliance with these regulations would require the proposed project to prepare a construction SWPPP and post-operation SWPPP that includes BMPs that meet the requirements of the Central Valley RWQCB's Water Quality Control Plan. The implementation of Mitigation Measure HYD-1 would reduce potential impacts to water quality to a less than significant level and ensure that the proposed project would not conflict with or obstruct implementation of the Water Quality Control Plan for the Central Valley RWQCB.

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.

3.11 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?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

3.11.1 Environmental Setting

The proposed project is located in the City of Antioch at the terminus of Wild Horse Road and State Route 4. The project site is currently vacant and consists of a single parcel identified as APN 041-022-003 and is approximately 12-acres.

The City's General Plan designates the project site as Low Density Residential, and the City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned Development District. This project-specific Planned Development District allows for uses such as housing developments which are appropriate as part of a specific planned development. The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation.

The project site is surrounded by State Route 4 to the east, residential developments to the west, and Wild Horse Road, the CCWD Antioch Service Center, and the Contra Costa Canal to the south. The property is primarily covered in with annual grasslands and no trees are present on the project site.

3.11.2 Methodology

The evaluation of potential land use impacts was based on a review of applicable land use documents, including the General Plan, and the Antioch Code of Ordinance. This

analysis examined the consistency of the proposed project with applicable General Plan policies.

3.11.3 Environmental Impact Analysis

This section discusses potential impacts related to land use and planning associated with the proposed project and provides mitigation measures where necessary.

Impact LU-1 Physically divide an established community?

Impact Analysis

The project site is vacant and is bordered by residential developments, roadways, and a water district pumping plant. The parcel is entirely vacant; therefore, the proposed project would not physically alter an established community. In addition, the proposed project would be accommodated by existing roadways and would not preclude access to adjacent developments. Therefore, the proposed project would not physically divide an established community, and no impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact LU-2 Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Impact Analysis

The City's General Plan designates the project site as Low Density Residential, and the City's Zoning Ordinance designates the project site as P-D 86-3.1: Planned

Development District. This project-specific Planned Development District allows for uses such as housing developments which are appropriate as part of a specific planned development. The proposed project includes a General Plan Amendment and Planned Development Rezone to develop higher density housing for multifamily uses. While the General Plan land use designation would change following approval of the proposed project, it would continue to provide for residential uses, similar to the existing designation.

High Density Residential developments have a maximum allowable density of 35 dwelling units per gross developable acre and two-story apartments and condominiums with surface parking typify this district, although structures of greater height with compensating amounts of open space would be possible. The Zoning Ordinance will establish specific density limits at or below 35 units per acre for zoning districts that correspond with the High Density Residential designation. The proposed project would also require a rezone to a new Planned Development District. The Planned Development District does not have set standards and regulations for structures as they are to be determined by the City Council through the planned development process. Each P-D District established will have specific development standards set for that particular district such as minimum lot sizes, setback and open space requirements, architectural and landscaping guidelines, and maximum building heights and lot coverages. These standards are determined by the City Council through planned development process (City of Antioch 2020a).

The proposed project would construct multifamily residences which would be inconsistent with the current General Plan land use designation. However, with the amendment, the proposed project would be consistent with the proposed designation and the project would be consistent with the City of General Plan and impacts related to General Plan consistency would be less than significant.

The applicant proposes to amend the zoning code to a new P-D District. The rezoning of the site would establish and outline maximum density and units, minimum lot sizes, landscape requirements, open space requirements, architectural guidelines, and maximum building height and lot coverage. A preliminary development plan must be prepared for all proposed P-D Districts containing residential components and Planning Commission approval of the preliminary development plan is necessary. The applicant of the P-D District establishment request is required to develop a listing of the development standards proposed for the new P-D District (e.g., setbacks, lot sizes,

building heights) (City of Antioch 2020a). The proposed project would implement all proposed development standards and guidelines. Therefore, the proposed project would be consistent with the City of Antioch Zoning Code and impacts related to Zoning Code consistency would be less than significant.

In summary, the proposed project would not conflict with the applicable land use plans, policies, or regulations of the City of General Plan or the Zoning Code adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, impacts on land use policies and plans would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.12 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 that would be a value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

3.12.1 Environmental Setting

According to the Contra Costa County General Plan, mineral resources are not currently located near the City (Contra Costa County 2005). Additionally, the General Plan EIR does not identify any areas identified as available for new development by the General Plan to contain any known mineral resources that would be of value to the region and residents of the state (City of Antioch 2003b).

3.12.2 Methodology

The following analysis is based on a review of the General Plan EIR and the DOC's Division of Mine Reclamation mineral lands classification maps.

3.12.3 Environmental Impact Analysis

This section discusses potential impacts on mineral resources 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 that would be a value to the region and the residents of the state?

Impact Analysis

The DOC's Mineral Lands Classification map of Aggregate Resources classifies the project site as an MRZ-3 zone. MRZ-3 zones are areas containing mineral deposits the significance of which cannot be evaluated from available data (DOC 1982). However,

the Contra Costa County General Plan as well as the City's General Plan EIR do not identify any mineral resources of value on or near the project site. No mineral extraction activities exist on or near the site, and mineral extraction is not included as part of the proposed project. Furthermore, the project's Planned Development zoning will not allow mineral extraction. 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, and no impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

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 DOC Division of Mine Reclamation identifies the project site as an MRZ-3 zone. MRZ-3 zone classifications are given to areas that contain mineral deposits but the significant of it cannot be evaluated from the available data. There are no locally important mineral resource recovery sites delineated on the City's General Plan and the Contra Costa County General Plan does not identify any valuable mineral resource areas in the City. Therefore, the proposed project would not result in the loss of availability of a locally important mineral resource recovery site, and no impact would occur. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.13 NOISE

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

3.13.1 Environmental Setting

Noise Fundamentals and Terminology

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an existing sound level.

Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The

perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dB(A) and referred to as A-weighted decibels. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. Table 3.13-1 summarizes typical A-weighted sound levels for different common noise sources.

Table 3.13-1. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet flyover at 1,000 feet	110	Rock band
Gas lawnmower at 3 feet	100	Food blender at 3 Feet
Diesel truck at 50 Feet at 50 miles per hour	90	Garbage Disposal at 3 Feet
Noisy urban area, daytime	80	Vacuum Cleaner at 10 Feet
Gas lawnmower, 100 feet	70	Normal Speech at 3 Feet
Commercial area	60	Large business office
Heavy traffic at 300 feet	50	Dishwasher in next room
Quiet urban daytime	40	Theater, large conference room (Background)
Quiet urban nighttime	20	Library
Quiet suburban nighttime	10	Bedroom at night, concert hall (Background)
Quiet rural nighttime	0	Broadcast/recording studio

Source: Caltrans Technical Noise Supplement Traffic Noise Analysis Protocol (Caltrans 2013)

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (Leq), the minimum and maximum sound levels (Lmin and Lmax, respectively), percentile-exceeded sound levels (such as L10, L20), the day-night sound level (Ldn), and the community noise

equivalent level (CNEL). Ldn and CNEL values often differ by less than 1 dB. As a matter of practice, Ldn and CNEL values are considered to be equivalent and are treated as such in this assessment. Table 3.13-2 defines sound measurements and other terminology used in this report.

Table 3.13-2. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dB(A))	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
Maximum Sound Level (Lmax)	The maximum sound level measured during the measurement period.
Minimum Sound Level (Lmin)	The minimum sound level measured during the measurement period.
Equivalent Sound Level (Leq)	The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
Percentile-Exceeded Sound Level (Lxx)	The sound level exceeded xx % of a specific time period. L10 is the sound level exceeded 10% of the time. L90 is the sound level exceeded 90% of the time. L90 is often considered to be representative of the background noise level in a given area.
Day-Night Level (Ldn)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Peak Particle Velocity (PPV)	A measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches/second.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Source: Federal Highway Administration Construction Noise Handbook (FHWA 2006)

With respect to how humans perceive and react to changes in noise levels, a 1 dB(A) increase is imperceptible, a 3 dB(A) increase is barely perceptible, a 5 dB(A) increase is clearly noticeable, and a 10 dB(A) increase is subjectively perceived as approximately twice as loud. These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broadband noise and to changes in levels of a given noise source. These statistical indicators are thought to be most applicable to noise levels in the range of 50 to 70 dB(A), as this is the usual range of voice and interior noise levels. Numbers of agencies and municipalities have developed or adopted noise level standards, consistent with these and other similar studies to help prevent annoyance and to protect against the degradation of the existing noise environment.

For a point source such as a stationary compressor or construction equipment, sound attenuates based on geometry at a rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance. Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface, such as grass, attenuates at a slightly greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the range of 1–2 dB per doubling of distance. Barriers, such as buildings and topography that block the line of sight between a source and receiver, also increase the attenuation of sound over distance.

Decibel Addition

Because dBs are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. On the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, their combined sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one source produces a sound pressure level of 70 dB(A), two identical sources would combine to produce 73 dB(A). The cumulative sound level of any number of sources can be determined using dB addition.

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 vibration depends on their 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 in terms of peak particle velocity (PPV) in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of PPV.

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. Table 3.13-3 notes the general threshold at which human annoyance could occur is 0.1 PPV for continuous/frequent sources. Table 3.13-4 indicates the threshold for damage to typical residential and commercial structures ranges from 0.3 to 0.5 PPV for continuous/frequent sources.

Table 3.13-3. Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum Peak Particle Velocity (inches/second)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe	2.0	0.40

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-seal equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans Transportation and Construction Vibration Guidance Manual (Caltrans 2020)

Table 3.13-4. Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum Peak Particle Velocity (inches/second)	
	Transient Sources	Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.30	0.12
Historic and some old buildings	0.50	0.20
Older residential structure	0.70	0.30
New residential structures	1.2	0.50
Modern industrial/commercial buildings	2.0	0.50

Notes: Transient sources again 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-seal equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans Transportation and Construction Vibration Guidance Manual (Caltrans 2020)

The operation of heavy construction equipment, particularly pile driving and other impact devices, such as pavement breakers, create seismic waves that radiate along the surface of the ground and downward into the earth. These surface waves can be felt as ground vibration. Vibration from the operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance. Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities.

Table 7-4 “Vibration Source Levels for Construction Equipment” in the 2018 Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual lists vibration source levels for the construction equipment most likely to generate high levels of ground vibration (FTA 2018). The equipment listed in the FTA table includes impact and sonic pile drivers, clam shovel drops, hydromills, vibratory rollers, hoe rams, large and small bulldozers, caisson drilling, loaded trucks, and jackhammers. Table 3.13-5 below summarizes typical reference vibration levels generated by select construction equipment proposed for this project.

Table 3.13-5. Vibration Source Levels for Construction Equipment

Equipment	Peak Particle Velocity at 25 Feet
Vibratory roller	0.210
Large bulldozer	0.089
Loaded trucks	0.076
Small bulldozer	0.003

Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018)

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions (FTA 2018). “PPVref” is the reference PPV from Table 3.13-5 and “Distance” is the distance between the source and the receptor:

$$PPV = PPVref \times (25/Distance)^{1.5}$$

Noise Regulatory Framework

Federal, state, and local agencies regulate different aspects of environmental noise. Generally, the federal government sets standards for transportation-related noise sources closely linked to interstate commerce. These include aircraft, locomotives, and trucks. No federal noise standards are directly applicable to this project. The state government sets standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles intended to guide and influence development plans.

State Regulations

California Building Code

Part 2, Title 24 of the CCR California Noise Insulation Standards establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family residences. Under Section 1207.11 “Exterior Sound Transmission Control,” interior

noise levels attributable to exterior noise sources cannot exceed 45 Ldn in any habitable room. Where such residences are located in an environment where exterior noise is 60 Ldn or greater, an acoustical analysis is required to ensure interior levels do not exceed the 45 Ldn interior standard. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the building must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

City of Antioch General Plan

The General Plan sets forth noise and land use compatibility standards to guide development, as well as noise goals and policies to protect citizens from the harmful and annoying effects of excessive noise. The following noise objectives and policies are applicable to the proposed project.

Objective 11.6.1 Noise Objective. Achieve and maintain exterior noise levels appropriate to planned land uses throughout Antioch as described below:

- Residential
  - Single-Family: 60 dBA CNEL within rear yards
  - Multifamily: 60 dBA CNEL within exterior open space
- Schools
  - Classrooms: 65 dBA CNEL
  - Play and Sports Areas: 70 dBA CNEL
- Hospitals, Libraries: 60 dBA CNEL
- Commercial/Industrial: 70 dBA CNEL at the front setback

11.6.2 Noise Policies

a. Implementation of the noise objective contained in Section 11.6.1 and the policies contained in 11.6.2 of the Environmental Hazards Element shall be based on noise data contained in Section 4.9 of the General Plan EIR, unless a noise analysis conducted pursuant to the City's development and environmental review process provides more up-to-date and accurate noise predictions, as determined by the City.

b. Maintain a pattern of land uses that separates noise sensitive land uses from major noise sources to the extent possible, and guide noise-tolerant land uses into the noisier portions of the Planning Area.

c. Minimize motor vehicle noise in residential areas through proper route location and sensitive roadway design.

    - Provide planned industrial areas with truck access routes separated from residential areas to the maximum feasible extent.

    - Where needed, provide traffic calming devices to slow traffic speech within residential neighborhoods.

d. Where new development (including construction and improvement of roadways) is proposed in areas exceeding the noise levels identified in the General Plan Noise Objective, or where the development of proposed uses could result in a significant increase in noise, require a detailed noise attenuation study to be prepared by a qualified acoustical engineer to determine appropriate mitigation and ways to incorporate such mitigation into project design and implementation.

e. When new development incorporating a potentially significant noise generator is proposed, require noise analyses to be prepared by a qualified acoustical engineer. Require the implementation of appropriate noise mitigation when the proposed project will cause new exceedances of General Plan noise objectives, or an audible (3.0 dB(A)) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development.

f. In reviewing noise impacts, utilize site design and architectural design features to the extent feasible to mitigate impacts on residential neighborhoods and other uses that are sensitive to noise. In addition to sound barriers, design techniques to mitigate noise impacts may include, but are not limited to:

    - Increased building setbacks to increase the distance between the noise source and sensitive receptor.

- Orient buildings which are compatible with higher noise levels adjacent to noise generators or in clusters to shield more noise sensitive areas and uses.
- Place noise tolerant use, such as parking areas, and noise tolerant structures, such as garages, between the noise source and sensitive receptor.
- Cluster office, commercial, or multifamily residential structures to reduce noise levels within interior open space areas.
- Provide double glazed and double paned windows on the side of the structure facing a major noise source, and place entries away from the noise source to the extent possible.

g. Where feasible, require the use of noise barriers (walls, berms, or a combination thereof) to reduce significant noise impacts.

- Noise barriers must have sufficient mass to reduce noise transmission and high enough to shield the receptor from the noise source.
- To be effective, the barrier needs to be constructed without cracks or openings.
- The barrier must interrupt the line of sight between the noise sources and the noise receptor.
- The effects of noise “flanking” the noise barrier should be minimized by bending the end of the barrier back from the noise source.
- Require appropriate landscaping treatment to be provided in conjunction with noise barriers to mitigate their potential aesthetic impacts.

h. Continue enforcement of California Noise Insulation Standards (Title 25, Section 1092, California Administrative Code).

i. Ensure that construction activities are regulated as to hours of operation in order to avoid or mitigate noise impacts on adjacent noise-sensitive land uses.

j. Require proposed development adjacent to occupied noise sensitive land uses to implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance area, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.

k. Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

l. Prior to the issuance of any grading plans, the City shall condition approval of subdivisions and non-residential development adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the City for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:

    - The construction contractor shall use temporary noise-attenuation fences, where feasible, to reduce construction noise impacts on adjacent noise sensitive land uses.

    - During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

    - The construction contractor shall locate equipment staging in areas that will create the greatest distance between

construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

- The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

m. The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by the City.

