4 Environmental Impact Analysis

This section discusses the possible environmental effects of the proposed project on the specific issue areas identified through the scoping process as having the potential to experience significant effects. “Significant effect” is defined by the *CEQA Guidelines* §15382 as:

> a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant.

Section 4.1 through 4.14 of the EIR examines the potential environmental impacts associated with implementation of the proposed project and focuses on the following issues:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy Conservation
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Recreation
- Transportation and Traffic
- Tribal Cultural Resources
- Utilities and Public Services

4.1 Technical Studies and Reports

Technical studies were prepared to accurately analyze specific environmental impacts the project would produce. The technical studies and other supporting studies prepared for the project include the following:

- Air Quality Report (Appendix B)
- Greenhouse Gas Report (Appendix C)
- Noise Study (Appendix D)
- Health Risk Assessment (Appendix E)
- Multi-Species Habitat Conservation Plan (MSHCP) Consistency Analysis and Habitat Assessment (Appendix F)
- Jurisdictional Delineation (Appendix G)
- Cultural Resources Assessment (Appendix H)
- Record of Assembly Bill (AB) 52 Consultation (Appendix I)
- Hydrology Report (Appendix J)
- Water Quality Management Plan (Appendix K)
- Transportation Impact Analysis (Appendix L)
- Project Plans (Appendix M)

- Water Supply Assessment (Appendix N)
- N_2O Mobile Emissions Calculations (Appendix O)
- Phase 1 Environmental Site Assessment (Appendix P)
- Determination of Biological Equivalent or Superior Preservation Report (DBESP, Appendix Q)

These documents along with the Initial Study (Appendix A) were used to prepare this EIR. They are identified in the discussions for the individual environmental issues and are included as technical appendices of the EIR.

4.2 Analysis Format

The EIR assesses how the proposed project would impact the areas identified above. Each environmental issue addressed in this EIR is organized into the following subsections.

Setting

Existing Setting

The existing environmental setting outlines the baseline environmental conditions on the project site and surrounding area that relate to the specific environmental topic analyzed and discussed.

Regulatory Setting

The regulatory setting lists and describes regulations and policies that relate to the environmental topic and to which the project would be subject. Regulations are divided into federal, state, and local/regional areas.

Impact Analysis

Methodology and Significance Thresholds

This section identifies the methodologies used in the analysis and the "significance thresholds," or criteria adopted by the City and other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant.

Project Impacts and Mitigation Measures

This subsection describes the impact of the proposed project on each impact area determined to be potentially significant in the Initial Study. Each impact begins with an impact statements in bold that summarize the analysis and contain a statement of the significance determination. Following the environmental impact discussion, a list of mitigation measures (if required) is provided with the residual effects or level of significance remaining after implementation of the measure(s). In cases where the mitigation measure for an impact could have a significant environmental impact on another issue area, this impact is discussed and evaluated as a secondary impact.

Cumulative Impacts

The impact analysis concludes with a discussion of cumulative effects, and evaluates the impacts associated with the proposed project in conjunction with other planned and pending developments in the area described in Section 3.0, *Environmental Setting*.

4.3 Significance Determination

The significance of each impact under consideration is determined as follows:

- **Significant and Unavoidable**. An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures.
- **Less than Significant with Mitigation Incorporated**. An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures.
- **Less than Significant**. An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact.** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

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4.1 Aesthetics

Based on Appendix G of the CEQA Guidelines, this section evaluates the project's potential impacts to scenic vistas, scenic resources, visual character or quality, and light or glare. During the public scoping meeting, comments were received about the impacts to the visual character, effects from light and glare, and potential impacts to privacy for nearby residences. This section addresses those concerns, as appropriate for CEQA analysis.

By way of definition, viewsheds refer to the visual qualities of a geographical area defined by the horizon, topography, and other natural features that give an area its visual boundary and context. Viewsheds are defined further by development that forms a prominent visual component of the area. Public views are those available from publicly accessible vantage points, such as streets, freeways, parks, and vista points. These views are available to a greater number of persons than private views, which are those available from vantage points on private property.

4.1.1 Setting

a. Existing Visual Setting

Visual Character of the Surrounding Area

The project site is in the northwestern part of the City, adjacent to the SR 60/I-215 interchange in an area characterized by relatively low-density, older residential, commercial, and institutional uses. Southwest of SR 60, downtown Riverside has undergone considerable revitalization since the 1990s and reflects a "rich blend of history, activity, architecture, tree-lined pedestrian spaces, [and] cultural and entertainment facilities" (Riverside Downtown Partnership 2017). Approximately three miles southeast of the project site, the University of California, Riverside is the most prominent of several large, institutional campuses in the region. Nearby recent development includes multi-use residential and commercial developments between the university and the downtown area, along University Avenue. In contrast, the northwestern quadrant of the City has not experienced substantial change, and it therefore retains a low-density suburban character, with undeveloped parcels and quiet residential streets.

The project vicinity is developed with a mix of single-family residential, industrial, and institutional uses. The project site has been vacant since the mid-1980s. Single-family homes parallel the project site, along Strong Street to the north, and face the project site across Orange Street to the west. The Fremont Elementary School is west of the site, across Orange Street. A tire store/repair facility is located directly across Orange Street, from the southwest corner of the project site. It features parked vehicles awaiting repair, temporary signage and flags of a commercial nature, and tires stacked along a fence. The Calvary Baptist Church is adjacent to the site on the north, at the corner of Orange and Strong streets. Looking south from the project site, the above-grade ramp from SR 60 to the I-215 is visible in the near distance. Properties south of the site, on the south side of SR 60, include single-story industrial and office uses, including a storage facility, an automotive repair and salvage facility, and a tile manufacturer. Figure 2-2 in the *Project Description* shows the location of the site in its neighborhood context.

A mix of residential, industrial, and commercial land uses characterize the immediate blocks in every direction from the project site. The former Riverside Golf Course and Reid Park-Ruth H. Lewis Center lie to the north of the site. Orange Street serves as a transit corridor, and signs and benches occur periodically in support of public transit in the vicinity of the project area.

Visual Character of the Project Site

Although the project site is vacant and appears largely natural, it also features remnants of former residential foundations and some mature trees. The low-growing vegetation is green during the rainy season then is dry and brown for much of the rest of the year. The site does not appear to undergo regular maintenance and features numerous stands of dead branches and refuse throughout. Section 4.4, *Cultural Resources*, offers a history of the region and project site. The following figures provide examples of current conditions on the site.

Figure 4.1-1 offers a long-distance view of the site looking northwest. Scattered palms, eucalyptus trees, and low-growing vegetation are visible in the foreground and the distance. A combination of dry brush, possibly native grasses, and invasive weeds cover much of the ground. In the distance, adjacent building rooftops are visible. A concrete-lined channel bisects the site roughly east to west, and is protected on both sides by a chain-link fence. Figure 4.1-2 shows evidence of dumping and efforts to eradicate graffiti in the channel. Figure 4.1-3 shows the SR 60/I-215 Interchange ramp as seen from the project site.

Figure 4.1-2 offers an easterly perspective with the project site in the foreground and middle distance, where low-growing, dry vegetation is visible, similar to that in the previous figure. The SR 60/I-215 Interchange ramps are visible in the distance and the tops of mountains can be seen in the very far distance. Palms and other trees in the far distance are visible under the freeway but do not present a cohesive or distinctive, high-quality view of a natural vista.

Figure 4.1-1 Visual Character of Project Site: Topographic Features including Palms, Eucalyptus, and Low-growing Vegetation

Figure 4.1-2 Visual Character of Project Site: Easterly View of SR 60/I-215 Interchange in the Distance

Figure 4.1-3 depicts the storm drain that passes through the project site. A chain-link fence is visible on both sides of the channel. Marks are visible along the concrete wash that indicate an effort to cover graffiti . Scattered debris (chair, carpet remnant, mop bucket) rests inside the fence, along the bare earthen maintenance road that borders the canal on either side. Eucalyptus and other trees are scattered in the foreground and middle distance; some of these appear dead or in need of pruning. In the far distance, a hilltop is visible beyond the irregularly aligned rooftops of adjacent structures. While the hilltop makes a visual boundary of sorts, it does not form part of a visually significant viewpoint.

Remnants of some former structures are visible throughout the site, as in Figure 4.1-4, where part of a subterranean foundation can be seen surrounded by trash, abandoned office furniture, and dead palm fronds. Weeds punctuate the perspective, where they grow between the refuse and around the pit containing the former foundation.

In Figure 4.1-5, a structure associated with an adjacent residence can be seen over the tops of the dense cactus, palms, and other trees that form the border between the properties. The project site is elevated, with the plants and the adjacent property sitting slightly lower. Dried grasses and bare earth characterize the property along this northern boundary. From this perspective, no mountains or other visually prominent features are apparent.

Figure 4.1-3 Visual Character of Project Site: University Wash/Thornton Storm Drain

Figure 4.1-4 Visual Character of Project Site: Remnant Foundation, Vegetation, Debris

Figure 4.1-5 Visual Character of Project Site: Northern Site Boundary, Adjacent Single-family Residence on Strong Street, Vegetation

Visibility of the Project Site

The project site is visible from the residences to the north and from the church on the corner of Orange and Strong streets. It is also visible from Fremont Elementary School, directly across Orange Street, and to passing motorists traveling on east and westbound SR 60 and southbound I-215. Motorists travelling on the SR-60/I-215 Interchange from north to west are able to see the entire project site from the elevated freeway lanes.

Scenic Views and Vistas

The City of Riverside General Plan 2025 identifies "hillsides and ridgelines above Riverside" as scenic benefits for the community, orienting people as they move about the area (City of Riverside 2007a). Scenic landmarks visible from the project site include the tops of the hills in the Sycamore Canyon Wilderness Park, approximately 3.5 miles southeast and Mount Rubidoux, approximately 2.4 miles to the southwest. On the distant northern horizon, 35 miles east, the San Bernardino Mountains form another boundary. While these do provide horizon lines in the distance, they are too far from the project site to demarcate defining viewsheds.

Scenic Routes and Resources

The California Scenic Highway System indicates no existing or proposed state scenic highways are close to the project site (Caltrans 2011). There are no eligible state scenic highways near the project site.

Light and Glare

Light and glare sources include interior and exterior lighting, streetlights, automobile headlights, and reflection of headlights in windows as they pass adjacent buildings. No existing sources of light or glare are present on-site. There are existing sources of light and glare associated with building lighting and vehicles passing on the streets and the freeways near the proposed project site. Overall, the level of light and glare in the project vicinity is typical of an urbanized area with mixed residential, industrial, and institutional uses.

b. Regulatory Setting

State

California Scenic Highway Program

The California Scenic Highways Program was established in 1963 to "preserve and protect scenic highway corridors from change which would diminish any aesthetic value of lands adjacent to highways" (Street and Highway Code §260 et seq.). No state-designated or eligible scenic highways exist in or near the project site, and, therefore, no state regulations apply.

Local Regulations

Riverside General Plan 2025

The Riverside General Plan 2025 guides development in the City through a compilation of community values, ideals, and aspirations pertaining to the natural and manmade environments (City of Riverside 2007). The following objectives and policies pertaining to aesthetics are drawn from the City's General Plan 2025 and are applicable to the proposed project.

LAND USE AND URBAN DESIGN ELEMENT

The General Plan Land Use and Urban Design Element describes present and planned land uses and their relationship to Riverside's goals for development in terms of the City's character (City of Riverside 2007). Objectives and policies from the general plan applicable to scenic resources and aesthetics relative to development in the City are:

Objective LU-11: Create a network of parkways to establish stronger linkages between Riverside's neighborhoods, major elements of its natural environment and neighborhood parks and schools.

> **Policy LU-11.1:** Recognize parkways as distinctive elements of the City's circulation network.
>
> **Policy LU-11.3:** Seek opportunities to provide enhanced bicycle and pedestrian usage along parkways through the development process.

Objective LU-27: Enhance, maintain, and grow Riverside's inventory of street trees

> **Policy LU-27.1:** Require appropriately sized landscaped parkways in all new development. Parkway areas shall be of sufficient width to allow planting of trees that will become large canopy trees.
>
> **Policy LU-27.4:** Encourage trees on private property.

Objective LU-30: Establish Riverside's neighborhoods as the fundamental building blocks of the overall community, utilizing Neighborhood and Specific Plans to provide a more detailed design and policy direction for development projects located in particular neighborhoods.

Policy LU-30.2: Ensure that every neighborhood has a unique community image that is incorporated and reflected in all public facilities, streetscapes, signage and entryways proposed for each neighborhood.

Policy LU-30.3: Ensure that the distinct character of each of Riverside's neighborhoods is respected and reflected in all new development, especially infill development.

Objective LU-72: Provide for steady change and improvement to an upgraded model community with a distinct identity.

Policy LU-72.2: Site new development to emphasize views out of the Northside area and not block existing views. Lay out subdivisions so that streets emphasize the views. In many cases, this means streets should be perpendicular to the view. This visual corridor can also be protected by an open space easement across a portion of the lot.

Objective LU-74: Preserve and promote the lower density charm of the Northside Community.

Policy LU-74.1: Use tree varieties that provide substantial shade and a canopy effect over the street in new developments and redevelopment projects.

Policy LU-74.2: Encourage the installation of parking lot landscaping on those commercial and industrial properties currently without such amenities. As an incentive for landscaping, the City in co-operation with the County should develop a property rehabilitation program. One source of funds for such a program could be Block Grants.

Policy LU-74.3: Use natural appearing drainage channels of innovative design in the Northside area. Development projects should be required to develop their drainage in natural or semi-natural appearing channels.

Policy LU-74.5: Land use interfaces between residential and commercial or industrial properties should receive special design consideration to protect the scenic integrity of the residential neighborhood.

OPEN SPACE AND CONSERVATION ELEMENT

The Open Space and Conservation Element of the General Plan addresses the use and preservation of the open space areas throughout the city, including natural and human-made features. It guides the preservation of scenic resources and vista points in Riverside, including hillsides and other topographic features. Objectives and policies related to scenic resources and aesthetics in the Element are:

Objective OS-1: Preserve and expand open space areas and linkages throughout the City and sphere of influence to protect the natural and visual character of the community and to provide for appropriate active and passive recreational uses.

Policy OS-1.6: Ensure that any new development that does occur is effectively integrated through convenient street and/or pedestrian connections, as well as through visual connections.

ARTS AND CULTURE ELEMENT

The Arts and Culture Element of the General Plan provides a comprehensive approach to enhancing art and cultural offerings in all areas of Riverside, including public art, public gathering places and venues. Farmer's markets, parks, and exterior walls of buildings form public spaces where art and culture can be shared by the community. Objectives and policies related to aesthetics in the element include:

Objective AC-2: Celebrate the diversity of Riverside's neighborhoods and residents, using arts and cultural programs to build neighborhood identity and mutual acceptance.

> **Policy AC-2.1:** Use public art and culture programs to help support the neighborhood identity and foster neighborhood pride.

Objective AC-4: Strengthen Riverside's identity as the cultural and arts center for the Inland Empire.

> **Policy AC-4.15:** Use art in public places to enhance the image of Riverside and emphasize its distinctive character.
>
> **Policy AC-4.20:** Use art in public places, in coordination with landscaping, lighting, paving and signage, at the City's regional and local gateways, freeway corridors and Metrolink Stations to strengthen Riverside's identity as a cultural and arts center for regional visitors.

City of Riverside Municipal Code

TITLE 17 – GRADING

Title 17 of the Riverside Municipal Code governs grading and other earthwork during construction, including fills and embankments. In part, it regulates hillside and arroyo grading in a manner that "minimizes the effects of grading on natural landforms…[and ensures] that significant natural characteristics such as land form…[and] scenic qualities…can be substantially maintained" (Riverside Municipal Code §17.01.010).

TITLE 18 – SUBDIVISION

Title 18 of the Riverside Municipal Code regulates the design and improvement of subdivisions and to make sure all subdivision maps conform to the standards of the General Plan, applicable specific plans, and the Zoning Code of the City. Related to aesthetics in the City, Title 18 seeks to achieve lots with sufficient size and design for their associated use, streets with adequate capacity and design for traffic and pedestrian safety, the preservation of natural assets in the City, and the provision of adequate street lighting.

TITLE 19 – ZONING CODE

The City of Riverside's Zoning Code restricts the location, size, density, and design of buildings in the city to encourage appropriate land use, conserve and stabilize property values, provide adequate open spaces for light and air, and promote the general welfare of the population (City of Riverside Zoning Code Title 19.020.010). Specifically, design standards and guidelines for mixed-use zones include minimum setbacks and provisions for landscaping that soften the edges between new construction and existing, adjacent residential neighborhoods. Title 19 further states that buildings "shall be arranged to create a sense of unity and overall harmony…clustered to create plazas and pedestrian malls," and to provide visually unifying aspects that minimize sharp contrasts between existing structures and new development. At residential edges buildings are to be designed with low profiles that transition between urban and residential areas with taller elements increasingly stepped back from adjacent, single-story zones (see Title 19 Figure 19.120.070 C – Scale and Mass). Finally, the Zoning Code requires that buildings be oriented to promote privacy to the greatest extent possible, with windows faced and balconies or similar areas oriented so they do not have a direct line of site into adjacent units and so "they do not look directly onto private patios or backyards of adjoining residential property units" in adjacent neighborhoods. The Zoning Code sets forth standards for lighting to ensure adequate light installed for safety does not spill onto neighboring properties (City of Riverside Zoning Code Title 19.566).