(City of Antioch 2003a)

City of Antioch Code of Ordinances

Article 19 “Noise Attenuation Requirements”, Section 9-5.1901 “Noise Attenuation Requirements” provides the following noise attenuation requirements for proposed development.

A. Stationary noise sources. Uses adjacent to outdoor living areas (e.g., backyards for single-family homes and patios for multifamily units) and parks shall not cause an increase in background ambient noise which will exceed 60 CNEL.

B. Mobile noise sources.

1) Arterial and street traffic shall not cause an increase in background ambient noise which will exceed 60 CNEL.

2) Proposed outdoor residential living areas adjacent to the future expressway (State Route 4 Bypass) or to State Route 4, including BART

or eBART development, may be allowed up to a maximum of 65 CNEL as approved by the City.

3) Existing outdoor residential living areas adjacent to the State Route 4 proposed widening, or to BART or eBART development, shall result in no significant increase (5 CNEL or greater) in existing noise levels.

C. Noise analysis. For new developments adjacent to the future bypass, applicants may be required to provide a noise and/or visual analysis conducted pursuant to the City's development and environmental review process as determined by staff during the project planning/entitlement phase.

D. Noise attenuation. The City may require noise attenuation measures be incorporated into a project to obtain compliance with this section. Measures outlined in the noise policies of the General Plan should be utilized to mitigate noise to the maximum feasible extent.

E. Flexible application. The City may allow up to 65 CNEL for residential projects adjacent to the future bypass or to State Route 4, BART or eBART if the applicant has demonstrated that noise attenuation down to 60 CNEL would result in significantly higher walls.

Section 5-17.04 “Heavy Construction Equipment Noise” states it shall be unlawful for any person to operate heavy construction equipment during the hours specified below:

1) On weekdays prior to 7:00 a.m. and after 6:00 p.m.

2) On weekdays within 300 feet of occupied dwelling space, prior to 8:00 a.m. and after 5:00 p.m.

3) On weekends and holidays, prior to 9:00 a.m. and after 5:00 p.m., irrespective of the distance from the occupied dwelling.

“Heavy Construction Equipment” is defined as equipment used in grading and earth moving, including diesel engine equipped machines used for that purpose, except pickup trucks of one ton or less. “Operate” includes the starting, warming-up, and idling of heavy construction equipment engines or motors.

Section 5-17.05 “Construction Activity Noise” states it shall be unlawful for any person to be involved in construction activity during the hours specified below:

1) On weekdays prior to 7:00 a.m. and after 6:00 p.m.

2) On weekdays within 300 feet of occupied dwellings, prior to 8:00 a.m. and after 5:00 p.m.

3) On weekends and holidays, prior to 9:00 a.m. and after 5:00 p.m., irrespective of the distance from the occupied dwellings.

"Construction Activity" means the process or manner of constructing, building, refurbishing, remodeling or demolishing a structure, delivering supplies thereto and includes, but is not limited to, hammering, sawing, drilling, and other construction activities when the noise or sound therefrom can be heard beyond the perimeter of the parcel where such work is being performed. The term "Construction Activity" also includes the testing of any audible device such as a burglar or fire alarm or loudspeaker. "Construction Activity" does not include floor covering installation or painting when done with non-powered equipment.

(City of Antioch 2015b)

Identification of Sensitive Receptors and Existing Ambient Noise Levels

Sensitive Receptors

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are considered to be more sensitive to noise intrusion than commercial or industrial activities. Ambient noise levels can also affect the perceived desirability or livability of a development.

The project site is on a vacant parcel located in the City of Antioch. The project site is surrounded by State Route 4 to the east, the Monterra residential development to the west, and Wild Horse Road, the CCWD Antioch Service Center, and the Contra Costa Canal to the south. Byron Airport is approximately 12 miles south of the project site and a helipad at the Kaiser Permanente Antioch hospital is about 2.65 miles southwest.

The closest noise-sensitive receptors to the project site are the single-family residential homes in the Monterra neighborhood. Based on the October 2020 Vesting Tentative Map and Preliminary and Final Development Plan drawings, the west edge of the project site will be as close as 165' from the fence line of the residential homes within Monterra.

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 typically relatively quiet, while areas that are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities.

The City is exposed to noise generated by traffic on major freeways, such as SR 4, and to a lesser extent along major arterial roads, such as Wild Horse Road and Hillcrest Avenue. At the time of this report, traffic volumes and ambient noise levels at the project site were not reflective of typical conditions due to COVID-19 considerations. Therefore, to estimate the current ambient noise conditions at the site and better define how noise from surrounding sources will affect the project, a three-dimensional wireframe model of the key buildings and streets surrounding the site was constructed using the SoundPLAN sound propagation computer modeling software. Also included in the model were the sound reflective qualities of the surrounding structures, the topography of the area, and shielding from all existing and planned solid fences and barriers.

To calculate the ambient noise levels at the site, existing before-noon (AM) and afternoon (PM) peak hour traffic volumes developed by Stantec were input into the SoundPLAN model for the local roads, such as Wild Horse Road. Peak hour traffic volume levels for SR 4 were obtained from the Caltrans Traffic Census Program website, https://dot.ca.gov/programs/traffic-operations/census. Peak hour traffic counts used to model the ambient noise levels at the site are shown in Table 3.13-6.

Table 3.13-6. Existing Peak Hour Traffic Counts

Road	Existing AM Peak Hour Count	Existing PM Peak Hour Count
State Route 4 North near Project Site	5,500	5,500
State Route 4 South near Project Site	5,500	5,500
Le Conte Circle North	7	28
Le Conte Circle South	26	15
Wild Horse Road East Near Le Conte Circle and the Project Site	33	46
Wild Horse Road West Near Le Conte Circle and the Project Site	8	30

Notes: AM = before noon; PM = afternoon

Site information along with the peak hour traffic volumes, vehicle type breakout, and speed allows the computer program to calculate the expected sound levels across the entire project area. A standard vehicle type breakout of 80% vehicles, 10% medium trucks, 5% heavy trucks, 3% buses, and 2% motorcycles was assumed for SR 4. A vehicle breakout of 98% vehicles, 1% motorcycles, and 1% medium trucks was assumed for Wild Horse Road and all roadways internal to residential complexes. Average vehicle speeds of 65 mph on SR 4, 45 mph on Wild Horse Road, and 25 mph on all roadways internal to residential complexes was assumed in the model.

Eleven receptor locations representing 10 future multifamily buildings and the future central open area space, were included in the SoundPLAN model. All modeled receptor locations are shown in Figure 3.13-1.

Figure 3.13-1. Receptor Locations for the SoundPLAN Model

Modeled ambient noise levels at the 11 receptor locations around the project site without the project buildings are listed below in Table 3.13-7 and shown in Figure 3.13-2. The noise level at all receptor locations was modeled at 5 feet above ground to simulate what people may hear at the first floor of the future multifamily buildings and in the central open area. Ambient noise levels at 10 receptor locations were also calculated at 26 feet above ground to account for future upper-story multifamily building locations which may be situated above any highway noise barriers.

Table 3.13-7. Modeled Ambient Noise Levels at Select Receptors

Receptor Location	Distance Above Ground (feet)	Modeled Ambient Noise Level without Project (dB(A) Ldn)
R1: Future Townhome Building Along SR 4	5 feet	69.3 dB(A)
	26 feet	74.2 dB(A)
R2: Future Townhome Building Along Wild Horse Road	5 feet	71.2 dB(A)
	26 feet	71.2 dB(A)
R5: Future Townhome Building Inset from Wild Horse Road	5 feet	71.5 dB(A)
	26 feet	72.2 dB(A)
R6: Future Townhome Building Along SR 4	5 feet	72.3 dB(A)
	26 feet	75.9 dB(A)
R9: Future Townhome Building Along Wild Horse Road	5 feet	70.4 dB(A)
	26 feet	70.6 dB(A)
R11: Future Townhome Building Near the Monterra Neighborhood	5 feet	70.0 dB(A)
	26 feet	70.9 dB(A)
R13: Future Townhome Building Along SR 4	5 feet	73.4 dB(A)
	26 feet	75.1 dB(A)
R17: Future Townhome Building Interior to the Project Site	5 feet	72.2 dB(A)
	26 feet	72.5 dB(A)
R23: Future Townhome Building Along SR 4	5 feet	74.2 dB(A)
	26 feet	75.5 dB(A)
R24: Future Townhome Building Near the Monterra Neighborhood	5 feet	71.7 dB(A)
	26 feet	72.3 dB(A)
OA: Future Central Open Area	5 feet	71.6 dB(A)

Notes:
dB(A) = A-weighted decibels; Ldn = day-night sound level; SR = State Route

All modeled ambient noise levels around the project site are expected to be above the 60-65 dB(A) CNEL/Ldn residential land use compatibility limit as defined in the Noise Objective in the General Plan.

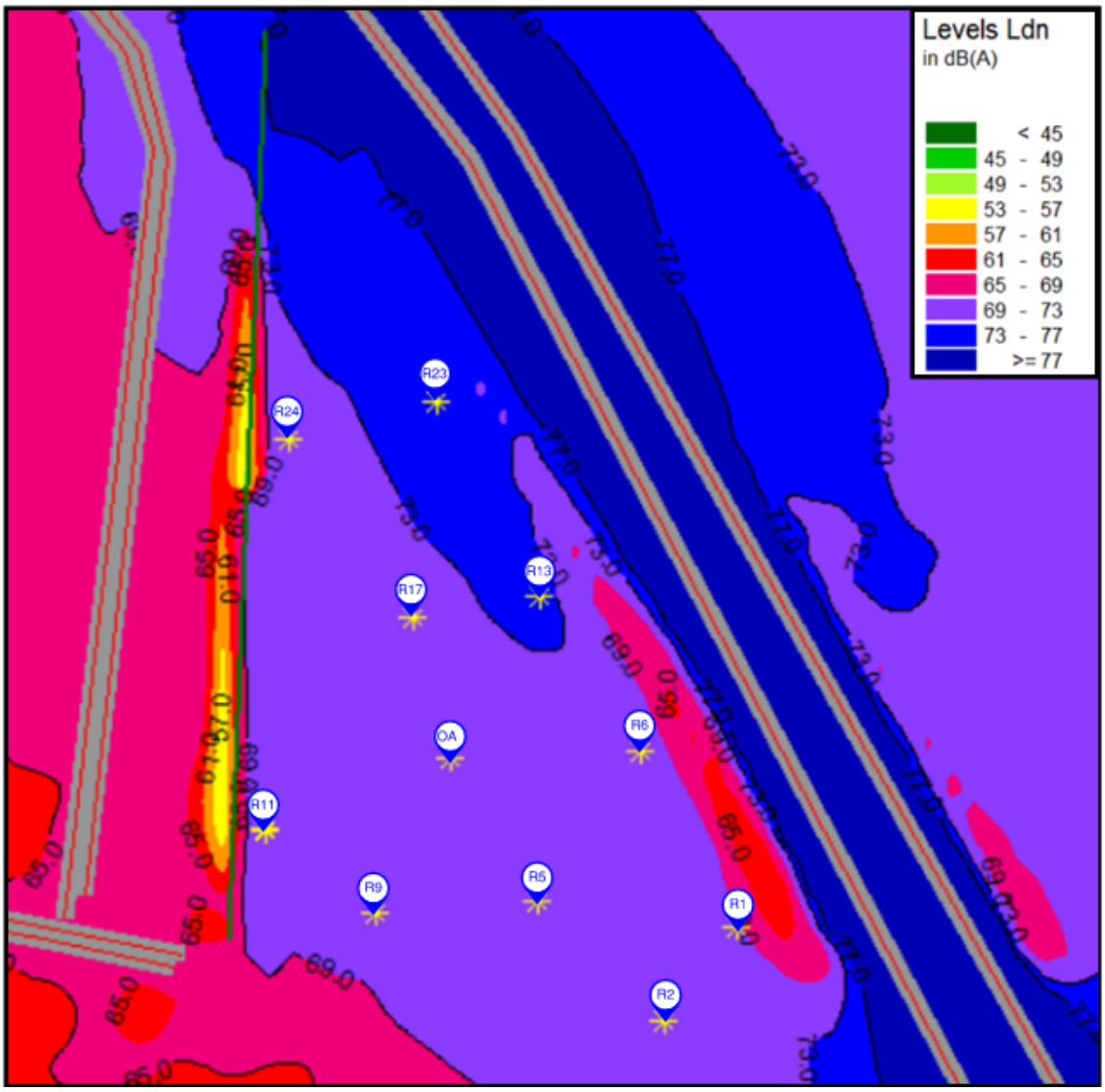


Figure 3.13-2. Modeled Ambient Traffic Noise Levels Without Project at 5 Feet Above Ground

3.13.2 Methodology

In accordance with the requirements of CEQA, the noise analysis evaluates the project's noise sources to determine the impact of the proposed project on the existing ambient noise environment. As noted above, existing traffic volumes provided by Stantec and the SoundPLAN sound propagation computer modeling software were used to provide baseline noise conditions at the project site. For the purpose of this

analysis, potentially sensitive receptors were determined by reviewing current aerial photography.

Impacts from future project-related traffic were estimated using predicted peak hour volumes from the traffic report, prepared by Stantec.

Noise from the project's mechanical systems would operate regularly and are therefore required to comply with the policies and restrictions listed in the General Plan and Code of Ordinances.

The Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to estimate the impact from short-term construction activities. The RCNM is used as the Federal Highway Administration's national standard for predicting noise generated from construction. The RCNM analysis includes the calculation of noise levels at a defined distance for a variety of construction equipment. The spreadsheet inputs include acoustical use factors and distance to receptors and calculates the expected Lmax and Leq values at a selected receptor.

EPA Guidelines

The EPA has established guidelines (EPA 1973) for assessing the impact of an increase in noise levels. These guidelines have been used as industry standard for several years to determine the potential impact of noise increases on communities. Most people will tolerate a small increase in background noise (up to about 5 dB(A)) without complaint, especially if the increase is gradual over a period of years (such as from gradually increasing traffic volumes). Increases greater than 5 dB(A) may cause complaints and interference with sleep. Increases above 10 dB(A) (heard as a doubling of judged loudness) are likely to cause complaints and should be considered a serious increase. Table 3.13-8 defines each of the traditional impact descriptions, their quantitative range, and the qualitative human response to changes in noise levels.

Table 3.13-8. U.S. Environmental Protection Agency (EPA) Impact Guidelines

Increase over Existing or Baseline Sound Levels	Impact Per EPA Region Guidelines	Qualitative Human Perception of Difference in Sound Levels
0 decibels (dB) to 5 dB	Minimum Impact	Imperceivable or Slight Difference
6 dB to 10 dB	Significant Impact	Significant Noticeable Difference – Complaints Possible
Over 10 dB	Serious Impact	Loudness Changes by a Factor of Two or Greater. Clearly Audible Difference – Complaints Likely

3.13.3 Environmental Impact Analysis

Impact NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact Analysis

Exterior Traffic Noise Level Impacts

The level of traffic noise experienced at a location depends primarily on traffic speed (tire noise increases with speed) and the proportion of truck traffic on the road. Trucks generate engine, exhaust, and wind noise in addition to tire noise. Changes in traffic volumes can also have an impact on overall noise levels. For example, it takes 25 percent more traffic volume to produce an increase of only 1 dB(A) in the ambient noise level. For roads already heavy with traffic volume, an increase in traffic numbers could even reduce noise because the heavier volumes could slow down the average speed of the vehicles. A doubling of traffic volume results in a 3 dB(A) increase in noise levels.

To describe future noise levels due to traffic added from the project, AM and PM peak hour traffic counts (with and without the project) listed in the traffic study provided by Stantec were used to determine the percentage increase of traffic on the roads adjacent to the project site and nearby sensitive receptors.

Table 3-13.9 shows the peak hour counts associated with traffic on the local roadway network under the existing and existing plus project traffic conditions. The last columns in the table show the overall percentage change and the estimated difference in peak hour noise level in dB(A).