Outdoor Lighting Ordinance

Through Ordinance No.7447, the City adopted outdoor lighting regulations to ensure that outdoor lighting is adequate for safety and security while preserving the naturally dark sky through mitigating artificial sky glow and preventing light and glare pollution. The ordinance, located in Chapter 19.556 of the Riverside Municipal Code, includes various light zones in the City and development standards for each zone.

Citywide Design Guidelines and Sign Guidelines

Through Resolution Number 21544, the City of Riverside adopted the Citywide Design Guidelines and Sign Guidelines to manage developing of the physical image of the City's residential neighborhoods and shopping centers to emphasize "a small-town character within an urban metropolis" (City of Riverside 2007b). This document offers an overview of what the City considers good design, outlines design objectives in terms of architectural styles relative to context and historic character in the areas where development occurs. It also provides specific guidance on scale and mass, landscaping, fences, privacy protection, common open space, and parking.

4.1.2 Impact Analysis

a. Methodology and Significance Criteria

The assessment of aesthetic impacts involves an inherently subjective qualitative analysis. Reactions to particular aesthetic conditions vary according to the viewer. This evaluation compares the existing visual environment of the project site to the anticipated visual environment after implementation of the proposed project, analyzing the nature of the anticipated change. The project site and surrounding area was viewed using Google Earth imagery and by examining photo documentation from site visits. Renderings of the proposed project design were used to consider the effects of the development on the surrounding neighborhood. Figure 4.1-6 through Figure 4.1-8 present project renderings prepared by Architects Orange; they are incorporated herein as visual references. Finally, the City Zoning Code and Design Guidelines were evaluated to determine potential impacts and mitigation measures appropriate for the proposed project.

The impacts on aesthetics from the implementation of the proposed project would be considered significant if they would exceed the following significance criteria, in accordance with Appendix G of the *CEQA Guidelines*:

1. Have a substantial adverse effect on a scenic vista
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway
3. Substantially degrade the existing visual character or quality of the site and its surroundings

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

The Initial Study (Appendix A) determined that while the project proposes buildings as tall as four stories, the height of new structures would not detract from views of identified scenic vistas as these resources are only partially or indistinctly visible from the project site. Furthermore, the distant landscape view is interrupted by existing freeway interchange flyovers. Because no identified scenic vistas would be adversely affected by the project and because the surrounding hillside views are already interrupted by existing industrial and urban features (freeway), the Initial Study determined a less than significant impact and threshold 1 is discussed no further in this EIR. The Initial Study states further that highways and streets in the vicinity are not designated as having scenic importance, and even if the views of hillsides and ridgelines from the streets are somewhat impaired, the project's effect would be less than significant. While the site does contain scattered trees and vegetation, the Initial Study determined it did not contain any significant protected-status trees, rock outcroppings, or historic buildings. The existing vegetation would not qualify as designated scenic resources and the landscape plan for the project more than compensates for the loss of existing, unmaintained or invasive vegetation. Threshold 2 is discussed no further in this EIR.

A brief discussion of thresholds 1 and 2 are presented in Section 4.15, *Impacts Found to be Less than Significant*. Development of the proposed project would change the existing visual character of the site and introduce new sources of light and glare. Therefore, impacts associated with thresholds 3 and 4 are analyzed below.

Project Design Features

The project design is contemporary with various accents, like arched openings. Residential and commercial buildings are massed in groupings situated at different angles to each other in such a way that the space between them is varied. The color pallet is neutral with soft white and various tones of beige and gray, in keeping with the surrounding development. These tones are enlivened by awnings in various shades, from "sun-dried tomato" to "country beige." The low-profile roofline will be finished in grey concrete roof tile and many wall surfaces and walkways will be treated with stone, tile, or other materials that blend with the color scheme and reflect the natural and built landscape. Mechanical equipment on rooftops would be concealed; no solar panels are included.

Residential Component

The 21 multi-family residential buildings would have varied facade treatments, including paint schemes that integrate with the natural landscape, surface finishes such as limestone that contrast with the stucco, and deep red or blue-green awnings over some of the windows to articulate the flat form of the buildings (Appendix M, Sheet AR-301). The three-story buildings would range in height from 34 to 44 feet from finished grade, with the residential unit counts ranging from 8 to 41 units per building. The roof shapes would vary slightly among buildings to articulate the top edge of the structures. In addition, the buildings would be arranged on the site such that their massing would break into smaller components arranged at slight angles around the complex (Appendix M, Sheet AR-102). Garages will be on the first floor with residential units above and will feature neutral doors that blend with the surrounding colors. As an added feature, the design includes murals on the sides of residential buildings, where appropriate, that reflect the history and culture of the area.

Commercial Component

The proposed architectural style of the eight commercial buildings is a contemporary design with dense infill. The single-story buildings would vary in height, ranging from 24 to 34 feet and allow for retail and restaurant tenants. Storefronts would feature complementary paint schemes, with attractive windows and window treatments to create a varied appearance.

Signage would be consistent with the character and scale of the buildings and add visual appeal to the businesses harmonious with the landscape (Figure 4.1-6). Directional signage would be designed and placed to encourage pedestrian traffic from nearby residences, the proposed hotels, and the RV parking lot. The project would include two 60 foot pylon signs, measured from the grade of the freeway, installed near SR 60 on the south side of the site and along the SR 60/I-215 Interchange ramp. The pylon sign design would include painted plaster and tile to match the commercial and hotel buildings with metal cladding on top and simple lettering to publicize the name of the project and six businesses. Individual business signs would be backlighted in a 25-foot portion at the top half of the pylon to be visible from the freeways.

Visitor-Serving Component

The proposed hotels and the RV parking area would be located in the southeast corner of the project site, closest to SR 60 and farthest from the existing residential neighborhood to the north. Each hotel would be four-stories and up to 64 feet in height. The hotel massing and design would be in harmony with the rest of the project components, incorporating similar architectural styles, building materials, and color schemes.

The RV parking area would be situated in the southeasterly corner of the project site, nearest the SR 60/I-215 Interchange and along the area where the concrete-lined channel enters the project site. The RV parking area will be designed to accommodate 20 to 25 vehicles and includes a passenger vehicle parking area. It is flanked by large trees along the private entrance road from the residential area that will screen it from the view of potential residents in that part of the development. It will also have generous plantings around and between the parking places, and between the RV area and the adjacent hotel parking, to soften the built environment and provide visual interest the in-filled area.

Landscape Features

The landscape design includes 17 types of trees, more than 50 varieties of shrubs and ground cover, and dozens of accent plants, all of which are drought-tolerant and/or low-water varieties. The trees will frame the edges of the site and appear throughout the interior of the project, providing shade and visual interest in residential and commercial areas. The plantings between the commercial uses and Orange Street would provide shade for pedestrians and would visually interrupt any uniformity in the structures. Paved common spaces and parking areas would feature visually interesting paving options that correspond with the architecture and give the pedestrian walkways a sense of design. These spaces would include tree-lined walkways and regular tree plantings in and around the parking stalls, providing both visual appeal and cooling effects, while also intensifying forestation in the area.

Figure 4.1-6 Rendering of the Project Looking South Along Orange Street

Source: Architects Orange

Figure 4.1-7 Rendering of the Project Looking South at Sonic Court, near Existing Residences on Strong Street

Source: Architects Orange

Figure 4.1-8 Rendering of the Project Driving West on SR 60

Source: Architects Orange

Figure 4.1-9 Site Plan View from the Main Entrance Showing Residential, Commercial Units with Hotel in Background

Source: Architects Orange

b. Project Impacts and Mitigation Measures

Threshold 3:	Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Impact AES-1 DEVELOPMENT OF THE PROJECT WOULD ALTER THE VISUAL CHARACTER OF THE VACANT SUBJECT SITE BY INTRODUCING A CLUSTER OF MULTI-STORY BUILDINGS THAT DIFFER FROM THE SUBURBAN, INDUSTRIAL, AND COMMERCIAL FORMS ON ADJACENT PARCELS. WHILE THE CHANGE WOULD BE SUBSTANTIAL, THE EXISTING VISUAL CHARACTER AND QUALITY OF THE SITE AND ITS SURROUNDINGS WOULD NOT BE SUBSTANTIALLY DEGRADED BECAUSE OF PROJECT IMPLEMENTATION. THE PROPOSED BUILDINGS AND LANDSCAPING WOULD ADHERE TO THE CITY'S DESIGN GUIDELINES AND CONTRIBUTE TO THE CITY POLICIES RELATED TO AESTHETICS, BRINGING ABOUT AN IMPROVEMENT TO EXISTING UNMAINTAINED PARCELS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The site is an open field with low visual quality. In the foreground, foliage includes overgrown weeds, unmaintained or dead trees, trash, a concrete wash with graffiti, and remnants of structures removed during freeway construction. In the distance, the elevated highway and interchange interrupt the view of distant hillsides. Behind the freeway, the industrial structures form a near background that is inharmonious with the residential neighborhood near the project site. The project will change the site significantly from an undeveloped field to a dense urban-style development. Nevertheless, the following details the ways in which this change will not degrade the visual character and quality of the site and the immediate surroundings.

Residential Component

As detailed in Section 2, *Project Description*, the residential portion would be constructed on approximately half of the project site. The three-story multi-family buildings would situated below the grade of Strong Street and Cosmic Court and, in keeping with the City's Design Guidelines, they would be set back at least 80 feet from the adjacent single-family dwellings on Strong Street, separated by landscaping, parking places, and an interior access road. This would soften the visual mass of the new buildings so they do not overwhelm the existing single-story homes to the north. A six-foot block wall will be placed along the northern property boundary, providing a solid demarcation between the new development and the properties to the north, while providing a privacy screen between the properties and serving as a noise barrier (see Section 4.10, *Noise*). As an added feature, the design includes murals on the sides of residential buildings, where appropriate, in keeping with the City's Arts and Culture element that encourages the inclusion of art in public places for new development.

Commercial Component

The commercial structures, vehicle fueling station, and drive-thru restaurant would be located on the southwest corner of the project site. The size and scale of the buildings would relate to the overall height of the new residences and would include setbacks appropriate to accommodate sufficient landscaping and outdoor gathering areas. The commercial area design would comply with the City's Design Guidelines and would present cohesiveness with the other project components to offer an inviting, enjoyable shopping and dining environment for patrons. Signage on the storefronts and at the gas station/car wash would be implemented in compliance with City zoning regulations and Citywide Design Guidelines, and consistent with the character and scale of the buildings. These signs would be designed to add to the visual appeal of the businesses in harmony with the surrounding development. Directional signage would be designed and placed to encourage pedestrian traffic from nearby residences and the proposed hotels and RV parking lot.

Visitor-Serving Component

The proposed hotels and the RV parking area would be located in the southeast corner of the project site, closest to SR 60 and farthest from the existing residential neighborhood to the north. Each hotel would be four-stories and up to 64 feet in height. The hotel massing and design would be in harmony with the rest of the project components, incorporating similar architectural styles, building materials, and color schemes.

Two hotel buildings with associated parking would be located on approximately 20 percent of the project site, near the southeast corner. The proposed RV parking area would be located in the southeast corner of the project site, closest to the SR 60/I-215 Interchange and adjacent to the hotels. Although the hotels would be the largest and tallest on-site buildings, they would be situated approximately 400 feet from the existing, adjacent residential properties on Strong Street, to the north. Because intervening residential structures and landscaping will be taller than the existing residential buildings in the adjacent neighborhood, the hotels would visually register as backdrop or not be visible at all (See Figure 4.1-7). The proposed hotels would mediate between the proposed commercial component and the above-grade freeway interchange ramps in a way that would effectively eliminate the intrusion of the freeway from a majority of existing and proposed uses. Finally, while the University Wash/Thornton Storm Drain is currently the site of illegal dumping and graffiti, the majority of the concrete-lined channel that traverses the project site would be covered with parking and drive aisles to serve the commercial and hotel components, making it unavailable for trespass. It is assumed development would alleviate existing illegal use of the site by transients, and the trash accumulation and graffiti on the concrete-lined channel (Figure 4.1-3).

The RV parking area would be situated in the southeasterly corner of the project site, nearest the SR 60/I-215 Interchange, where the concrete-lined channel enters the project site. The area would be designed to accommodate 23 recreational vehicles and includes a passenger vehicle parking area It would be flanked by large trees along the private entrance road from the residential area that would screen it from the view of potential residents in that part of the development. It would also have generous plantings around and between the parking places and between the RV area and the adjacent hotel parking that would soften the built environment and provide visual interest in the in-filled area.

Landscape Features

Although the site is not maintained in its current state, it forms a provisional open space between the existing residential area and the freeway/industrial uses south and southeast of the Freeway. When implemented, the project would cover most of the site with structures, private access roads, and paved parking areas. To soften the effects of the coverage, the landscape design includes 17 types of trees, more than 50 varieties of shrubs and ground cover, and over a dozen types of accent plants, all of which are drought-tolerant and/or low-water varieties. The trees would frame the edges of the site and appear throughout the interior of the project, providing shade and visual interest in residential and commercial areas.

Paved common spaces and parking areas would feature visually interesting paving options that correspond with the architecture and give the pedestrian walkways a sense of design. Alongside these walkways, the proposed planting palette and planting density would contribute to the City’s goal to increase the urban forestation and the density of the proposed landscaping while providing shade and visual variety throughout the project site. The proposed landscape features would visually mediate between the different project components. In particular, the varieties planted at the residential edge would include a combination of shrubs, shade trees, and conifers at various heights that would break up the height and massing of the three-story residential structures when viewed from the existing neighborhood and the other proposed project components. The plantings between the commercial uses and Orange Street would provide shade for pedestrians and would visually interrupt any uniformity in the structures. Since the large parking lot south of the commercial buildings would be available for outdoor events, such as a farmers market, the landscape design in that area is particularly important as it would provide shade and a pleasant pedestrian environment. It would include tree-lined walkways and regular tree plantings in and around the parking stalls.

In addition to the setbacks and planted buffers, the pool areas would integrate waterfall or other styles of barrier walls to form visually integrated boundaries that also mitigate noise (See Section 4.10, Noise, for further discussion). The renderings in Figure 4.1-6 through Figure 4.1-9 illustrate how the proposed project would appear in the neighborhood context and how it would impact existing views from nearby roadways and neighborhoods.

Overall, development of the project would alter the visual character of the vacant subject site by introducing a cluster of multi-story buildings that differ from the adjacent urban and suburban forms. While the change would be substantial, the existing visual character and quality of the site and its surroundings would not be substantially degraded from project implementation. The proposed buildings and landscaping would adhere to the Citywide Design Guidelines and the City Zoning Code. They would contribute to implementation of the City policies related to aesthetics. Therefore, the project will have a less than significant impact to the visual character and quality of the site.

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

Threshold 4:	Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact AES-2 **THE PROJECT WOULD INTRODUCE NEW LIGHTING AND GLARE TO THE AREA. THE ADDITION OF COMMERCIAL AND RESIDENTIAL PROPERTIES WOULD GENERATE VEHICLE USE AND ASSOCIATED LIGHT AND GLARE, ALONG WITH STREET AND SECURITY LIGHTS, AND LIGHT EMITTED FROM BUILDINGS AND SIGNAGE. HOWEVER, THE PROJECT WOULD BE REQUIRED TO FOLLOW THE PERFORMANCE STANDARDS IN THE CITY ZONING CODE THAT REGULATE LIGHTING TO AVOID LIGHT AND GLARE IMPACTS, INCLUDING THOSE THAT PREVENT LIGHT SPILLAGE ONTO THE SURROUNDING PROPERTIES. IMPACTS WOULD BE LESS THAN SIGNIFICANT.**

Site illumination serves multiple functions. It enhances visibility and safety along roadways and other public spaces for vehicles, bicyclists, and pedestrians. It can also emphasize pathways, signage, focal points, gathering places, and building entrances. Implementation of the proposed project would create new light sources from interior and exterior illumination associated with the residential, commercial, hotel, and parking components of the development. If these light sources create substantial increases in ambient light levels and/or new sources of glare from direct or reflected visual exposure to the light source, then the project could have a significant impact related to light or glare.

Although the site itself is undeveloped and does not produce on-site sources of light or glare, it is in an urbanized area with an existing mix of uses that contribute to current light and glare levels. The primary sources of light and glare in the vicinity of the project site are those associated with vehicles traveling on Orange Street, SR 60, and I-215, and that generated by building-mounted lighting on existing residential, commercial, and institutional structures. Infrastructural lighting from the freeway interchange also spills onto the site.

The proposed project would introduce new sources of light from fixtures installed on pedestrian walkways, buildings, and in parking areas; the headlights of cars entering and leaving the site at night, the lighted signs, and building windows that emit light at night would also form new sources on the site. The proposed project would create new sources of light, particularly in the evening hours when interior lights would be on inside buildings.