Table 3.13-9. Traffic Peak Hour Counts and Estimated Noise Increase

Roadway Intersection	Existing Peak Hour Traffic Count	Peak Hour Traffic Count with Project	Percentage Change	Estimated dB(A) Change
Hillcrest Ave and Wild Horse Rd	1,127 (1,757)	1,179 (1,820)	4.6% (3.6%)	0.19 (0.14)
Folsom Dr and Wild Horse Rd	667 (795)	725 (865)	8.7% (8.8%)	0.35 (0.35)
Meadow Lake St. and Wild Horse Rd	374 (514)	432 (584)	15.5% (13.6%)	0.62 (0.55)
Goode St and Wild Horse Rd	303 (444)	361 (514)	19.1% (15.8%)	0.77 (0.63)
Sweet Water St and Wild Horse Rd	167 (222)	225 (292)	34.7% (31.5%)	1.39 (1.26)
Le Conte Circle and Wild Horse Rd	38 (78)	96 (148)	152.6% (89.7%)	6.11 (3.59)

Notes:
Numbers in parenthesis are afternoon peak hour traffic volumes.

The project is expected to minimally increase traffic counts along Wild Horse Road at Hillcrest Ave, Folsom Dr, Meadow Lake St, Goode St, and Sweet Water St. There will essentially be no change in traffic noise (1.39 dB(A) or less) expected along these streets. Traffic volumes will increase at the intersection of Le Conte Circle and Wild Horse Road potentially resulting in an increase in traffic noise up to 6.11 dB(A). Even though noise levels from traffic could increase at this intersection, the overall peak hour traffic count is still very low with only a maximum of 148 vehicles per hour. The peak hour traffic count on SR 4 is 11,000 vehicles per hour. Therefore, noise levels generated by traffic at this intersection are still expected to be below the ambient noise already experienced in the area. Therefore, the project should not cause increased traffic noise levels over the baseline conditions at the neighboring sensitive receptors, and this would be a less than significant impact relative to this topic.

Interior Traffic Noise Level Impacts

The California Building Code states that the interior noise levels attributable to exterior sources shall not exceed 45 dBA in any habitable room, including multifamily residences. The needed sound isolation requirements of a building's exterior façade system would be dependent on the following conditions:

- The dimension of the rooms with exterior windows
- The finishes within the rooms
- The ratio of clear glass to solid wall in the exterior wall assembly
- The exterior solid wall construction

Modern construction with punch windows typically provides a 25 dB(A) exterior-to-interior noise level reduction with windows closed. Therefore, sensitive receptors exposed to exterior noise levels of 70 dB(A) Ldn or less would typically comply with the required interior noise level standard as stated in the California Building Code. Modern construction using window walls, curtainwalls, or a high ratio of exterior clear glass would provide less reduction with the windows closed. Buildings using a large amount of glass are required to comply with the required interior noise level standard as stated in the California Building Code if exposure to exterior noise levels of 67 dB(A) Ldn or less is anticipated.

To help determine future noise levels at the facades of the project buildings and the central open area, the SoundPLAN sound propagation computer modeling software was again utilized using traffic volumes including the project and the multifamily building layout shown in the October 2020 Preliminary Plan drawing. The modeled noise levels at the site at 5 feet above ground with the proposed project buildings and project traffic volumes are shown in Figure 3.13-3.

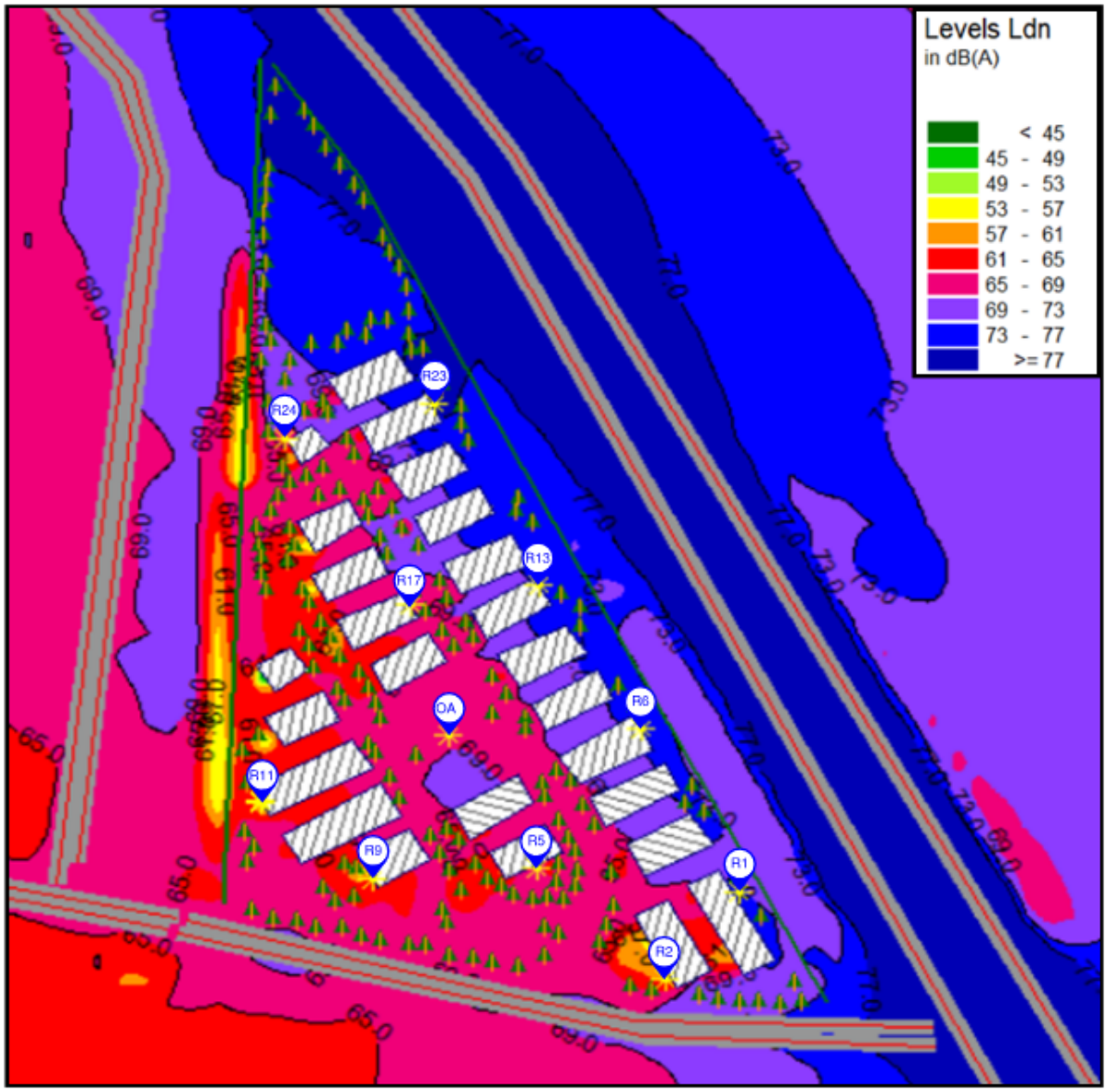


Figure 3.13-3: Modeled Ambient Traffic Noise Levels with Project at 5 Feet Above Ground

Estimated noise levels at select residential buildings and the central open area with the predicted project traffic volumes are listed below in Table 3.13-10. Again, noise levels at the residential buildings were modeled at 5' and 26' above ground to account for upper-story locations which may be situated above any highway noise barriers.

Table 3.13-10. Modeled Noise Levels at Project Buildings

Receptor Location	Distance Above Ground, ft	Modeled Ambient Noise Level with Project dB(A) Ldn
R1: Future Townhome Building Along SR 4	5 ft	74.2 dB(A)
	26 ft	76.6 dB(A)
R2: Future Townhome Building Along Wild Horse Road	5 ft	58.8 dB(A)
	26 ft	58.8 dB(A)
R5: Future Townhome Building Inset from Wild Horse Road	5 ft	65.3 dB(A)
	26 ft	66.7 dB(A)
R6: Future Townhome Building Along SR 4	5 ft	75.8 dB(A)
	26 ft	78.3 dB(A)
R9: Future Townhome Building Along Wild Horse Road	5 ft	54.8 dB(A)
	26 ft	56.9 dB(A)
R11: Future Townhome Building Near the Monterra Neighborhood	5 ft	44.9 dB(A)
	26 ft	66.8 dB(A)
R13: Future Townhome Building Along SR 4	5 ft	76.7 dB(A)
	26 ft	77.4 dB(A)
R17: Future Townhome Building Interior to the Project Site	5 ft	68.9 dB(A)
	26 ft	72.3 dB(A)
R23: Future Townhome Building Along SR 4	5 ft	77.7 dB(A)
	26 ft	77.5 dB(A)
R24: Future Townhome Building Near the Monterra Neighborhood	5 ft	68.6 dB(A)
	26 ft	70.3 dB(A)
OA: Future Central Open Area	5 ft	68.6 dB(A)

Based on the modeled noise level contours in Figures 3.13-3 and the data listed in Table 3.13-10, noise levels around the project site range from below 60 dB(A) Ldn on the building facades which face Wild Horse Road to above 78 dB(A) Ldn at the upper story residential units which face SR 4. Therefore, the requirements listed in Policy 11.6.2.d in the General Plan would be required. A detailed noise attenuation study will be necessary to be prepared by a qualified acoustical engineer to determine appropriate mitigation to reduce interior noise levels within the multifamily buildings to 45 dB(A) Ldn and include ways to incorporate such mitigation into the project design and implementation. Therefore, with the requirements listed in Policy 11.6.2.d (as noted in

Mitigation Measure MM-NOI-1), the impact of traffic noise on the interior of the residential units would be less than significant.

Proposed Project Fixed-Source Noise

Typical multifamily residential building construction would commonly involve new mechanical equipment, such as air conditioning units and exhaust fans. This equipment would generate noise that would radiate to neighboring properties. The noise from this equipment would be obliged to comply with the requirements in Policy 11.6.2.e in the General Plan and the maximum noise level limits listed in Section 9-5.1901, Paragraph A in the City of Antioch Code of Ordinances.

When the actual on-site equipment is selected, a noise analysis will be prepared by a qualified acoustical engineer and the equipment would be designed to incorporate measures as needed, such as shielding, barriers, and/or attenuators to reduce noise levels that may affect nearby properties. Noise levels from the project's fixed-source equipment will either be designed to achieve 60 dB(A) Ldn at the outdoor living areas of the existing residential receptors within the Monterra neighborhood or will not cause an audible (3.0 dB(A)) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development.

With the requirements listed in Policy 11.6.2.e in the General Plan and Section 9-5.1901, Paragraph A (as noted in Mitigation Measure MM-NOI-2), the impact of fixed-source noise to the neighboring properties would be less than significant.

Short-term Construction Noise Impacts

Two types of short-term noise impacts could occur during construction. The first type of short-term noise impact is traffic noise from construction crew vehicular commutes on the access roads leading to and from the project site. The construction of the project would involve a maximum of 79 construction worker vehicles and 20 vendor vehicles per day (99 vehicles total) traveling to and from the site. Assuming a worst case of half of the construction workers arrive in an hour, this would add 50 vehicles to the peak hour traffic volume on Wild Horse Road. Adding 50 vehicles to the existing traffic on Wild Horse Road represents an increase of 4.4% to 29.9% in traffic volumes between Hillcrest Ave and Sweet Water St, which equates to a 0.18 dB(A) to 1.2 dB(A) increase in noise, which is imperceivable.

Traffic volumes with construction worker vehicles will increase about 132% at the intersection of Le Conte Circle and Wild Horse Road potentially resulting in an increase in traffic noise levels up to 5.3 dB(A). Even though noise levels from traffic could increase at this intersection, the overall peak hour traffic count with construction vehicular traffic is still very low with only a maximum of 88 vehicles per hour. Again, the peak hour traffic volume on SR 4 is 11,000 vehicles per hour. Therefore, noise levels generated by traffic at this intersection are still expected to be below the ambient noise already experienced in the area. Therefore, noise generated by construction crew commutes should not cause increased traffic noise levels over the baseline conditions at the neighboring sensitive receptors and this would be a less than significant impact.

The second type of short-term noise impact is related to noise generated during construction. Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Each construction stage has its own mix of equipment, and consequently, its own noise characteristics. The various construction operations would change the character of the noise generated at the project site and therefore, the noise level as construction progresses. The loudest stages of construction include the site preparation, building construction, and grading stages, as the noisiest construction equipment is typically earthmoving and grading equipment.

The construction of the Wild Horse Multifamily project would be conducted in five stages and each stage will use different construction equipment. The main types of noise-producing equipment for each construction stage are shown in Table 3.13-11.

Table 3.13-11. Construction Stage Equipment

Construction Stage	Construction Equipment	
Site Preparation	• Rubber-Tired Dozers (3) • Tractors (2) • Haul Truck	• Front-End Loader • Backhoe
Grading	• Excavators (2) • Grader • Rubber-Tired Dozer • Tractor	• Scrapers (2) • Front-End Loader • Haul Trucks (8)
Building Construction	• Crane • Generator • Welders • Front End Loader	• Forklifts (3) • Tractor • Backhoe • Haul Truck
Paving	• Pavers (2) • Paving Equipment (2)	• Rollers (2) • Haul Truck
Architectural Coating	• Air Compressor	• Haul Truck

Table 3.13-12 lists the types of construction equipment and the maximum and average operational noise level as measured at 165 feet from the operating equipment. The 165-foot distance represents the approximate closest distance between the west edge of the project site and the closest noise-sensitive receptors within the Monterra neighborhood.

Table 3.13-12. Summary of Federal Highway Administration Roadway Construction Noise Model

Construction Equipment Source at the Project Site	Distance to Nearest Sensitive Receptor	Sound Level at Receptor		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Backhoe	165 feet	67.2	40	63.2
Crane	165 feet	70.2	16	62.2
Compressor (air)	165 feet	67.3	40	63.3
Dozer	165 feet	71.3	40	67.3
Excavator	165 feet	70.3	40	66.4
Forklift[1]	165 feet	68.7	40	64.8
Front End Loader	165 feet	68.7	40	64.8
Generator	165 feet	70.3	50	67.2
Grader	165 feet	74.6	40	70.7

Construction Equipment Source at the Project Site	Distance to Nearest Sensitive Receptor	Sound Level at Receptor		
		Lmax, dB(A)	Acoustical Use Factor (%)	Leq, dB(A)
Haul Truck[2]	165 feet	66.1	40	62.1
Paver and Paving Equipment	165 feet	66.8	50	63.8
Roller	165 feet	69.6	20	62.6
Scraper	165 feet	73.2	40	69.2
Tractor	165 feet	73.6	40	69.7
Welder	165 feet	63.6	40	59.7

Notes:
1. The Roadway Construction Noise Model program does not have sound levels for a forklift. Therefore, the noise levels from a front-end loader were used in the analysis to simulate the forklift.
2. The Roadway Construction Noise Model program does not have sound levels for a haul truck. Therefore, the noise levels from a dump truck were used in the analysis to simulate the haul truck.
Source: Federal Highway Administration Road Construction Noise Model v1.1 2018

A worst-case condition for construction activity would assume all noise-generating equipment were operating at the same time and at the same distance from the closest noise-sensitive receptor. Using this assumption, the RCNM program calculated the following combined Leq and Lmax noise levels from each stage of construction as shown in Table 3.13-13.

Table 3.13-13. Calculated Noise Level from Each Construction Stage

Construction Phase	Distance to Closest Noise Sensitive Receptor (feet)	Calculated Maximum Sound Level in A-Weighted Decibels	Calculated Equivalent Sound Level in A-Weighted Decibels
Site Preparation	165	80.1	76.2
Grading	165	82.3	78.3
Building Construction	165	79.3	75.2
Paving	165	76.2	71.8
Architectural Coating	165	69.8	65.8

Although noise levels from construction could exceed the 60-65 dB(A) land use compatibility level for residential properties as defined by the General Plan (Antioch 2003a), increases in noise levels from construction activity would be temporary. All

construction activities at the site would also follow the time and noise reduction measure requirements listed in Policies 11.6.2.i, j, k, m, and n in the General Plan and Sections 5-17.04 and 5-17.05 in the City of Antioch Code of Ordinances (Antioch 2015b).