The buildings closest to the adjacent residential neighborhood would also be residences, and they would likely have interior coverings (e.g., blinds, drapes, shutters) to keep the sun out during the day and to provide privacy at night. Any exterior lighting on the residences or in the parking area would meet the City of Riverside Zoning Code requirements for support structure height, intensity, flickering/flashing, placement, shielding, orientation, and style. The City may require an exterior lighting plan as a condition of project approval (City of Riverside Zoning Code, Chapter 19.566). The exterior facades of both residential and commercial structures would feature muted, earth-toned colors and non-reflective materials, reducing their capacity to reflect light. The commercial buildings could include accent and seasonal, festive light features, lighted outdoor dining areas, and storefront windows that would emit light, but these buildings would be setback substantially and buffered from the existing residential properties to the north by the proposed residential buildings. Therefore, overall levels of light generated by the new buildings and passing cars would be comparable to typical light levels in an urban environment.

New sources of glare would include windows of buildings and the metallic features and windows of parked cars, which could reflect sunlight during certain times of the day. The proposed residential buildings would be designed with a variety of recessed and canopied windows that would reduce the potential for reflected incident light or glare. The commercial buildings would be designed to include projections, overhangs, canopies, and recesses to provide sidewalk shading and reduce window light exposure and reflection. The five-foot north boundary wall between the homes in the existing residential neighborhood and the new development would block glare from cars driving or parked in the proposed residential development, as would the landscape features that shade parking areas. Again, overall levels of glare generated by the new buildings and cars would be comparable to expected levels of glare in an urban environment.

The proposed landscape design would reduce the effects of light and glare on the project site and on the area surrounding the project site. Proposed landscaping includes the planting of 25-foot trees that would be 40 to 80 feet when mature (e.g., California pepper tree, southern magnolia, and Canary Island pine [SFGate.com 2018, Arbor Day Foundation 2018]). These trees would moderate glare and light generated from the proposed development.

The site will comply with the City's Zoning Code requirements for lighting that supports safety in the project without excessive spillage to adjacent uses. The project will not result in a substantial new source of light or glare and impacts with regard to day or nighttime views in the vicinity of the project site will be less than significant.

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

4.1.3 Cumulative Impacts

Table 3-1 (Section 3, Environmental Setting) lists the cumulative projects in the vicinity of this project, including residential, warehouse, commercial, hotel, school, and recreational land uses. The projects in the immediate vicinity of the proposed project include two residential subdivisions with 19 dwelling units (3719 Strong Street and APN 276-060-003), a gas station and convenience store (2234 Main Street), a warehouse (4253 Fairgrounds Street), and a senior housing development (2450 Market Street).

As discussed under impacts AES-1 and AES-2, development of the project would alter the existing visual setting and introduce new light and glare, but it would not have a significant impact on the aesthetics of the site or its surroundings. Future projects would also be required to adhere to specific development standards pursuant to the City's Zoning Ordinance and General Plan designed to protect and enhance the area's aesthetic and visual resources. None of the cumulative projects are directly adjacent to or nearby the project site; therefore, no cumulative impacts are anticipated to occur with respect to light and glare or shade and shadow. Although over time, cumulative development may alter the visual character of this part of Riverside, all development, including the project, would be subject to the same policies and regulations, and therefore, cumulative impacts related to aesthetics would be less than significant.

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4.2 Air Quality

This section analyzes the effects of the proposed mixed-use project on air quality. It considers both the temporary impacts relating to construction activity and potential long-term impacts associated with project operation. The analysis is based on data and information in the Air Quality Impact Analysis (Appendix B), Air Toxic and Criteria Pollutant Health Risk Assessment (HRA, Appendix E), and Traffic Impact Analysis (TIA; Appendix L). Greenhouse gas (GHG) and climate change impacts are discussed in Section 4.7, *Greenhouse Gas Emissions*.

4.2.1 Setting

a. Existing Air Quality Setting

Local Climate and Meteorology

The project site is in the South Coast Air Basin (the Basin), which is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east; and the Riverside County/San Diego County border to the south. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, as well as the San Gorgonio Pass in Riverside County. The regional climate in the Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Air quality in the Basin is influenced primarily by meteorology and a wide range of emissions sources, such as dense population centers, substantial vehicular traffic, and industry.

Air pollutant emissions in the Basin are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are distributed widely and include sources such as painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles and other modes of transportation, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) has set primary national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), Particulate Matter (PM_{10}, $PM_{2.5)}$, and lead (Pb). Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established health-based ambient air quality standards (CAAQS) for these and other pollutants, some of which are more stringent than federal standards. Table 4.2-1 lists the current federal and state standards for regulated pollutants.

Table 4.2-1 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	California Standard
Ozone	1-Hour	–	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.030 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	Annual	–	–
	24-Hour	–	0.04 ppm
	1-Hour	0.075 ppm	0.25 ppm
PM_{10}	Annual	–	20 µg/m^3
	24-Hour	150 µg/m^3	50 µg/m^3
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3
	24-Hour	35 µg/m^3	–
Lead	30-Day Average	–	1.5 µg/m^3
	3-Month Average	0.15 µg/m^3	–

ppm = parts per million
µg/m^3 = micrograms per cubic meter
Source: California Air Resource Board (CARB) 2016a

Air Pollutants of Primary Concern

The federal and state clean air acts mandate the control and reduction of certain air pollutants. Under these laws, USEPA and CARB have established ambient air quality standards for certain "criteria" pollutants. Ambient air pollutant concentrations are affected by the rates and distributions of corresponding air pollutant emissions, and by the climate and topographic influences discussed above. Proximity to major sources is the primary determinant of concentrations of non-reactive pollutants, such as CO and suspended particulate matter. Ambient CO levels usually follow the spatial and temporal distributions of vehicular traffic closely. A discussion of each primary criterion pollutant is provided below.

Ozone

Ozone (O_3) is produced by a photochemical reaction (i.e., triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG).[1] NO_X is formed during the combustion of fuels, while

[1] Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, two groups are important from an air quality perspective: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC). SCAQMD uses the term VOC to denote organic precursors.

reactive organic gases are formed during combustion and evaporation of organic solvents. Because O_3 requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. O_3 is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to O_3 include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas and causes a number of health problems including fatigue, headache, confusion, and dizziness. The incomplete combustion of petroleum fuels in on-road vehicles and at power plants is a major cause of CO. CO is also produced during the winter from wood stoves and fireplaces. CO tends to dissipate rapidly into the atmosphere; consequently, violations of the state CO standards are associated generally with major roadway intersections during peak-hour traffic conditions.

Localized CO "hotspots" can occur at intersections with heavy peak-hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high that the local CO concentration exceeds the NAAQS of 35.0 ppm or the CAAQS of 20.0 ppm.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. Nitric oxide is the principal form of nitrogen oxide produced by combustion, but nitric oxide reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis may occur in young children at concentrations below 0.3 ppm. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulate Matter

Suspended particulate matter (PM_{10}) is particulate matter measuring no more than 10 microns in diameter; $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates, and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads, and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates (those 2.5 microns and below) can be very different. The small particulates generally come from windblown dust and dust kicked up by mobile sources. The fine particulates are generally associated with combustion processes, and form in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Toxic Air Contaminants

The California Health and Safety Code defines a toxic air contaminant (TAC) as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines. According to CARB, diesel engine emissions are believed to be responsible for about 70 percent of California's estimated known cancer risk attributable to TACs and they make up about 8 percent of outdoor $PM_{2.5}$ (CARB 2016b).

Lead

Lead (Pb) is a metal found in the environment and in manufacturing products. The major sources of Pb emissions historically have been mobile and industrial sources. In the early 1970s, the USEPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA completed the ban prohibiting the use of leaded gasoline in highway vehicles in December 1995. As a result of the USEPA's regulatory efforts to remove lead from gasoline, atmospheric lead concentrations have declined substantially over the past several decades. The most dramatic reductions in lead emissions occurred prior to 1990 due to the removal of lead from gasoline sold for most highway vehicles. Lead emissions were further reduced substantially between 1990 and 2008, with reductions occurring in the metals industries at least in part as a result of national emissions standards for hazardous air pollutants (USEPA 2013). Because of phasing out leaded gasoline, metal processing is now the primary source of lead emissions. The highest level of lead in the air is found generally near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers.

Current Ambient Air Quality

The South Coast Air Quality Management District (SCAQMD) is the designated air quality control agency for the Basin. The Basin is designated as a nonattainment area for the federal and state one-hour and eight-hour ozone standards, the state PM_{10} standards, the federal 24-hour $PM_{2.5}$ standard, and the federal and state annual $PM_{2.5}$ standard. The Basin is in attainment of all other federal and state standards (CARB 2017a).