In conclusion, construction noise would be short-term and intermittent (Appendix F). Furthermore, the implementation of the mitigation measures and hours restrictions as dictated by the City (as noted in Mitigation Measure MM-NOI-3) would reduce construction noise to the closest noise-sensitive receptors to the extent feasible. Therefore, impacts from construction noise would be less than significant.

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM NOI-1: Interior Traffic Noise Levels

Implement the requirements listed in Policy 11.6.2.d in the City of Antioch General Plan to reduce interior noise levels within the multifamily buildings to 45 dB(A) Ldn. Policy 11.6.2.d states the following: “Where new development (including construction and improvement of roadways) is proposed in areas exceeding the noise levels identified in the General Plan Noise Objective, or where the development of proposed uses could result in a significant increase in noise, require a detailed noise attenuation study to be prepared by a qualified acoustical engineer to determine appropriate mitigation and ways to incorporate such mitigation into project design and implementation.”

MM NOI-2: Project Fixed-Source Noise

The noise from all mechanical equipment associated with the project shall comply with the requirements in Policy 11.6.2.e in the City of Antioch General Plan and the maximum noise level limits listed in Section 9-5.1901, Paragraph A in the City of Antioch Code of Ordinances. Policy 11.6.2.e in the City of Antioch General Plan states the following: “When new development incorporating a potentially significant noise generator is proposed, require noise analyses to be prepared by a qualified acoustical engineer. Require the implementation of appropriate noise mitigation when the proposed project will cause new exceedances of General Plan noise objectives, or an

audible (3.0 dB(A)) increase in noise in areas where General Plan noise objectives are already exceeded as the result of existing development."

Section 9-5.1901, Paragraph A in the City of Antioch Code of Ordinances states "Uses adjacent to outdoor living areas (e.g., backyards for single-family homes and patios for multifamily units) and parks shall not cause an increase in background ambient noise which will exceed 60 CNEL."

MM NOI-3: Construction Activity

All construction activity shall follow the time and noise reduction measure requirements listed in Policies 11.6.2.i, j, k, m, and n in the City of Antioch General Plan and Sections 5-17.04 and 5-17.05 in the City of Antioch Code of Ordinances as follows:

i. Ensure that construction activities are regulated as to hours of operation in order to avoid or mitigate noise impacts on adjacent noise-sensitive land uses.

j. Require proposed development adjacent to occupied noise sensitive land uses to implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance area, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.

k. Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

l. Prior to the issuance of any grading plans, the City shall condition approval of subdivisions and non-residential development adjacent to any developed/occupied noise-sensitive land uses by requiring applicants to submit a construction-related noise mitigation plan to the City for review and approval. The plan should depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the project through the use of such methods as:

- The construction contractor shall use temporary noise-attenuation fences, where feasible, to reduce construction noise impacts on adjacent noise sensitive land uses.
- During all project site excavation and grading on-site, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- The construction contractor shall limit all construction-related activities that would result in high noise levels to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

m. The construction-related noise mitigation plan required shall also specify that haul truck deliveries be subject to the same hours specified for construction equipment. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings. Lastly, the construction-related noise mitigation plan shall incorporate any other restrictions imposed by the City.

   Section 5-17.04 "Heavy Construction Equipment Noise" and Section 5-17.05 "Construction Activity Noise" states it shall be unlawful for any person to operate heavy construction equipment or be involved in construction activity during the hours specified below:

1) On weekdays prior to 7:00 a.m. and after 6:00 p.m.
2) On weekdays within 300 feet of occupied dwelling space, prior to 8:00 a.m. and after 5:00 p.m.
3) On weekends and holidays, prior to 9:00 a.m. and after 5:00 p.m., irrespective of the distance from the occupied dwelling.

Level of Significance After Mitigation

Less Than Significant with Mitigation.

Impact NOI-2 Generation of excessive groundborne vibration or groundborne noise levels?

Impact Analysis

During construction of the proposed project, equipment such as trucks, bulldozers, and rollers may be used as close as 165 feet from the nearest sensitive receptors in the Monterra neighborhood. Equipment used during project construction could generate vibration levels between 0.0002 PPV and 0.0124 PPV at 165 feet, as shown below in Table 3.13-14. All the groundborne vibration levels are below the 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 project would have a less than significant impact related to vibration.

Table 3.13-14. Vibration Source Levels for Construction Equipment

Type of Equipment	Peak Particle Velocity at 165 Feet	Threshold at which Human Annoyance Could Occur	Potential for Proposed Project to Exceed Threshold
Large Bulldozer	0.0052	0.10	None
Loaded Trucks	0.0045	0.10	None
Small Bulldozer	0.0002	0.10	None
Vibratory Roller	0.0124	0.10	None

Source: Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual (FTA 2018)

This impact will not be further addressed in the EIR.

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

Impact Analysis

The proposed project is not located within the vicinity of a private airstrip or an airport land use plan. The closest airport to the project site is the Byron Airport 12 miles to the south. A helipad is located at the Kaiser Permanente Antioch Hospital 2.65 miles southwest of the project site. Therefore, the project would not expose people residing or working in the project area to excessive noise levels, and impacts would be less than significant.

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.14 POPULATION AND HOUSING

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

3.14.1 Environmental Setting

Antioch is the second largest City in Contra Costa County. According to the U.S. Census, the City had a population of 102,372 in 2010 (California Department of Finance 2020a). Since 2010, the City's population has increased by 9.91 percent to 112,520 people in 2020 (California Department of Finance 2020b). By the year 2025, it is expected the City's population will increase to approximately 120,300 (City of Antioch 2015a). Antioch's economy functions as a small part of the Bay Area economy and comprises 1.1 percent of the Bay Area labor force (City of Antioch 2003b). One of the objectives of the General Plan is to create a larger employment base within the City by 2030 and includes policies to provide for a mix of employment generating uses and ample employment opportunities for City residents (City of Antioch 2003a). In 2010, the Association of Bay Area Governments estimated there were approximately 19,090 jobs in the City of Antioch (City of Antioch 2015a). It is projected the total number of jobs in the City would increase to 25,530 by 2040 (City of Antioch 2015a).

3.14.2 Methodology

The following evaluation of potential population, housing, and employment impacts associated with the proposed project was based on data obtained from the U.S. Census, the California Department of Finance, and applicable planning documents from the City. The following impact discussions consider the impacts of the proposed project related to employment, population, and housing in the City.

3.14.3 Environmental Impact Analysis

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

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

Impact Analysis

The proposed project would develop 126 multifamily residences, thereby directly inducing population growth in the project site. The question of whether the project would induce substantial *unplanned* growth is addressed below. According to the Department of Finance, the City of Antioch had an average household size of 3.28 persons per household (Department of Finance 2020). Based on the Department of Finance estimate of 3.28 persons per household, the projected population of the proposed project is approximately 413 residents. As discussed above, the General Plan estimates an increase of 120,300 residents by 2035. The proposed project would generate 413 new residents, which would represent approximately 0.33 percent of the City's growth anticipated by 2035. According to the City's General Plan, the site is planned for residential development. The proposed project would increase the intensity level of residential use by allowing more dwelling units, however, the increase in population would not be substantial. Therefore, implementation of the proposed project would not directly induce substantial unplanned growth in the area and the impact would be less than significant.

The proposed project would also not indirectly induce substantial unplanned population growth in the project site because it would not involve any new extensions to area roads or other infrastructure that could enable additional development in currently vacant areas not planned for growth and development in the General Plan. This impact will not be further addressed in the EIR.

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 people or housing, necessitating the construction of replacement housing elsewhere?

Impact Analysis

The project site is vacant and does not currently contain residential development. Construction of the proposed project would not result in the displacement of housing, so the construction of replacement housing elsewhere would not be necessary. The proposed project would have no impact related to replacement housing. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

3.15 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?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

3.15.1 Environmental Setting

Fire Protection

Contra Costa County Fire Protection District (CCCFPD) provides fire suppression and emergency medical services (EMS) to nearly a million people across its 304-square mile district area, and through mutual aid, in and around the 19 cities and unincorporated communities of Contra Costa County California (Contra Costa County 2021). The CCCFPD is an “all-hazards” organization providing fire suppression, paramedic EMS, technical rescue, water rescue, and fire prevention/investigation services. The 2003 General Plan Update EIR states, that the CCCFPD operates 25 fire stations and responds to approximately 45,000 incidents annually (City of Antioch 2003b). Four of the fire stations are located within the City. CCCFPD Station No. 88 is located 0.73 miles to the west of the project site on 4288 Folsom Drive.

In 2018, CCCFPD responded to 60,000 fire, rescue, and medical emergency calls (CCCFPD 2018). Minimum response times are established by the county, which requires that 90 percent of all calls be responded to in an average of between 10 and 11

minutes and 45 seconds. Additionally, the City's General Plan has a response time goal of 80 percent for all City emergencies within 5 minutes (City of Antioch 2003b). In 2018, CCFPD's average response time was 4 minutes and 38 seconds. CCCFPD is meeting the County and City General Plan requirements by responding to 95 to 97 percent of calls (CCCFPD 2018).

As required by the CCCFPD, the proposed project would be conditioned to form or annex into a Community Facilities District in which 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 EMS. 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. As per Title 3 Section 7.05 of the City's Municipal Code, the fire protection facility fee is $951 per single-family dwelling unit, and $451.00 per multifamily swelling unit (City of Antioch 2019).

Police Protection

The Antioch Police Department (APD) provides police services for the City. The department has a sworn staff of 120 officers and 33 nonsworn employees, which includes Dispatchers, Community Services Officers, and Administrative Support staff (City of Antioch 2021). In 2018, Antioch police saw a total of 199,073 overall calls by volume, of which 59,811 were emergency 9-1-1 calls, and 88,123 were calls for service (East County Today 2019). The average response time for Priority 1 calls was 8 minutes and 54 seconds and the average response times for non-emergency calls were approximately 60 minutes (East County Today 2019). The APD is located at 300 L Street, approximately 4.3 miles northwest of the project site.

Schools

The City is served by the Antioch Unified School District, which provides kindergarten through high school education in the City. The Grant Elementary School, Black Diamond Middle School, and Deer Valley High School serve the area surrounding the project site (AUSD 2021). In the 2019-2020 school year, the Grant Elementary School had an enrollment of approximately 439 students; Black Diamond Middle School had an enrollment of 382 students; and, Deer Valley High School had an enrollment of 1,886 students (California Department of Education 2021).

Parks

The City owns and administers 31 parks, varying in size and amenities from 2 acres to 99 acres. Over 400 acres of parks, open space areas, and marinas are located within the City, 200 acres of which are developed. The remaining 200 acres consist of acreage waiting development or are managed exclusively as open space (City of Antioch 2003b). The nearest park to the project site is Nelson Ranch Park, which is a neighborhood park that is approximately 9.5 acres and is located at the end of Wild Horse Road adjacent to the project site.

3.15.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the Public Facilities and Services Element of the General Plan, Parks and Recreation Element of the General Plan, the General Plan EIR, the Antioch Municipal Code, and Section 2.0, Project Description, of this IS.

3.15.3 Environmental Impact Analysis

This section discusses potential impacts on public services 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

The proposed project could incrementally increase demand for fire protection services. Upon completion of the proposed residential development, the CCCFPD would provide fire protection services to the project site. As required by the CCCFPD, the proposed project would be conditioned to form or annex into a Community Facilities District. The proposed project would be required to pay the applicable fire protection fees per the City's Master Fee Schedule, in accordance with Title 3 Section 7.05 of the City's Municipal Code, (City of Antioch 2019). In addition, the proposed buildings would be constructed in accordance with the fire protection requirements of the most recent California Fire Code. Conformance with the California Fire Code would reduce risks associated with fire hazards. The proposed streets would be 26 feet wide to allow emergency vehicles to access the project site. The CCCFPD and the City's Building Inspection Services Division would review the project building plans to ensure compliance with all code requirements. As described in Section 3.14, Population and Housing, the proposed project would have a less-than-significant impact on population in the City, because the population growth was accounted for in the General Plan buildout of the City. Additionally, payment of the Public Facilities Impact Fees would

offset the cost of fire protection and paramedic service demands associated with the proposed project. Therefore, the impact to fire protection services would be less than significant. This impact will not be further addressed in the EIR.

Police Protection

Law enforcement services for the project site are provided by the APD. Implementation of the project would result in an incremental increase in demand for police protection services at the project site. According to the General Plan EIR, the need for officers estimated to be 1.2 to 1.5 officers per 1,000 residents. As the population of Antioch in 2020 is 112,520 and there are 120 sworn officers as of 2021, the City is currently below the ratio. The project applicant would be required to pay Development Impact Fees for police facilities per Section 9-3.50 of the City Municipal Code. Additionally, the population growth projected as a result of the proposed project was accounted for in the General Plan. The proposed project will not require the construction of new or physically altered police protection facilities. Therefore, the impact to police protection services would be less than significant. This impact will not be further addressed in the EIR.

Schools

The proposed project would include the development of the project site with 126 multifamily residences and would increase demand for school facilities and services. However, the AUSD collects development fees for new residential projects on a per square foot basis. The development fees serve to offset school facility costs associated with serving new students. Therefore, impacts to schools would be less than significant. This impact will not be further addressed in the EIR.

Parks

The proposed project would add approximately 413 new residents, which have been accounted for in the General Plan EIR 2035 full-build-out population. Section 9-4.1003 of the Antioch Subdivision Ordinance requires 5 acres of parks and open space per 1,000 residents. All park requirements for the City are based on the Quimby Act which requires no fewer than three acres of park area be provided per 1,000 residents. The Subdivision Ordinance requires the subdivider to either dedicate land, pay a fee in lieu thereof, or both, at the option of the City, for park or recreational purposes. The proposed project includes 1.6 acres of usable open space that would be used as a central gathering place for the community and would include both active and passive

recreational opportunities, which would fall below the required 2 acres for the 413 residents. Additionally, the developer of the proposed project would also be required to pay a Development Impact Fee established under Section 9-3.50 of the Code of Ordinance which would be used by the City to fund public facilities such as parks and recreation facilities which would mitigate the impacts on existing parks and recreational facilities caused by new developments. The construction of any new parks or recreational facilities would be subject to further environmental review requiring mitigation for any potentially significant environmental impacts. Therefore, impacts to parks and recreation would be less than significant. This impact will not be further addressed in the EIR.

Other Public Facilities

The addition of up to 413 new residents would create an incremental increase in the demand for library facilities and community centers. In accordance with California Development Code Section 53090, development impact fees would be required to offset any additional service needs. With payment of legislated development fees, impacts would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.16 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

3.16.1 Environmental Setting

The City owns and administers 31 parks, varying in size and amenities from 2 acres to 99 acres. Over 400 acres of parks, open space areas, and marinas are located within the City, 200 acres of which are developed. The remaining 200 acres consist of acreage waiting development or are managed exclusively as open space (City of Antioch 2003a). The nearest park to the project site is Nelson Ranch Park, which is a neighborhood park that is approximately 9.5 acres and is located at the end of Wild Horse Road adjacent to the project site.

3.16.2 Methodology

The following analysis is based on a review of the General Plan, General Plan EIR and the Antioch Code of Ordinance.

3.16.3 Environmental Impact Analysis

This section discusses potential impacts to recreation 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 permanently increase the City's residential population. Section 9-4.1003 of the Antioch Subdivision Ordinance requires 5 acres of parks and open space per 1,000 residents. All park requirements for the City are based on the Quimby Act which requires no fewer than three acres of park area be provided per 1,000 residents. The Subdivision Ordinance requires the subdivider to either dedicate land, pay a fee in lieu thereof, or both, at the option of the City, for park or recreational purposes. The proposed project includes 1.6 acres of usable open space that would be used as a central gathering place for the community and would include both active and passive recreational opportunities. The developer of the proposed project would also be required to pay a Development Impact Fee established under Section 9-3.50 of the Code of Ordinance which would be used by the City to fund public facilities such as parks and recreation facilities which would mitigate the impacts on existing parks and recreational facilities caused by new developments. The proposed project would comply with all City ordinances set forth and impacts to parks and recreation facilities would be less than significant. This impact will not be further addressed in the EIR.