The SCAQMD operates a network of air quality monitoring stations throughout the Basin that measure ambient concentrations of pollutants and determine whether ambient air quality meets the federal and California standards. The monitoring station closest to the proposed project site is the Riverside-Rubidoux monitoring station; it is located at 5888 Mission Boulevard in the City of Riverside, approximately three miles west of the project site. Table 4.2-2 indicates the number of days each of the standards was exceeded at the Riverside-Rubidoux station for years in which data is available.

Table 4.2-2 Ambient Air Quality at the Riverside – Rubidoux Monitoring Station

Pollutant	2015[1]	2016[2]	2017[2]
8-Hour Ozone (ppm), 8-Hr Maximum[1]	0.105	0.104	0.078
Number of Days of State exceedances (>0.070)	55	69	81
Number of days of Federal exceedances (>0.070)	55	69	81
Ozone (ppm), Worst Hour[1]	0.132	0.142	0.145
Number of days of State exceedances (>0.09 ppm)	31	33	47
Number of days of Federal exceedances (>0.112 ppm)	1	1	2
Nitrogen Dioxide (ppm) - Worst Hour[2]	57.4	73.1	63.0
Number of days of State exceedances (>0.18 ppm)	0	0	0
Number of days of Federal exceedances (0.10 ppm)	0	0	0
Particulate Matter 10 microns, $\mu g/m^3$, Worst 24 Hours[3]	69.0	84.0	92.0
Number of days above Federal standard (>150 $\mu g/m^3$)	0	0	0
Particulate Matter <2.5 microns, $\mu g/m^3$, Worst 24 Hours[2]	54.7	51.5	50.3
Number of days above Federal standard (>35 $\mu g/m^3$)	9	5	7

Source: CARB 2018a

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with a margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14, the elderly over 65, persons engaged in strenuous work or exercise, and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are, therefore, schools, hospitals, and residences.

The nearest sensitive receptors to the proposed project site are single-family residences and Calvary Baptist Church along Strong Street, directly adjacent the project site along the northern boundary. The closest receptors are approximately 16 feet from the project boundary. The next closest receptors include Fremont Elementary School and single-family residences approximately 70 feet west, across Orange Street, and single-family residences approximately 415 feet east across Interstate 215 (I-215).

b. Regulatory Setting

Federal

As discussed in more detail below, federal and state governments have been empowered by the federal and state clean air acts to regulate the emission of airborne pollutants and have established ambient air quality standards for the protection of public health. The USEPA is the federal agency designated to administer air quality regulation, and CARB is the state equivalent under the California Environmental Protection Agency (CalEPA). County-level air pollution control districts and air quality management districts provide local management of air quality. CARB establishes air quality standards and is responsible for control of mobile emission sources; the local air pollution control districts are responsible for enforcing standards and regulating stationary sources. CARB has established 14 air basins statewide.

Federal Clean Air Act

The USEPA is charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), passed in 1963 by the U.S. Congress and amended several times. The 1970 federal CAA amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including non-attainment requirements for areas not meeting NAAQS and the Prevention of Significant Deterioration program. The 1990 federal CAA amendments represent the latest in a series of federal efforts to regulate air quality in the United States. The federal CAA allows states to adopt more stringent standards or to include additional pollution species.

National Ambient Air Quality Standards

The federal CAA requires USEPA to establish primary and secondary NAAQS for a number of criteria air pollutants. The air pollutants for which standards have been established are considered the most prevalent air pollutants known to be hazardous to human health. NAAQS have been established for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb.

State

California Clean Air Act

The California CAA, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. CARB is the state air pollution control agency and is a part of CalEPA. CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California, and for implementing the requirements of the California CAA. CARB overseas local district compliance with federal and California laws, approves local air quality plans, submits the state implementation plans to the USEPA, monitors air quality, determines and updates area designations and maps, and sets emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

California Ambient Air Quality Standards

The California CAA requires CARB to establish CAAQS. Similar to the NAAQS, CAAQS have been established for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, Pb, vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. In most cases, the CAAQS are more stringent than the NAAQS. The California CAA requires all local air districts to endeavor to achieve and maintain the CAAQS by the earliest practical date. The California CAA specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Assembly Bill 1493

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (Pavley), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of CAA preemption to California for its GHG standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as “LEV (Low Emission Vehicle) III GHG” will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels.

Regional and Local

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a regional planning agency that serves as a forum for regional issues relating to transportation, economics, community development, and environmental issues. SCAG is not an air quality management agency, but it is responsible for development transportation, land use, and energy conservation measures that impact air quality. SCAG’s Regional Comprehensive Plan and Guide provide growth forecasts used by SCAQMD to develop air quality and land use strategies (SCAG 2008). SCAG is charged with developing and implementing Senate Bill 375, a measure that addresses greenhouse gas reduction in the state, with participation from Riverside County and the other cities and counties that make up SCAG.

South Coast Air Quality Management District Air Quality Management Plan

The SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-compliance. The District’s Air Quality Management Plan (AQMP) is updated every three years, and each update has a 20-year horizon. The 2016 AQMP was adopted on March 3, 2017 and incorporated new scientific data and notable regulatory actions that have come about since adoption of the 2012 AQMP, including the approval of the new federal eight-hour ozone standard of 0.070 ppm that was finalized in 2015 (SCAQMD 2017).

The 2016 AQMP addresses several federal and state planning requirements and incorporates new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and updated meteorological air quality models (SCAQMD 2017). The 2017 AQMP builds upon the approaches taken in the 2012 AQMP for the attainment of federal particulate matter and ozone standards, and highlights the significant reductions to be achieved. It emphasizes the need for interagency planning to identify strategies to achieve reductions within the timeframes allowed under the federal CAA, especially in the area of mobile sources. The 2016 AQMP also includes a discussion of emerging issues and opportunities, such as fugitive toxic particulate emissions, zero-emission mobile source control strategies, and the interacting dynamics among climate, energy, and air pollution. The Plan includes attainment demonstrations of the new federal eight-hour ozone standard and vehicle miles travelled emissions offsets, according to recent USEPA requirements.

City of Riverside General Plan 2025

The City of Riverside recognizes the importance of air quality to public health and safety, as well as its contribution to the City’s economic well-being and image in the region. The City, therefore, included an Air Quality Element in its General Plan 2025 to address public health and welfare. The element identifies the role the City can play in achieving federal and state air quality standards. A number of objectives and policies aim at reducing pollutant emissions, ensuring compliance with air quality standards, and protecting sensitive receptors from unnecessary exposure to TACs. Air Quality Element Objectives and Policies relevant to the proposed project include the following:

Objective AQ-1: Adopt land use policies that site polluting facilities away from sensitive receptors and vice versa; improve job-housing balance; reduce vehicle miles traveled and length of work trips; and improve the flow of traffic

Policy AQ-1.3: Separate, buffer and protect sensitive receptors from significant sources of pollution to the greatest extent possible

Policy AQ-1.5: Encourage infill development projects within urbanized areas, which include job centers and transportation nodes.

Policy AQ-1.6: Provide a mechanism to create opportunities for mixed-use development that allows the integration of retail, office, institutional and residential uses for the purpose of reducing costs of infrastructure construction and maximizing the use of land.

Policy AQ-1.7: Support appropriate planned residential developments and infill housing, which reduce vehicle trips.

Policy AQ-1.12: Support mixed-use land use patterns, but avoid placing residential and other sensitive receptors in close proximity to businesses that emit toxic air contaminants to the greatest extent possible. Encourage community centers that promote community self-sufficiency and containment and discourage automobile dependency.

Policy AQ-1.16: Design safe and efficient vehicular access to commercial land uses from arterial streets to ensure efficient vehicular ingress and egress.

Policy AQ-1.18: New residential subdivisions shall be designed to encourage "walkable" neighborhoods with pedestrian walkways and bicycle paths to facilitate pedestrian travel.

Policy AQ-1.19: Require future commercial areas to foster pedestrian circulation through the land use entitlement process and/or business regulation.

Objective AQ-2: Reduce air pollution by reducing emissions from mobile sources.

Policy AQ-2.17: Encourage, and to the extent possible, require through the land use entitlement or business regulation process, business owners to schedule deliveries at off-peak traffic periods.

Policy AQ-2.22: Monitor traffic and congestion to determine when and where the City needs new transportation facilities to achieve increased mobility efficiency.

Policy AQ-2.25: Support the development of alternative fuel infrastructure that is publicly accessible.

Objective AQ-3: Prevent and reduce pollution from stationary sources, including point sources (such as power plants and refinery boilers) and area sources (including small emission sources such as residential water heaters and architectural coatings).

Policy AQ-3.3: Support SCAQMD's efforts to require stationary air pollution sources, such as gasoline stations, restaurants with charbroilers and deep fat fryers, to comply with or exceed applicable SCAQMD rules and control measures.