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

The proposed project would include 1.6 acres of shared usable open space on the project site that would serve as a central gathering place for community residents. The shared open space would include a lawn, green landscaped areas, children's play equipment, picnic tables and grills. The proposed project would not involve the construction or expansion of off-site recreational facilities and the developer would be required to pay Development Impact Fees to contribute to funding of park and recreational facilities. The construction of any new parks or recreational facilities would be subject to further environmental review requiring mitigation for any potentially significant environmental impacts. Therefore, impacts associated with adverse environmental impacts of recreational facilities would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.17 TRANSPORTATION

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

3.17.1 Environmental Setting

Roadway System

Freeways

The project is served by two freeways, SR 4 and SR 160, which are part of the state highway network. SR 4 has two travel lanes in each direction close transitioning to 7 lanes total SR 160 and connects Antioch with the wider bay area. SR 160 has two travel lanes in each direction, and a via a toll bridge allows motorists to connect to SR 12 and north to the City of Sacramento.

Arterials

The local street and roadway system within the City is composed of a hierarchy of streets with varying functions. Arterial roads range from two-lane arterials to six-lane arterials that link residential and commercial districts with the freeway network and provide intercity connections. Arterial roads near the project site include Hillcrest Avenue, a four-lane divided arterial, and Laurel Road, also a four-lane divided arterial. These roadways are located south of the project site. Hillcrest Avenue provides access to SR 4, and Laurel Road will also provide access to SR 4 once fully constructed (City of Antioch 2003a).

Collectors and Local Streets

Collectors are designed to connect residential neighborhoods with arterials and have two travel lanes. Wild Horse Road is located immediately adjacent to the project site and is designated a major collector in the City's General Plan (City of Antioch 2003a). An eastward extension of Wild Horse Road is currently under construction as shown in the General Plan extending to east of SR 4 and connecting with the future Slatten Ranch Road extension. Both extensions will be collectors in the vicinity of the project. Once these roadways are fully constructed, they will provide more direct access from the project to SR 4 and the City of Oakley.

Local streets are intended to serve adjacent and nearby residential and commercial neighborhoods or business areas only. Motorists would not need to access any local streets to access the project site.

Bicycle Facilities

Existing bicycle facilities in the area consist of Class I trails and Class II lanes. In the General Plan Class I trails are defined as separate, multi-use trails or paths, and Class II lanes are defined as striped bicycle lanes on roadways (City of Antioch 2003a). Currently there are Class II lanes present on Wild Horse Road on both sides of the roadway, which connect to the wider bicycle network via Class II lanes on Hillcrest Avenue. The project is also close to the Delta De Anza Trail, which runs along the CCWD drainage channel through Antioch. The trail connects from Bay Point in the east (County of Contra Costa) to the City of Oakley in the west. The trail can be accessed via Ridgeline Drive or at the Hillcrest Avenue intersection. South of the project area, Class II lanes are provided on Laurel Road and a future eastward extension of Laurel Road will include Class II lanes connecting to existing Class II lanes at the SR 4 interchange. See Figure 3.17-1 for the existing and future bicycle facilities in the project vicinity.

Bus System

The Antioch Bay Area Rapid Transit (BART) station is located a travel distance of approximately 3 miles away from the project, which provides frequent services to the San Francisco area. Antioch is the end of the line, and services operate approximately every 15 minutes in the AM and PM peaks and every 30 minutes for the rest of the day.

Tri Delta Transit operates bus transit services in the region to connect to local hubs and BART railway stations. The closest transit stop to the project is located approximately one mile away on Hillcrest Avenue adjacent to the Wild Horse Road intersection. It provides access to three routes; Routes 380 (weekday only) and 392 (weekend and holiday only) which connect from Pittsburg BART to Antioch BART, and Route 385 which connects from Antioch BART to Brentwood Park & Ride (Tri Delta Transit 2020). Tri Delta Transit buses are all equipped with bicycle racks, which would allow commuters to ride from the project to the transit stop and take the bus the remainder of the journey as an alternative to riding a bicycle the full distance to the BART station.

See Figure 3.17-2 for transit facilities in the project vicinity.

RTP/SCS and General Plan Consistency

The Final Bay Area 2040 is the long-range Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) for the nine-county San Francisco Bay Area. The RTP/SCS is prepared by the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG) to guide the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities.

Per California State and federal law, the RTP/SCS is to be updated at least every four years to reflect changes to funding opportunities and respond to growth. Plan Bay Area 2050, an update to the RTP/SCS, is currently in progress. The preparation of the Final Bay Area 2040 RTP/SCS included an extensive public outreach program where members of the public and member agencies were engaged to provide input to the RTP/SCS. In addition, an environmental impact report was prepared and certified and the comment period allowed for members of the public and member agencies to review and comment on the RTP/SCS assumptions. The City is within the ABAG planning area and the City’s General Plan assumptions have been considered and included in the RTP/SCS. Therefore, if the project is consistent with the City’s General Plan the project is considered consistent with the RTP/SCS.

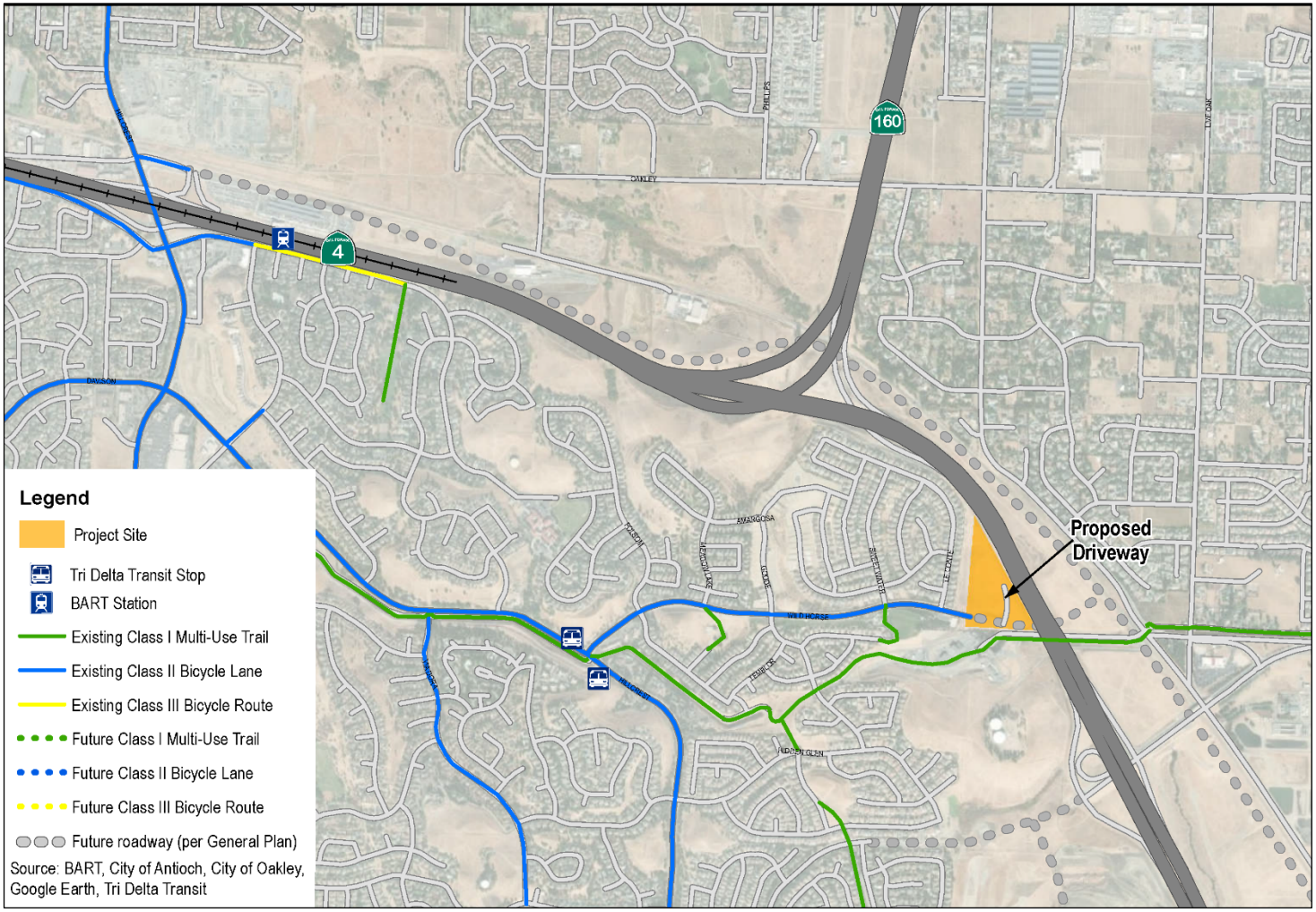


Figure 3.17-1. Existing and Future Bicycle Facilities

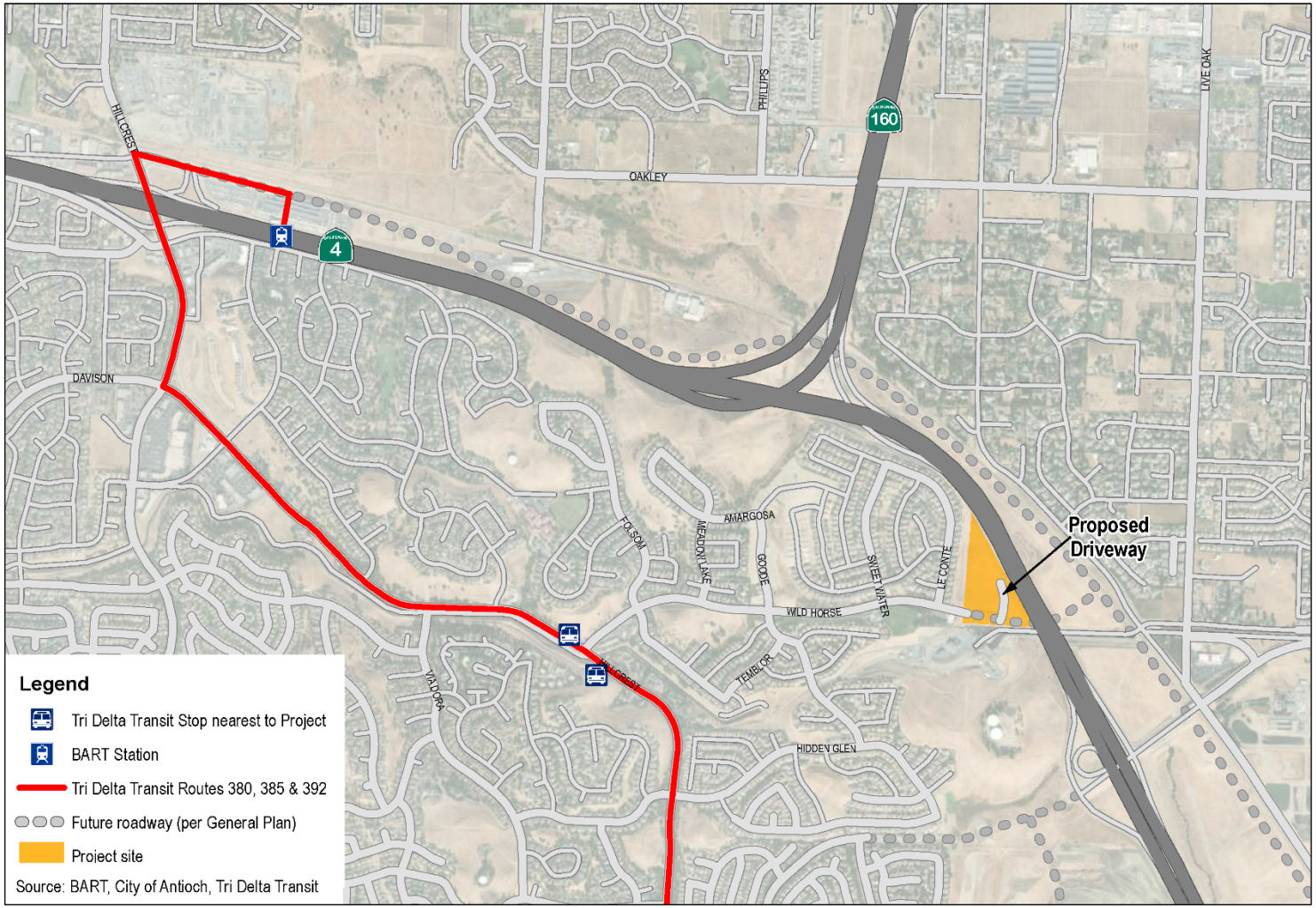


Figure 3.17-2. Transit Facilities

The General Plan Circulation Element includes policies relating to roadway and intersection level of service (LOS), which are not relevant to CEQA analysis due to the statewide change to VMT as the primary impact criteria for transportation. Therefore, LOS is not addressed in this study but is evaluated separately as part of the project's traffic study. The City's General Plan policies relating to circulation and transportation per the Circulation Element are as follows:

Objective 7.3.1 Provide adequate roadway capacity to meet the roadway performance standards set forth in the Growth Management Element.

Policy 7.3.2.a Facilitate meeting the roadway performance standards set forth in the Growth Management Element and improving traffic flow on arterial roadways.

- Work with the UP and BNSF railroads to construct grade separations along the tracks at Somersville Road, Hillcrest Avenue, "A" Street, the proposed Viera Road extension, and the proposed Phillips Lane extension.
- Promote the design of roadways to optimize safe traffic flow within established roadway configurations by minimizing driveways and intersections, uncontrolled access to adjacent parcels, on-street parking, and frequent stops to the extent consistent with the character of adjacent land uses.
- Provide adequate capacity at intersections to accommodate future traffic volumes by installing intersection traffic improvements and traffic control devices, as needed, as development occurs.
- Facilitate the synchronization of traffic signals.
- Where needed, provide acceleration and deceleration lanes for commercial access drives.
- Provide for reciprocal access and parking agreements between adjacent land uses, thereby facilitating off-street

vehicular movement between adjacent commercial and other nonresidential uses.

- Encourage regional goods movement to remain on area freeways and other appropriate routes.

Policy 7.3.2.b Design and reconfigure collector and local roadways to improve circulation within and connections to residential and commercial areas.

- Implement appropriate measures to mitigate speeding and other traffic impacts in residential areas.
- Implement roadway patterns that limit through traffic on local residential streets.

Policy 7.3.2.c Require the design of new developments to focus through traffic onto arterial streets.

Policy 7.3.2.d Where feasible, design arterial roadways, including routes of regional significance, to provide better service than the minimum standards set forth in Measure C and the Growth Management Element. Thus, where feasible, the City will strive to maintain a "High D" level of service (v/c [volume-to-capacity ratio] = 0.85 to 0.89) within regional commercial areas and at intersections within 1,000 feet of a freeway interchange. The City will also strive where feasible to maintain low-range "D" (v/c = 0.80 to 0.84) in all other areas of the City, including freeway interchanges.

Policy 7.3.2.e Establish Assessment Districts in areas that will require major roadway infrastructure improvements that will benefit only that area of the City, and thereby facilitate the up-front construction of needed roadways.

Policy 7.3.2.f Design street intersections to ensure the safe passage of through traffic and accommodate anticipated turning movements. Implement intersection improvements consistent

with the following lane geometrics, unless traffic analyses indicate the need for additional turn lanes.

Policy 7.3.2.g Require traffic impact studies for all new developments that propose to increase the approved density or intensity of development or are projected to generate 50 peak hour trips or more at any intersection of Circulation Element roadways. The purpose of these studies is to demonstrate that:

- The existing roadway system, along with roads to be improved by the proposed project, can meet the performance standards set forth in Sections 3.4.1 and 3.4.2 of the Growth Management Element; and
- Required findings of consistency with the provisions of the Growth Management Element can be made.