Policy AQ-3.4: Require projects to mitigate, to the extent feasible, anticipated emissions which exceed AQMP Guidelines.

Policy AQ-3.5: Consider ordinances and/or voluntary incentive programs that encourage residential builders to go above and beyond State codes to conserve energy and reduce air pollution.

Policy AQ-3.6: Support "green" building codes that require air conditioning/filtration installation, upgrades or improvements for all buildings, but particularly for those associated with sensitive receptors.

Objective AQ-4: Reduce particulate matter, as defined by the Environmental Protection Agency, as either airborne photochemical precipitates or windborne dust.

Policy AQ-4.1: Identify and monitor sources, enforce existing regulations and promote stronger controls to reduce particulate matter (e.g., require clean fuels for street sweepers and trash trucks, exceed the AQMD requirements for fleet rules).

Policy AQ-4.2: Reduce particulate matter from agriculture (e.g., require use of clean non-diesel equipment and particulate traps), construction, demolition, debris hauling, street cleaning, utility maintenance, railroad rights-of-way and off-road vehicles to the extent possible, as provided in SCAQMD Rule 403.

Policy AQ-4.3: Support the reduction of all particulates potential sources.

Policy AQ-4.4: Support programs that reduce emissions from building materials and methods that generate excessive pollutants through incentives and/or regulations.

Policy AQ-4.5: Require the suspension of all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour.

Objective AQ-7: Support a regional approach to improving air quality through multi-jurisdictional cooperation.

Policy AQ-7.9: Adhere with Federal, State and regional air quality laws, specifically with Government Code Section 65850.2, which requires that each owner or authorized agent of a project indicate, on the development or building permit for the project, whether he/she will need to comply with the requirements for a permit for construction or modification from the SCAQMD.

Policy AQ-7.10: Incorporate, to the extent applicable and permitted by law, current and proposed AQMP measures.

4.2.2 Impact Analysis

a. Methodology

Air Quality

This air quality analysis conforms to the methodologies recommended in the SCAQMD's CEQA Air Quality Handbook (1993). The handbook includes thresholds for emissions associated with both construction and operation of a project. The proposed project's construction and operational emissions were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2.

CalEEMod uses project-specific information, including the proposed land uses, square footages of each use (e.g., residential, hotel, commercial, parking), and project location, to estimate construction and operational emissions from new development. Project construction primarily generates diesel emissions and dust. Construction emissions include those generated by construction equipment, such as excavators, graders, cranes, dump trucks, loaders, backhoes, and bulldozers, and emissions generated by off-site vehicle trips associated with construction, such as vender trips and worker travel to and from the project site. Emissions estimates assumed all construction equipment would be diesel-powered.

Operational emissions were also estimated using CalEEMod. Operational emissions include mobile source emissions, energy emissions, and area source emissions for the various on-site land uses proposed, which include apartments, hotels, multi-tenant commercial retail, high turnover (sit down) restaurant, fast food restaurant with drive thru, overnight RV park, convenience market with gas pumps, and parking lots. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of on-site development. Vehicle trip generation rates from the project were taken from The Exchange TIA (Appendix L). Trip length utilized CalEEMod distance assumptions based on associated land uses. Home-to-work trip lengths were 14.7 miles for the multi-family residences and commercial-to-work trip lengths were 16.6 miles for the other land uses of the project. Home to shop trip lengths were 5.9 for the multi-family residents and commercial to customer trips were 8.4 miles for all other land uses. Home to other trip lengths were 8.7 miles for the residential uses and commercial to non-work trips were 6.9 for all other land uses. Emissions attributed to energy use include natural gas consumed for space and water heating, as well as electricity. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coating.

Emissions for the proposed project were modeled based on the project description as detailed in Section 2, *Project Description*. Construction of the proposed project was assumed to be 21 months, pursuant to the applicant-provided construction schedule, with full operation anticipated to begin in 2023. Construction would involve site preparation, phased grading, building construction, paving and architectural coating. Demolition of the concrete stormwater channel would be required to install a concrete pipe. Preliminary earthwork investigations indicated site grading would result in site balancing that would deposit excavated materials elsewhere on the site. Therefore, the Air Quality study (Appendix B) did not include haul trips associated with hauling import or export material.

Health Risk Assessment

To assess the impact of emitted compounds on individuals who reside at the proposed apartment complex, air quality modeling utilizing the AMS/EPA Regulatory Model, AERMOD, was performed to assess the downwind extent of mobile source emissions located within a 0.25-mile radius of the project site. AERMOD's air dispersion algorithms are based upon planetary boundary layer turbulence structure and scaling concepts, including the treatment of surface and elevated sources in simple and complex terrain. The model utilizes the ARM2 protocol to perform the NOx to NO_2 conversion as recommended by the SCAQMD.

An evaluation of carcinogenic chemical risk was conducted based on guidance from the SCAQMD to provide cumulative risk estimates from near-field on-road sources that reflect anticipated exposures experienced at a given residential occupancy. To represent residential exposures, the assessment employed the USEPA's guidance to develop viable dose estimates based on reasonable maximum exposures.

An evaluation of the potential noncancerous effects of contaminant exposures was also conducted. Under the point estimate approach, adverse health effects were evaluated by comparing the concentration of each compound with the appropriate reference exposure level. Available reference exposure levels provided by Office of Environmental Health Hazard Assessment /CARB Approved Risk Assessment Health Values were considered in the HRA. All of these values and resources are referenced in the HRA, provided in Appendix E.

b. Regulatory Requirements

The project would comply with all regulatory standards applicable to air quality. In particular, the project would comply with 2016 California Green Building Code (CALGreen), SCAQMD Rule 403, and SCAQMD Rule 1113, and all other applicable provisions of the SCAQMD. Rules 403 and 1113 were included in the air quality analysis, and are discussed below. CALGreen standards include indoor water usage reduction, regulation of outdoor water usage, and construction waste reduction.

The grading phase would involve the greatest use of heavy equipment and would generate the most fugitive dust. For the purposes of construction emissions modeling, it was assumed that the project would comply with the SCAQMD Rule 403, which identifies measures to reduce fugitive dust and is required to be implemented at all construction sites in the Basin. Therefore, the following conditions would be required to reduce fugitive dust in compliance with SCAQMD Rule 403, and were included in CalEEMod for the site preparation and grading phases of construction.

1. **Minimization of Disturbance.** Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
2. **Soil Treatment.** Construction contractors should treat all graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved onsite roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day.
3. **Soil Stabilization.** Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials, shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
4. **No Grading During High Winds.** Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
5. **Street Sweeping.** Construction contractors should sweep all onsite driveways and adjacent streets and roads (Orange Street, Strong Street, and La Cadena Drive) at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

The architectural coating phase would involve the greatest release of ROG. The emissions modeling for the proposed project included the use of low-VOC paint (50 grams per liter for non-flat coatings) as required by SCAQMD Rule 1113.

c. Regional Thresholds

To determine whether a proposed project would have a significant impact to air quality, Appendix G of the CEQA Guidelines questions whether the project would:

1. Conflict with or obstruct implementation of the applicable air quality plan
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)
4. Expose sensitive receptors to substantial pollutant concentrations
5. Create objectionable odors affecting a substantial number of people

SCAQMD recommends the quantitative regional significance thresholds for temporary construction activities and long-term project operation in the Basin listed in Table 4.2-3 (SCAQMD 2015).

Table 4.2-3 SCAQMD Regional Air Quality Significance Thresholds

Construction Thresholds	Operational Thresholds
75 pounds per day of ROG	55 pounds per day of ROG
100 pounds per day of NO_X	55 pounds per day of NO_X
550 pounds per day of CO	550 pounds per day of CO
150 pounds per day of SO_X	150 pounds per day of SO_X
150 pounds per day of PM_{10}	150 pounds per day of PM_{10}
55 pounds per day of $PM_{2.5}$	55 pounds per day of $PM_{2.5}$

The SCAQMD recommends the quantitative air quality significance thresholds for TACs and for impacts to ambient air quality listed in Table 4.2-4.

Table 4.2-4 SCAQMD Air Quality Significance Thresholds

Pollutant/Type	Threshold
TACs	Incremental Cancer Risk $\geq$ 10 in one million Non-carcinogenic Index $\geq$ 1
PM_{10} and $PM_{2.5}$ - 24-hour	2.5 $\mu g/m^3$ (operation)
PM_{10} - Annual	1.0 $\mu g/m^3$
CO – 1 and 8-hour	SCAQMD is in attainment; impacts are significant if they cause or contribute to an exceedance of attainment standards of 20 ppm (1-hour) and 9 ppm (8-hour)
NO_2 – 1-hour	SCAQMD is in attainment; impacts are significant if they cause or contribute to an exceedance of the attainment standard of 0.18 ppm

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: HRA (Appendix E) and SCAQMD 2017

d. Localized Significance Thresholds

In addition to regional thresholds, the SCAQMD has developed Localized Significance Thresholds (LST) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), prepared to update the CEQA Air Quality Handbook. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), project size, and distance to the sensitive receptor. However, LSTs only apply to emissions within a fixed stationary location, including idling emissions during both project construction and operation. LSTs have been developed for NO_X, CO, PM_{10}, and $PM_{2.5}$. LSTs are not applicable to mobile sources such as cars on a roadway (SCAQMD 2009). As such, LSTs for operational emissions do not apply to operation of on-site development, as the majority of emissions would be generated by cars on the roadways.