Policy 7.3.2.k Where single-family residences have no feasible alternative but to front on collector or arterial roadways, require, wherever possible, that circular driveways or onsite turnarounds be provided to eliminate the need for residents to back onto the street.

Policy 7.3.2.l Locate driveways on corner parcels as far away from the intersection as is possible.

Policy 7.3.2.m Avoid locating driveways within passenger waiting areas of bus stops or within bus bays. Locate driveways so that drivers will be able to see around bus stop improvements.

Policy 7.3.2.n Use raised medians as a method for achieving one or more of the following objectives: access control, separation of opposing traffic flows, left turn storage, aesthetic improvement, and/or pedestrian refuge.

Policy 7.3.2.o Where medians are constructed, provide openings at the maximum feasible intervals, typically no less than 1/8 mile.

Policy 7.3.2.v Private streets, where permitted, shall provide for adequate circulation and emergency vehicle access. Private streets that will accommodate more than 50 vehicles per hour in the peak hour or that are designed for on-street parking shall be designed to public street standards. The design of other private streets shall be subject to the review and approval of the City Engineer. Private streets shall be improved to public street standards prior to acceptance of dedications to the City.

Policy 7.3.2.x Require new development to construct all on-site roadways, including Circulation Element routes, and provide a fair share contribution for needed off-site improvements needed to maintain the roadway performance standards set forth in the Growth Management Element. Contributions for off-site improvements may be in the form of fees and/or physical improvements, as determined by the City Engineer. Costs associated with mitigating off-site traffic impacts should be allocated on the basis of trip generation and should have provisions for lower rates for income-restricted lower income housing projects needed to meet the quantified objectives of the General Plan Housing Element.

Objective 7.4.1 Maintenance of a safe, convenient, and continuous network of pedestrian sidewalks, pathways, and bicycle facilities serving both experienced and casual bicyclists to facilitate bicycling and walking as alternatives to the automobile.

Policy 7.4.2.a Design new residential neighborhoods to provide safe pedestrian and bicycle access to schools, parks and neighborhood commercial facilities.

Policy 7.4.2.b Design intersections for the safe passage of pedestrians and bicycles through the intersection.

Policy 7.4.2.c Provide street lighting that is attractive, functional, and appropriate to the character and scale of the neighborhood or area, and that contributes to vehicular, pedestrian, and bicycle safety.

Policy 7.4.2.d	Maintain roadway designs that maintain mobility and accessibility for bicyclists and pedestrians.
Policy 7.4.2.e	Integrate multi-use paths into creek corridors, railroad rights-of-way, utility corridors, and park facilities.
Policy 7.4.2.f	Provide, as appropriate, bicycle lanes (Class II) or parallel bicycle/pedestrian paths (Class I) along all arterial streets and high-volume collector streets, as well as along major access routes to schools and parks.
Policy 7.4.2.j	Permit the sharing or parallel development of pedestrian walkways with bicycle paths, where this can be safely accomplished, in order to maximize the use of public rights-of-way.
Policy 7.4.2.l	Require the construction of attractive walkways in new residential, commercial, office, and industrial developments, including provision of shading for pedestrian paths.
Policy 7.4.2.m	Maximize visibility and access for pedestrians and encourage the removal of barriers for safe and convenient movement of pedestrians.
Policy 7.4.2.n	Ensure that the site design of new developments provides for pedestrian access to existing and future transit routes and transit centers.
Policy 7.4.2.o	Pave walks and pedestrian pathways with a hard, all-weather surface that is easy to walk on. Walks and curbs should accommodate pedestrians with disabilities. Walks within open space areas should have specially paved surfaces that blend with the surrounding environment.
Policy 7.4.2.p	In general, design walks to provide a direct route for short to medium distance pedestrian trips, and to facilitate the movement of large numbers of pedestrians. Meandering sidewalks are appropriate in areas where the natural

topography or low-density land uses lend themselves to informal landscapes.

Objective 7.5.1 Maintenance of rail and bus transit, providing both local and regional service that is available throughout the week, and operates on par with automobile travel during peak commute hours.

Policy 7.5.2.g Preserve options for future transit use when designing roadway and highway improvements.

Policy 7.5.2.i Include Tri-Delta Transit in the review of new development projects and require new development to provide transit improvements in proportion to traffic demands created by the project. Transit improvements may include direct and paved access to transit stops, provision of bus turnout areas and bus shelters, and roadway geometric designs to accommodate bus traffic.

Objective 3.4.3 Maintain acceptable traffic levels of service on City roadways through implementation of Transportation Systems Management, Growth Management, and the City's Capital Improvement Program, and ensure that individual development projects provide appropriate mitigation for their impacts.

Policy 3.4.4.a Place ultimate responsibility for mitigating the impacts of future growth and development, including construction of new and widened roadways with individual development projects. The City's Capital Improvements Program will be used primarily to address the impacts of existing development, and to facilitate adopted economic development programs.

Policy 3.4.4.b Continue to develop and implement action plans for routes of regional significance (see Circulation Element requirements).

Policy 3.4.4.c Ensure that development projects pay applicable regional traffic mitigation fees and provide appropriate participation in relation

to improvements for routes of regional significance (see also Circulation Element Policy 5.3.1f).

Policy 3.4.4.d Consider level of service standards along basic routes to be met if 20-year projections based on the City's accepted traffic model indicate that conditions at the intersections that will be impacted by the project will be equivalent to or better than those specified in the standard, or that the proposed project has been required to pay its fair share of the improvement costs needed to bring operations at impacted intersections into conformance with the applicable performance standard.

Project Construction

The project would result in temporary construction activity with no ongoing operational changes to traffic generation or traffic patterns due to construction. Project construction is discussed in Section 2.3.

3.17.2 Methodology

In accordance with the updated CEQA guidelines that incorporate the requirements of SB 743, this analysis is prepared using VMT as the primary performance metric to measure project impacts. Generally, SB 743 moves away from using delay-based LOS as the metric for identifying a project's significant impact to instead use VMT.

SB 743 required the OPR to establish recommendations for identifying and mitigating transportation impacts within CEQA, as outlined in the Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018). The document is referred to in this memorandum as OPR's Technical Advisory. OPR's Technical Advisory recommends methodologies for quantifying VMT, significance thresholds for identifying a transportation impact, and screening criteria to quickly identify if a project can be presumed to have a less than significant impact without conducting a full VMT analysis. Lead agencies are to adopt local guidelines appropriate for their jurisdiction. At this time, the City has not formally adopted VMT guidelines. Therefore, this VMT analysis has been prepared in accordance with OPR's Technical Advisory guidance.

Prior to undertaking a detailed VMT analysis, OPR's Technical Advisory recommends that lead agencies conduct a screening process. If a project satisfies one or more of the

screening criteria, the project could be presumed to have a less-than-significant impact. OPR's Technical Advisory suggests that lead agencies may screen out VMT impacts using project size, maps depicting areas of low VMT, transit availability and provision of affordable housing screening criteria as shown in Table 3.17-1.

Table 3.17-1. Project Screening Criteria and Threshold

Category	Criteria/Screening	Threshold	Screened Out (Yes/No)
Trip generation screening	Small projects can be screened out from completing a full VMT analysis.	If the project generates less than 110 trips per day, the project is assumed to have a less than significant impact. Projects of 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day.	No
Map-based screening	Residential and employment-generating projects that are located in areas with low VMT and that are similar in character to the existing development can be screened out from completing a full VMT analysis.	If the project is in a low VMT area, the project is assumed to have a less than significant impact.	No
Transit Priority Area Screening	Projects within ½ mile of a major transit stop or a stop located along a high-quality transit corridor reduce VMT and therefore can be screened out from completing a full VMT analysis.	If the project is within ½ mile of a major or high-quality transit stop/corridor, the project is assumed to have a less than significant impact. The project should generally also meet the following criteria: • FAR > 0.75 • Not provide more parking than required by City • Be consistent with the regional SCS • Does not result in a net reduction in multifamily housing units • Not replace existing affordable units with a smaller number of moderate to high-income units	No

Category	Criteria/Screening	Threshold	Screened Out (Yes/No)
Affordable residential development	Affordable housing in infill locations can be screened out from completing a full VMT analysis.	If the project is comprised 100% of affordable units and is located in an infill location, then the project is assumed to have a less than significant impact.	No

Notes:
FAR = floor area ratio; SCS = sustainable community strategy; VMT = vehicle miles traveled
Source: Governor's Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018)

Since the project does not meet any of the screening criteria described above, a VMT analysis is required.

OPR's Technical Advisory indicates that a lead agency may elect to use a traffic model to estimate a project's VMT. As such, the City has elected to use the Contra Costa Transportation Agency's travel demand model to assess VMT resulting from land use projects.

The project is located in traffic analysis zone (TAZ) 30143 (see Figure 3.17-3), which includes residential land uses similar in nature to the proposed project. Since the project's land uses are comparable to the land use in TAZ 30143, the project can be expected to exhibit trip generation and trip length characteristics similar to the other residential land use in the TAZ. The results of the analysis are summarized in Section 3.17.5 Impact TRANS-2.

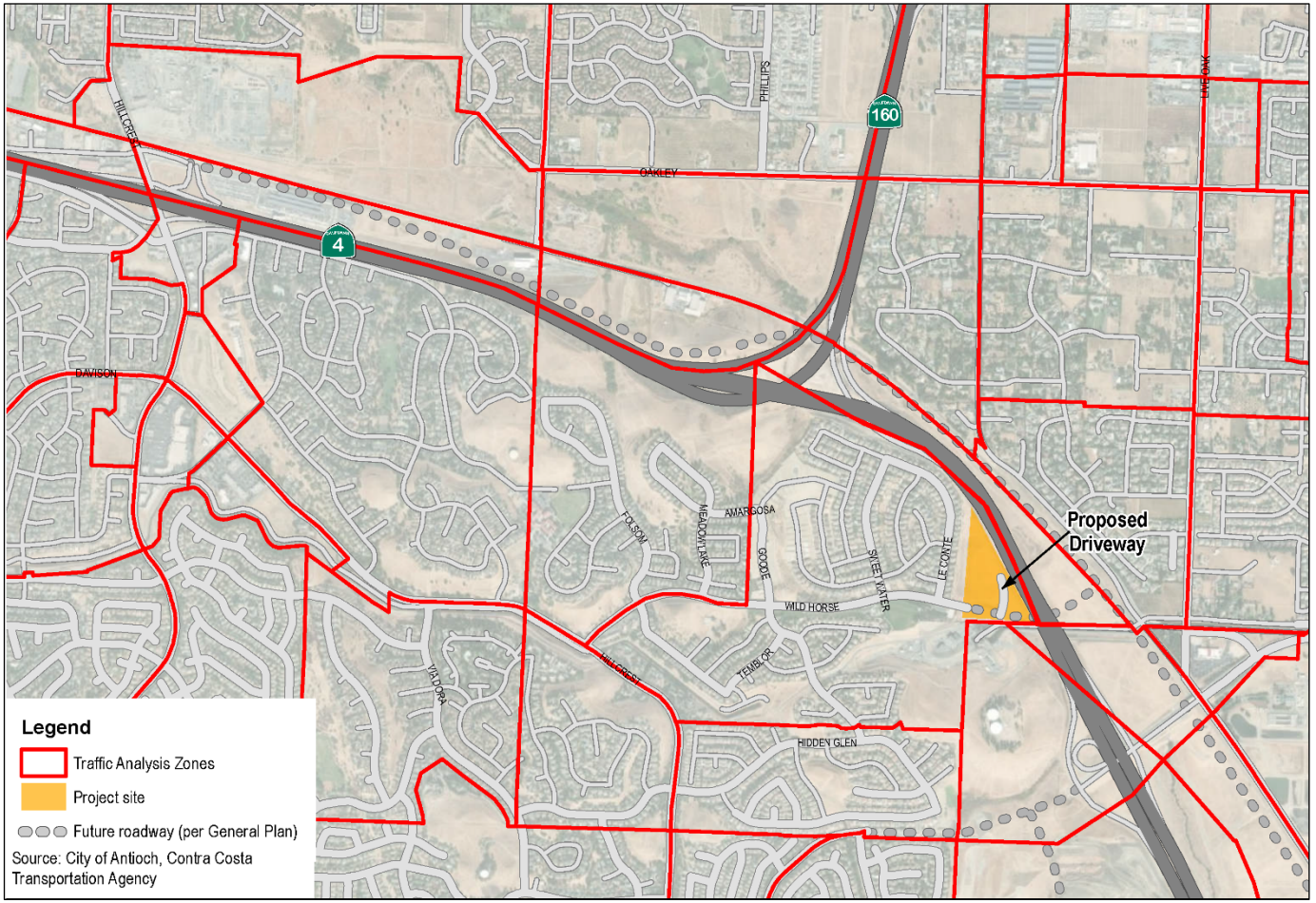


Figure 3.17-3. Contra Costa Transportation Agency Traffic Analysis Zones

3.17.3 Environmental Impact Analysis

Impact TRANS-1 Conflict with program plan, ordinance or policy addressing the circulation system, including transit roadway, bicycle and pedestrian facilities?

Impact Analysis

The project does not conflict with the General Plan Circulation Element, any program plan, ordinance or policy addressing the circulation system. The project does not propose to amend or adjust roadway classifications, the roadway network, transit routes, or bicycle network as identified in the General Plan.

Pedestrian movement will be enhanced by providing pedestrian access from Wild Horse Road along the project frontage in accordance with City requirements. This will facilitate connections to nearby amenities and public transit when the roadway network is built out per the General Plan. Pedestrian amenities to be constructed by the project include accessibility in compliance with the American Disabilities Act and an internal network of sidewalks which connect to public facilities offsite.

Site access improvements will not cause any conflicts with other improvements planned for the area, including the Wild Horse Road extension which is currently under currently under construction in the vicinity of the project. Operation of the proposed project would include amenities and site improvements for bicyclists and pedestrians such as sidewalks along internal streets that connect to existing facilities on Wild Horse Road. As a result, the proposed project would not create hazards or barriers for pedestrians, bicyclists, or local transit service.

Construction of the proposed project would generate traffic through the transport of workers, equipment, and materials to and from the project site. It is currently anticipated that project construction would take approximately 13 months to complete, starting in January 2023 and ending in February 2024. Construction equipment and materials would be stored onsite, or on the undeveloped area north of the project site adjacent to New Horizons Way. Construction activities are anticipated to be confined to the project site, and no road closures or detours are anticipated. Project construction and grading activities would be consistent with the Antioch Municipal Code Section 5-17.05 and would occur on weekdays from 7:00 a.m. - 6:00 p.m., on weekdays within 300 feet of occupied dwellings, 8:00 a.m. - 5:00 p.m., and on weekends and holidays 9:00 a.m. -

5:00 p.m., irrespective of the distance from the occupied dwellings (City of Antioch 2020b). Since construction traffic would be temporary and would be spread across the duration of construction, this impact would be less than significant.

As described, Class II bicycle facilities will be provided on Wild Horse Road adjacent to the project site after completion of the eastward extension of Wild Horse Road. In addition, Tri Delta Transit provides public transit service to a stop located approximately one mile from the project. The proposed project would not modify or interfere with the bicycle and bus facilities adjacent to the project site during construction or operation. During construction, project activities would be confined to the project site and no road closures or detours are anticipated.

General Plan goals and policies related to roadway operational conditions and LOS are addressed in the project's traffic study. The LOS analysis will not be included as part of the proposed project CEQA documents but will be used by the City to ensure General Plan compliance and will be considered by City decision-makers during the project approval process.

Therefore, the proposed project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. This impact would be less than significant.

This impact will not be further addressed in the EIR.

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 or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision(b)?

Impact Analysis

According to CEQA Guidelines §15064.3 Subdivision (b)(1), VMT exceeding an applicable threshold of significance may indicate a significant impact. Projects that decrease VMT in the project area compared to existing conditions should be considered to have a less than significant transportation impact. As previously discussed, the project is anticipated to exhibit the same trip making characteristics as the existing residential uses and it is therefore appropriate to assume the same home-based VMT (HB VMT) as the existing TAZ. The project also has characteristics that would reduce VMT and quantification methodologies from California Air Pollution Control Officers Association (CAPCOA) are utilized to estimate the VMT reduction from project characteristics (PCs).

PC-1: The Project will increase density. CAPCOA describes that designing the project with increased densities reduces VMT, and thereby GHG emissions associated with travel in several ways. Density is generally measured in terms of persons, jobs, or dwellings per unit area. Increasing the project density will affect the distance people travel and provide greater options to choose for the mode of travel. The project site plan shows the gross density is 10.9 dwelling units per acre, which is greater than the General Plan specified 4.0 dwelling units per acre, and greater than the number of housing units per acre for Institute of Transportation Engineers (ITE)-typical residential development (CAPCOA 2018). To calculate the estimated VMT reductions from this measure, CAPCOA's quantification methodology was utilized. This measure would result in a project VMT reduction of approximately 3.0%.

Table 3.17-2 below shows the estimated VMT reduction based on CAPCOA's LUT-1 Land Use/Location Transportation- Increase Density methodology:

Table 3.17-2. Vehicle Miles Traveled (VMT) Reduction Based on LUT-1

Mitigation Method:

% VMT Reduction = A X B [not to exceed 30%]

where A = Percentage increase in housing units per acre

= (the project's number of housing units per acre – number of housing units per acre for typical ITE development) / (number of housing units per acre for typical ITE development)

*Per CAPCOA Table C-1 housing units per acre for typical ITE development = 7.6

= (10.9 - 7.6) /7.6

= 0.43

B = Elasticity of VMT with respect to density

= 0.07

% VMT Reduction = 0.4 x 0.07 = 3.0%

Source: California Air Pollution Control Officers Association

PC-2: The Project will improve pedestrian connectivity by constructing an on-site pedestrian network. The project will construct pedestrian pathways that will facilitate pedestrian movements throughout the project and connect to new off-site pedestrian improvements along the project frontage. The Site Plan shows on-site pedestrian pathways that connect to Wild Horse Road, facilitating connectivity with the wider pedestrian network. To quantify the VMT reductions related to this site design feature, SDT-1 Improve Pedestrian Network from CAPCOA is utilized. This measure would result in a project VMT reduction of 2.0%.

Table 3.17-3 below shows the estimated VMT reduction based on CAPCOA's SDT-1 Neighborhood/Site Enhancements- Provide Pedestrian Network Improvements methodology.

Table 3.17-3. VMT Reduction Based on SDT-1

Estimated VMT Reduction	Extent of Pedestrian Accommodations	Context
2%	Within project site and connecting offsite	Urban/Suburban
1%	Within project site	Urban/Suburban
<1%	Within project site and connecting offsite	Rural

Source: California Air Pollution Control Officers Association

The VMT reductions which apply to the project characteristics are outlined in Table 3.17-4. A reduction of 4.9% was calculated using the reduction formula contained in the CAPCOA guidelines as noted in the table.

Table 3.17-4. Vehicle Miles Traveled Reductions from Project Characteristics Summary

Description	Residential VMT Reduction (HB VMT)	Source
Project Characteristics		
PC-1. The project will increase density.	3.0%	CAPCOA Land Use/ Location LUT-1
PC-2. The project will improve pedestrian connectivity by constructing an on-site pedestrian network.	2.0%	CAPCOA Neighborhood / Site Enhancement SDT-1
Total VMT Reductions from Project Components	4.9%[1]	

Notes:
[1] The calculated reductions do not sum up to the total since individual strategies are multiplicative and not additive. e.g., overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C) where A, B, C equals reductions for individual strategies
VMT = vehicle miles traveled; HB VMT = home-based vehicle miles traveled

The existing HB VMT per capita for the project TAZ is 24.8 VMT per capita. The Contra Costa Transportation Agency's VMT screening threshold for a residential development is 15% below the County average. As shown in Table 3.17-5, the County average is 17.3 HB VMT per capita and 15% below the average results in a significance threshold of 14.7 HB VMT per capita. The 4.9% VMT reduction due to project components results in a project VMT of 23.6 VMT per capita.

Table 3.17-5. Vehicle Miles Traveled (VMT) Analysis Summary

Description	Residential HB VMT per Capita
Project	
Zonal Home-Based VMT per Capita (2020)	24.8 VMT per capita
% VMT reduction due to project Components (See Table 4)	4.9%
Project VMT	23.6 VMT per capita
Threshold	
City of Antioch Average Baseline HB VMT per Capita (2020)	17.3 VMT per capita
Threshold of Significance (15% reduction from baseline)	14.7 VMT per capita
Difference (project minus Threshold of Significance)	8.9 VMT per capita
Is project above or below Threshold of Significance	Above Threshold of Significance
Significant Transportation Impact	**Yes**

VMT = vehicle miles traveled; HB VMT = home-based vehicle miles travelled
Source: *Contra Costa Travel Demand Model* (Contra Costa Transportation Authority 2021)

Since the project VMT of 23.6 HB VMT per capita is greater than the significance threshold of 14.7 HB VMT per capita (difference of 8.9 HB VMT), the project would result in a significant impact.

This impact will be further addressed in the EIR.

Impact TRANS-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact Analysis

The project does not increase hazards due to a geometric design feature or incompatible uses. Development of the project site and site access improvements requires compliance with City development guidelines and code, which follow the General Plan policies and actions that encourage the safe design of streets. The project driveway will provide access from Wild Horse Road to the 20-foot private alleyways servicing the residential units. Vehicles would enter and exit the project site from this location.

During construction, traffic management plans will be implemented to ensure the safety of roadway users accessing Wild Horse Road. During construction, the proposed project would generate traffic through the transport of workers, equipment, and materials to and from the project site. The use of roadways by heavy construction equipment can increase the risk to drivers and cyclists in the vicinity of the project site; however, construction equipment and materials would be stored onsite. Construction activities are anticipated to be confined to the project site, and no road closures or detours are anticipated; therefore, there would be no substantial increase in hazards. The project will comply with the City of Antioch's Traffic Control Plan Requirements for work area traffic control for work performed in the City's right-of-way. Also, there would be no incompatible uses introduced to the project area which could cause vehicle conflicts (e.g., farm equipment). The impact would be less than significant.

This impact will not be further addressed in the EIR.

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-4 Result in inadequate emergency access?

Impact Analysis

The project will not result in inadequate emergency access. Development of the project site will not alter or impede emergency response routes or plans set in place by the City.

In regard to site emergency access, the project driveways are designed to comply with turning radius requirements for emergency vehicles and will not cause hazardous driving conditions. The project's detailed design will be completed in compliance with California Fire Code requirements and not impair emergency vehicle access in the vicinity of the project during construction and in ongoing operation. Compliance with the

California Fire and Building Codes will be mandated through the plan check and approval process. This process will also ensure that adequate access for emergency services is provided and the City's emergency response plan will be upheld during construction.

Some key site design requirements of the California Fire Code which will be implemented by the project to ensure adequate emergency access include provision of access roads to all facilities on-site with all-weather driving surfaces. They will be a minimum unobstructed width of 20 feet with a maximum grade of 15% as required by the Fire Code. Access roads shall have a minimum of 13 feet and 6 inches of vertical clearance and will not incorporate speed bumps or other vertical traffic calming devices. Access roads will be present and maintained prior to and during combustible construction. Appropriate signage and red curbs will be installed to ensure emergency access remains clear. As no non-compliant features are proposed, the impact is considered to be less than significant.

This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

3.18 TRIBAL CULTURAL RESOURCES

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

3.18.1 Environmental Setting

This section describes potential tribal cultural resources in the project site, defined as the project site and a 0.25-mile radius around the project site, and evaluates potential impacts to these resources from the construction and operation of project facilities. Under CEQA, local tribes and tribal representatives are the authority for identifying tribal cultural resources.

AB 52 and SB 18

AB 52 mandates consideration of Native American culture as part of the CEQA process. The goal of AB 52 is to promote involvement of California Native American tribes in the decision-making process when it comes to identifying resources of importance to their cultures and developing mitigation for impacts to these resources. To reach this goal, AB 52 establishes a formal role for tribes in the CEQA process. CEQA lead agencies

are required to consult with tribes about potential tribal cultural resources in the project site, the potential significance of project impacts, the development of project alternatives, and the type of environmental document that should be prepared. AB 52 specifically states that a project that may cause a substantial adverse change in the significance of a tribal cultural resource may have a significant effect on the environment.

In addition, because the proposed project includes a request for a General Plan Amendment, in compliance with SB 18, the City also sent SB 18 notification letters to all the tribes included on the NAHC's tribal consultation list for Contra Costa County.

Ethnographic Context

The project is within the traditional tribal territory of the Bay Miwok, or *Saclan*, one of the five linguistic divisions of Eastern Miwok peoples (Levy 1978; Kroeber 1925; Map 1). Linguistic evidence suggests that the Eastern Miwok have inhabited the region for a long period of time, perhaps as early as the Middle Horizon of California prehistory (4,000 to 1,500 year before present) (Levy 1978; Breschini 1983). Around the time of European contact, the Bay Miwok occupied the eastern portions of Contra Costa County from Walnut Creek to the Sacramento-San Joaquin Delta (Levy 1978).

The foremost political unit of the Bay Miwok was the tribelet, an independent nation with defined geographical boundaries. Within their territory, each tribelet occupied one or more semi-permanent settlements and several seasonally occupied camps. Members of the tribelet moved between camps to fish, hunt, and gather resources as they became locally available (Levy 1978). The closest ethnographic village is *Chupcan* which is over 2 miles northwest of the project site; however, knowledge of individual tribelets and settlement locations is fragmentary due to rapid depopulation and relocation occurring throughout the 19th century (Levy 1978).

Within villages and camps, Miwok structures at lower elevations usually consisted of conical wood pole frames thatched with brush, grass, or tules (*Schoenoplectus acutus and californicus*). Larger semisubterranean and circular brush structures were also constructed for communal use at village sites, and granaries were built for the storage of gathered food, primarily acorns from several types of oak (*Quercus spp.*) (Levy 1978). The Bay Miwok also collected buckeye (*Aesculus californica*), hazelnut (*Corylus cornuta*), and pine nuts from digger pine (*Pinus sabiniana*) and sugar pine (*Pinus lambertiana*). A wide variety of seeds were also collected when available. Important

terrestrial animal foods included mule deer (*Oedocoileus hemionus*), tule elk (*Cervuus nannodes*), and pronghorn antelope (*Antilocapra americana*). Salmon and trout (*Oncorhynchus spp.*), sturgeon (*Acipenser transmontanus*), and lamprey (*Lampetra tridentata*) were also important food species for all divisions of the Eastern Miwok (Levy 1978) and would have been especially important for indigenous peoples in the vicinity of the project site due to local environmental conditions and the proximity of wetlands (Tang 2009).

After initial contacts with Spanish explorers, the Bay Miwok were among the first indigenous people to be gathered into the Spanish missions. Subsequent influxes of Euro-Americans drove many of the remaining native inhabitants to hide in the delta, and later conflicts ended with the confiscation of Miwok lands by the United States government. Miwok populations, estimated to have been around 19,500 in 1808, rapidly declined to around 670 by 1910 (Cook 1943).

3.18.2 Methodology

To identify tribal cultural resources, Stantec prepared a cultural resources assessment (Appendix D) and the City completed AB 52 and SB 18 consultations. Available literature obtained through a record search performed at the NWIC of CHRIS was consulted for background information, ethnographical information, and to identify any previously recorded archaeological tribal resources in the project site. A Stantec archaeologist performed a pedestrian survey of the project site to identify any potential archaeological cultural resources present in the project site that had not been recorded during previous studies. A search of the Sacred Lands File for tribal cultural resources in the project site did not indicate the presence of Native American cultural resources in the project site.

AB 52 and SB 18 Consultation Results

On January 19, 2021, the City mailed letters to all tribes who requested to be consulted on City projects under AB 52 and SB 18. Follow up phone calls were made to these tribes on February 2, 2021. The tribes contacted are listed below:

- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Chicken Ranch Rancheria of Me-Wuk Indians
- Confederated Villages of Lisjan
- Guidiville Indian Rancheria

- Indian Canyon Mutsun Band of Costanoan
- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- North Valley Yokuts
- Ohlone Indian Tribe
- Tule River Indian Tribe
- Wilton Rancheria

On February 2, 2021, Chairperson Zwierlein of the Amah Mutsun Tribal Band of Mission San Juan Bautista did not have concerns with the project but recommended the construction crew be given a cultural resource awareness training. On February 3, 2021, the Confederated Villages of Lisjan requested the NWIC cultural resource records search results and NAHC Sacred Lands File results. These results were sent to the Confederated Villages of Lisjan. After review of these materials, the Confederated Villages of Lisjan, did not have any further comment on the project but requested to be contacted should there be any inadvertent finds during project construction.

On March 23, 2021, the Indian Canyon Band of Costanoan Ohlone People sent an email recommending Native American and Archaeological monitoring during project construction because the project overlapped or was near a cultural site. The email also discussed ways to bring about public awareness of the history of indigenous communities.

On March 24, 2021, the City replied via email to the Indian Canyon Band of Costanoan Ohlone People email and requested additional information and further discussion with the tribe to confirm if a cultural site is within the project site.

On April 5, 2021, the City followed up with the Indian Canyon Band of Costanoan Ohlone People to make sure they had received the previous email on March 24, 2021.

On April 5, 2021, the Indian Canyon Band of Costanoan Ohlone People replied to the City's email and requested a zoom or phone call meeting on the morning of April 14, 2021.

On April 14, 2021, the City, Indian Canyon Band of Costanoan Ohlone People, and the City's project archaeological consultant met via a Zoom meeting to discuss the project. During the meeting, the tribe did not identify any cultural resources or sensitivity for cultural resources within or adjacent to the project site but said to be conservative, they

recommended monitoring during construction. There were also discussions of recent construction adjacent to the project site and the City said they would follow up with a list development completed within the last 20 years. During the meeting, the City and the tribe also discussed ways to bring about public awareness of the history of indigenous communities.

On April 20, 2021, the City sent an email to the Indian Canyon Band of Costanoan Ohlone People as a follow-up to the Zoom meeting. The City provided a list of construction in the last 20 years adjacent to the project site. All of the construction was recent enough to have gone through the State environmental review process and no cultural resources were found during construction of these projects. Additionally, a desktop geologic sensitivity analysis indicated the project site has a low sensitivity for buried cultural resources. Based on these factors, the City does not think cultural monitoring is necessary. However, to ensure any potentially sensitive resources are protected, the City would implement mitigation measures requiring worker awareness training and inadvertent discovery procedures. The City also invited the tribe to participate in the upcoming comprehensive General Plan update so the tribe can participate in Citywide policy on how to bring about public awareness of the history of indigenous communities.

The other tribes contacted either did not respond or did not have any concerns with the proposed project. An AB 52 and SB 18 correspondence record can be found in Appendix D.

3.18.3 Environmental Impact Analysis

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

Impact TRIB-1	**Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to California Native American tribe, and that is:** **a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or** **b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

Impact Analysis

Tribes contacted as part of the AB 52 and SB 18 process did not identified tribal cultural resources within or adjacent to the project site. No known tribal cultural resources were identified in the project site or within 0.25 mile of it during the archival records search and literature review performed as part of the cultural resources inventory. A field survey of the project site did not identify any archaeological tribal resources in the project site. As discussed above, a search of the NAHC Sacred Lands File did not indicate the presence of Native American cultural resources in the project site. However, subsurface construction activities associated with the proposed project could potentially damage or destroy previously undiscovered tribal cultural resources. The proposed project would be required to implement Mitigation Measures CUL-1, CUL-2, and CUL-3. Mitigation Measure CUL-1 requires a preconstruction worker awareness training for cultural resources. Mitigation Measures CUL-2 and CUL-3 are inadvertent discovery procedures that would be implemented in the event previously undiscovered subsurface cultural resources or human remains are found at the project site during construction. Therefore, with the implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3, potential impacts to undiscovered tribal cultural resources would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

Mitigation Measures CUL-1, CUL-2, and CUL-3 are required.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

3.19 UTILITIES AND SERVICE SYSTEMS

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

3.19.1 Environmental Setting

Wastewater Collection/Treatment

The City maintains and owns the local sewage collection system and is responsible for the collection and conveyance of wastewater to the Delta Diablo Wastewater Treatment Plant (WWTP). The DDSD owns and operates the regional interceptors and the WWTP. DDSD is located on the Pittsburg-Antioch border and serves nearly 213,000 customers in the communities of Pittsburg, Antioch and Bay Point (DDSD 2021). The WWTP

operates under the San Francisco Bay Regional Water Quality Control Board (Order No. R2-2014-0030, NPDES No. CA0038547), and is permitted for up to 19.5 million gallons per day (mgd) average dry weather flow (SFBRWQCB 2014). The permit expired in 2019, and tentative order No. R2-2019-XXXX NPDES No. CA0038547 is in process with the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) (SFBRWQCB 2019). In 2015, the average dry weather flow to the WWTP, including the City of Pittsburg, was 13.2 mgd (City of Antioch 2016).

Stormwater Management

Stormwater collection in the City is overseen by the Contra Costa County Flood Control and Water Conservation District (Flood Control District). The City has over 110 miles of trunk lines to collect stormwater (City of Antioch 2003b). These trunk lines are independent from the wastewater collection system. The stormwater trunk lines discharge to channels owned and maintained by both the City and the Flood Control District. The Flood Control District releases stormwater from the channels to the San Joaquin River and is the holder of a NPDES permit. Contra Costa County Clean Water Program staff monitors the quality of the released water to comply with the specifications of the NPDES permit.

Water Supply

The City receives water from two sources. The City's primary source of surface water is the Sacramento-San Joaquin Delta through its own intake, or the water purchased from the CCWD through the Contra Costa Canal and Los Vaqueros Reservoir (City of Antioch 2016). The water from the CCWD is treated at the City Water Treatment Plant that has a capacity of 38 mgd. There are 6 water pressure zones in the City and the project site lies within Zone III East. Zone III East encompasses much of the newer residential and commercial growth in the City (City of Antioch 2016). According to the City's UWMP, the CCWD's water supply reliability goal is to meet 100 percent of demand in normal years and at least 85 percent of demand during a drought. The single dry year supply would be same as normal year demand; and multiple dry year supply would reduce by 15 percent (City of Antioch 2016).

Solid Waste

Republic Services provides solid waste collection, disposal, recycling, and yard waste services in in the City. Solid waste and recyclables from the City are taken to the Contra

Costa Transfer and Recovery Station in Martinez. Solid waste is transferred from the Transfer and Recovery Station to the Keller Canyon Landfill in Pittsburg (City of Antioch 2003b). The landfill site is 1,399 acres, 244 of which comprise the actual current disposal acreage. The landfill is permitted to accept 3,500 tons of waste per day and has a total estimated permitted capacity of approximately 75 million CY (CalRecycle 2021). The remaining available disposal capacity of the existing landfill is over 55 million CY as of 2015, which is sufficient for several decades of continued operation (Contra Costa County Department of Conservation and Development 2015).

Electric Power, Natural Gas, and Telecommunications

PG&E provides electric power and natural gas services to the City. Pacific Bell is the provider of residential and commercial telephone service in the City. Pacific Bell also provides or hosts a variety of telecommunication services such as Digital Subscriber Lines, Internet Service Providers, web hosting, virtual private networking, and wireless/cellular and paging services (City of Antioch 2003b).

3.19.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, the General Plan EIR, 2015 UWMP, and Section 2.0, Project Description, of this IS. The following impact discussions consider the impacts of the proposed project related to utilities and service systems in the City.

3.19.3 Environmental Impact Analysis

This section discusses potential impacts related to utilities and service systems associated with the proposed project and provides mitigation measures where necessary.

Impact UTIL-1	**Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**

Impact Analysis

Wastewater Treatment

According to the General Plan EIR, the standard multiplier for residential base wastewater flow is 220 gallons/per day (City of Antioch 2003b). The proposed project would include construction of 126 multifamily residences; therefore, the anticipated wastewater generation would be 27,720 gallons per day (gpd). The wastewater generated by the proposed project would flow to the project's lateral 8-inch diameter sewer lines to service the residences and would connect to the existing 8-inch public sanitary sewer main line located along Wild Horse Road.

An increase of 27,720 gpd would represent a fraction of the WWTP capacity and would allow the facility to operate at its current flow rate of 13.2 mgd, with a remaining capacity of 6 mgd. Since the WWTP is operating below its maximum capacity, the project would not result in the WWTP's existing wastewater treatment requirements. Additionally, the project applicant would be required to pay sewer connection fees, which work to fund needed sewer system improvements. Because the project applicant would pay sewer connection fees, and adequate long-term wastewater treatment capacity is available to serve full build-out of the project, the project would not require or result in the relocation or construction of new or expanded off-site wastewater facilities, the construction or relocation of which could cause significant environmental effects. Therefore, impacts to wastewater treatment requirements would be less than significant. This impact will not be further addressed in the EIR.

Water Treatment

The proposed project would connect new 8-inch and 6-inch water main lines that would run along the new proposed project streets to the existing 10-inch water main located along Wild Horse Road on the southern perimeter of the proposed project. Based on the water demand factors used in the 2015 UWMP for single-family residences (multifamily not available) of 320 gpd/unit, the proposed project would result in an overall demand of approximately 44,100 gpd, or approximately 16 million gallons per year (mgy) (City of

Antioch 2016). Although the proposed project is not specifically identified in the City's 2015 UWMP, the City's growth projections and water demand projections accommodate the proposed project's estimated population of approximately 413 residents and projected water demand of 16 mgy. Therefore, the proposed project would not require or result in the relocation or construction of new or expanded off-site water facilities, the construction or relocation of which could cause significant environmental effects, and sufficient water supplies would be available to serve the proposed project and reasonably foreseeable future development during normal, dry, and multiple dry years. Per the City's 2015 UWMP, adequate water supplies will be available to accommodate buildout of the City under normal year, single year, and multiple-dry year demand scenarios, accounting for mandatory measures included in the City's Water Shortage Contingency Plan (City of Antioch 2016). Therefore, the proposed project would not require or result in the relocation or construction of new or expanded off-site water facilities, the construction or relocation of which could cause significant environmental effects, and sufficient water supplies would be available to serve the proposed project and reasonably foreseeable future development during normal, dry, and multiple dry years. This impact will not be further addressed in the EIR.

Stormwater Drainage

The proposed project would include installation of new 18-inch and 24-inch storm drains and storm drain outfall. The storm drains would connect to the bioretention basin and existing 48-inch and 36-inch storm drain pipes along the western perimeter of the proposed project. The proposed project would create 214,032 square feet of new impervious surface. It would also include 284,502 square feet of pervious surface consisting of landscaping and bioswale landscaping throughout the project site and a bioretention basin in the northern corner of the project site. The bio-retention areas would be sized to function as stormwater treatment and flow control. The project would not require new or expanded off-site stormwater infrastructure. Therefore, the impacts associated with stormwater drainage facilities would be less than significant. This impact will not be further addressed in the EIR.

Electric Power and Natural Gas

PG&E is the electric and natural gas provider to the City. Although the proposed project would demand additional electricity and natural gas, electrical and gas connections would be made with existing facilities located onsite. Although the proposed project will

demand additional electricity and natural gas, the 2017 General Plan Update found that buildout of the General Plan would not exceed the demand for electricity and natural gas estimated in the 2003 General Plan (City of Antioch 2017). Furthermore, the proposed project and future development would be subject to more stringent energy efficiency standards through updates of the California Green Building Code and Title 24. No new expanded facilities would be required for electric and natural gas facilities that could potentially cause a significant environmental impact. This impact will not be further addressed in the EIR.

Telecommunications

Telecommunication services are provided by Pacific Bell to the project site. Any telecommunication connections that are deemed necessary during final site design would be placed within existing utility easements. No expanded capacity would be required for telecommunication facilities that could potentially cause a significant environmental impact. Therefore, impacts to telecommunications facilities would be less than significant. This impact will not be further addressed in the EIR.

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	**Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

Impact Analysis

As previously discussed, based on the water demand factors used in the 2015 UWMP for single-family residences (multifamily not available) of 320 gpd/unit, the proposed project would result in an overall demand of approximately 44,100 gpd, or

approximately 16 mgy (City of Antioch 2016). Although the proposed project is not specifically identified in the City's 2015 UWMP, the City's growth projections and water demand projections accommodate the proposed project's estimated population of approximately 413 residents and projected water demand of 16 mgy. The 2015 UWMP calculates the City's past, current, and projected water use and water supply through 2040. According to the UWMP, the future water supply would be adequate to offset future water demands from planned development during normal, single-dry, and multi-dry years through 2040 (City of Antioch 2016). The UWMP contemplated the build out of the uses and densities that were envisioned in the General Plan and, thus, a project-specific water supply analysis is not required. Additionally, the proposed project would be required to comply with the water conservation requirements codified in Title 6, Chapter 10 of the Municipal Code (City of Antioch 2015). Therefore, the impact would be less than significant. This impact will not be further addressed in the EIR.

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

Impact Analysis

The Delta Diablo WWTP has a permitted treatment capacity of 19.5 mgd (SFBRWQCB 2014). The average volume of wastewater treated at the WWTP was 13.2 mgd in 2015 and is expected to stay similar considering the limited growth within the WWTP service area since 2015 (City of Antioch 2016). The proposed project would generate 27,720 gpd of wastewater that would be a fraction of the available capacity of 6 mgd. In

addition, the project applicant would pay sewer connection fees. Therefore, the impact would be less than significant. This impact will not be further addressed in the EIR.

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	**Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

Impact Analysis

The proposed project would be expected to generate waste during the construction and operation phases; however, it would not be expected to result in inadequate landfill capacity. The proposed project does not involve demolition of structures or require the export of soils from the project site. Any construction waste generated would be minimal and disposed by the project contractor in accordance with the City's established programs that facilitate the diversion and disposal of construction waste. The City uses a standard multiplier of 8.2 pounds of solid waste per day for each resident (City of Antioch 2003b). Therefore, during operation the project would be anticipated to use approximately 3,386.6 pounds per day, or 618 tons per year. Solid waste from the proposed project would be disposed at the Keller Canyon Landfill. The landfill is permitted to accept 3,500 tons of waste per day and has a remaining capacity of 55 million CY (Contra Costa County Department of Conservation and Development 2015). Due to the substantial amount of available capacity remaining at Keller Canyon Landfill, sufficient capacity would be available to accommodate the proposed project's solid waste disposal needs. The City's waste prevention efforts have been successful, as the current per capita disposal rate is 3.1 pounds per person per day and the State mandated target is 4.2 pounds per person per day (City of Antioch 2021). The proposed project would also include solid waste, food waste, and recycling facilities at a readily

available location. The proposed project would not be expected to generate solid waste in excess of State or local standards and would not impair attainment of solid waste reduction goals. Therefore, a less-than-significant impact related to solid waste would occur. This impact will not be further addressed in the EIR.

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	**Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

Impact Analysis

The proposed project would be served by curbside solid waste and recycling services, which are standard services for residential uses in the City. Solid waste disposal must follow the requirements of the contracted waste hauler and disposal facility, which follows local, state, and federal statutes and regulations related to the collection and disposal of solid waste.

The proposed project would include solid waste, food waste, and recycling facilities at a readily available location. Title 6, Chapter 3 of the City's Municipal Code also requires the construction contractor to prepare and submit a Waste Management Plan (WMP). The WMP shall identify the types of C&D debris materials that will be generated for disposal and recycling. The project would comply with all applicable local, State, and federal statutes and regulations related to solid waste. Therefore, the impacts would be less than significant. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

Less-Than-Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less-Than-Significant Impact.

3.20 WILDFIRE

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

3.20.1 Environmental Setting

In the City, areas of potential wildland fire hazard exist within the southern, mostly unincorporated portions of the General Plan study area, including rural, hilly terrain, as well as areas adjacent to or covered by natural grassland or brush (City of Antioch 2003b). The project site is vacant and surrounded by existing residential developments and roadways. Based on a review of the Fire Hazard Severity Zone maps developed by California Department of Forestry and Fire Protection (CALFIRE), the project site is not within a state responsibility area and does not contain lands classified as very high fire hazard severity zone. The project site is within a local responsibility area and is classified as being in a moderate fire hazard severity zone (CALFIRE 2007a). The U.S. Forest Service (USFS) has also developed a Wildfire Hazard Potential Map. According

to the USFS, the risk of wildfire at the project site and in the surrounding areas is low to very low (USFS 2020).

3.20.2 Methodology

The following analysis is based on a review of documents pertaining to the project site, including the General Plan, General Plan EIR, and review of CALFIRE's Fire Hazard Severity Zone Maps and the USFS Wildfire Hazard Potential Map.

3.20.3 Environmental Impact Analysis

This section discusses potential wildfire impacts on the proposed project and provides mitigation measures where necessary.

Impact WF-1 Substantially impair an adopted emergency response plan or emergency evacuation plan?

Impact Analysis

The project site is not in a state responsibility area and does not contain lands classified as being within a very high fire hazard severity zone (CALFIRE 2007b). The proposed project does not involve permanent modification to the existing roadways and road closures are not anticipated during the construction phase. There are no identified evacuation routes that would be potentially impacted by the construction of the project. The Traffic Control Plan would identify all detours, appropriate traffic controls, and ensure adequate circulation and emergency access are provided during the construction phase. Therefore, project construction and operation activities would not interfere with an emergency evacuation or response plan, and this impact would be less than significant. This impact will not be further addressed in the EIR.

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 WF-2	**Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

Impact Analysis

The topography of the project site is mostly flat with a slight rise to the southwest corner and is located in an urban area surrounded by existing development and roadways. The area surrounding the project site is similarly flat. The project site is not in a state responsibility area and does not contain lands classified as being within a very high fire hazard severity zone (CALFIRE 2007b). Furthermore, the risk of wildfire in this portion of the City is classified as low to very low (USFS 2020). Given the characteristics of the project site, the proposed project would not exacerbate fire risk beyond what currently exists in the vicinity of the project site. Development of the proposed project would not expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire, and there would be no impact. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

Impact WF-3	**Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

Impact Analysis

The project site is not in a state responsibility area and does not contain lands classified as being within a very high fire hazard severity zone (CALFIRE 2007b). The project site is currently vacant, and the construction of the proposed project would require the installation of associated infrastructure. Primary access to the project site would be via Wild Horse Road and onto two streets within the project site which would be 26 feet wide to allow emergency vehicles access to the project site. All utilities needed for the new development would be located underground and also includes installation of fire hydrants on the project site to mitigate fire hazards. The proposed project would be required to implement General Plan policies along with the implementation of the Uniform Fire Code and the Uniform Building Code which will reduce effects of development on wildland fire hazard impacts to a less than significant level (City of Antioch 2003b). The proposed project would require the installation of associated infrastructure to support the new development but would not exacerbate fire risk beyond what currently exists in the vicinity of the project site. Compliance with City's policies, the Uniform Fire Code and the Uniform Building Code would reduce effects of installation of associated infrastructures that may exacerbate fire risk and there would be a less-than-significant impact. This impact will not be further addressed in the EIR.

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 WF-4	**Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

Impact Analysis

The project site is not in a state responsibility area and does not contain lands classified as being within a very high fire hazard severity zone (CALFIRE 2007b). The project site and surrounding area is relatively flat and not in an area subject to landslides or flooding. As such, the proposed project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. As such, there would be no impact. This impact will not be further addressed in the EIR.

Level of Significance Before Mitigation

No Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

No Impact.

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