LSTs have been developed for emissions in construction areas up to 5.0 acres in size. The SCAQMD provides LST threshold lookup tables for project sites that measure one, two, or five acres. The proposed project would involve a maximum daily disturbance of 3.5 acres per day for site preparation and 4 acres per day for grading. Therefore, the maximum daily disturbance would be less than 5.0 acres. A linear regression was used to determine the 3.5 acre and 4.0 acre values from the SCAQMD LSTs. The thresholds vary depending on the location of the project or SRA. The project site is in SRA 23, Metropolitan Riverside County. LSTs are provided for receptors at a distance of 82 to 1,640 feet (25, 50, 100, 200, and 500 meters) from a project site boundary. The closest sensitive receptors to the proposed project site are single-family residences approximately 16 feet north of the project boundary. Therefore, LSTs for receptors less than 82 feet from the project boundary was used for the LST threshold analysis, consistent with SCAQMD guidance (SCAQMD 2009). The derived LSTs for site preparation and grading construction in SRA 23 for receptors less than 82 feet are shown in Table 4.2-5.

Table 4.2-5 SCAQMD LSTs for Construction in SRA-23 with Sensitive Receptors Less than 25 meters

Pollutant	3.5-acre Site Preparation Allowable Emissions (lbs/day)	4-acre Grading Allowable Emissions (lbs/day)
Gradual conversion of NO_X to NO_2	220	237
CO	1,230	1,346
PM_{10}	10	11
$PM_{2.5}$	6	7

Source: Air Quality Report, Appendix B, SCAQMD 2009

e. Project Impacts and Mitigation Measures

Threshold 1:	Would the project conflict with or obstruct implementation of the applicable air quality plan?

Impact AQ-1 THE PROPOSED PROJECT WOULD GENERATE NEW HOUSING AND EMPLOYMENT OPPORTUNITIES THAT COULD CONTRIBUTE TO ADDITIONAL POPULATION GROWTH. THE ANTICIPATED INCREASE IN POPULATION WOULD NOT EXCEED GROWTH FORECASTS USED IN THE DEVELOPMENT OF THE AIR QUALITY MANAGEMENT PLAN (AQMP). HOWEVER, THE PROJECT WOULD GENERATE NO_X EMISSIONS THAT EXCEED THRESHOLDS AND COULD RESULT IN AN INCREASE IN AIR QUALITY VIOLATIONS, WHICH WOULD CONFLICT WITH THE AQMP. BECAUSE THERE ARE NO FEASIBLE MITIGATION MEASURES TO REDUCE NO_X, EMISSIONS, THE PROJECT COULD CONFLICT WITH IMPLEMENTATION OF THE AQMP AND IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

A project could be inconsistent with the AQMP if it would generate a considerable increase in regional air quality violations and affect the region's attainment of air quality standards, or if it would generate population, housing, or employment growth exceeding forecasts used in the development of the AQMP. The 2016 AQMP incorporates local city general plans and the SCAG's 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) socioeconomic forecast projections of regional population, housing, and employment growth, including those for the City of Riverside.

The project would involve the development of apartments, hotels, multi-tenant commercial retail, high turnover (sit down) restaurant, fast food restaurant with drive thru, overnight RV park, convenience market with gas pumps, and parking lots. These uses could cause increases in the City of Riverside's population. New employment opportunities related to the commercial and visitor-serving uses would likely pull from the existing labor force in the City, but it is possible the jobs would draw new residents to the area, contributing to population growth in the City.

SCAG's 2016 RTP/SCS estimated employment in Riverside to be 742,000 in 2015. The jobs are estimated to grow to 1,174,500 in the City by 2040, which would be an 11 percent increase from 2015 (SCAG 2016). Using SCAG's estimated employee density for Riverside, the proposed project would create approximately 115 jobs (Table 4.2-6). This represents less than 0.1 percent[2] of the anticipated employment growth in the Riverside region and is within SCAG's estimated growth forecasts.

Table 4.2-6 Commercial Employee Generation Rates

Land Use	Employees per Square Foot	Proposed Square Footage	Total Employees
Other Retail/ Services	1/629 sf	49,000	78
Hotels	1/3,476 sf	130,000	37
Total			115

Source: Table 10A (SCAG 2001).

[2] 115 project jobs / 432,500 anticipated job growth = <0.1 percent of total anticipated job growth

According to data provided by the California Department of Finance, the population of the City of Riverside as of January 2018 was 325,860 persons. Based on an average household size of 3.18, the project could generate approximately 1,532 new residents. In addition, indirect population growth would occur from the commercial uses of the project, assuming all new employees relocated to the Riverside. Based on this household size and assuming all employees and families relocated to the Riverside, the commercial uses would add 365 persons to the City's population. Combined with the residential use, the project could add 1,897 new people to the City. According to SCAG's 2016 RTP/SCS, the City of Riverside is estimated to be 386,600 by 2040, an increase of 60,740 persons over the current population (SCAG 2016). The population increase from the project represents 2.8 percent[3] of this anticipated population growth of the City through 2040.

The regional growth forecasts used in the AQMP are derived partially from land use designations in local general plans. The proposed project site has two land use designations: O- Office and MDR – Medium Density Residential (City of Riverside 2007a, Figure LU-10). Under the current land use designations, the project site could yield approximately 827 new residents[4] at full development. This was the assumption used to forecast growth in SCAG's 2016 RTP/SCS. However, the project is proposing to change the existing land uses of the site to MU-U – Mixed Use Urban and C – Commercial (proposed vehicle fueling station). Under the proposed land use designation, the project site could yield approximately 1,897 new residents and employees. The proposed change in land use designations would allow for residential and commercial densities greater than the current underlying designation by 1,070 people, a 77 percent change in the assumptions used for the site in the 2016-2040 RTP/SCS. This would increase the population more than was assumed under the AQMP, but the difference in population growth between development under the existing land use and the proposed project represents less than two percent[5] change in the estimated population growth in the region. Moreover, the project would not cause the area to exceed growth forecasts.

While the project would not generate housing or population growth which would exceed growth forecasts in the area, as discussed under Impact AQ-3, the project would result in a significant and unavoidable impact associated with operational NO_x emissions. Implementation of Mitigation Measures AQ-3 and AQ-4 would reduce emissions to the extent feasible, but not to a level of less than significant due to the inability to regulate tailpipe emissions from vehicle trips generated by the project. Because the project would exceed SCAQMD thresholds for NO_x emissions during operation of the project, the project could result in an increase in frequency or severity of existing air quality violations or contribute to new violations and conflict with the AQMP. Therefore, the project would conflict with the AQMP and impacts would be significant and unavoidable.

Mitigation Measures

Implementation of mitigation measures AQ-3 and AQ-4 would reduce operational NO_x emission impacts to the maximum extent feasible by incorporating additional conservation measures and ensuring compliance with CalGreen and Title 24 requirements.

Significant After Mitigation

The project would still exceed daily maximum thresholds for NO_x emissions by 128.7 pounds per day as detailed in Impact AQ-3. Operational-related regional emissions cannot be reduced to below

[3] 1,897 project residents / 60,740 anticipated population growth = 2.8 percent of total anticipated population growth
[4] Current land use designation density would allow for up to 260 residential units. 260 units x 3.18 residents per unit = 827 residents
[5] 1,070 change in project residents / 60,740 anticipated population growth = 1.8 percent difference in anticipated population growth

SCAQMD thresholds for NO_x and therefore, impacts are considered to be significant and unavoidable.

Threshold 2:	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact AQ-2 **CONSTRUCTION OF THE PROPOSED PROJECT WOULD RESULT IN THE TEMPORARY GENERATION OF AIR POLLUTANTS THAT WOULD AFFECT LOCAL AIR QUALITY. MITIGATION WOULD BE REQUIRED TO REDUCE SHORT-TERM EMISSIONS OF ROG DURING THE CONSTRUCTION PHASE AND REDUCE MAXIMUM DAILY EMISSIONS OF PM10 AND PM2.5 DURING SITE PREPARATION. THIS IMPACT IS LESS THAN SIGNIFICANT WITH MITIGATION.**

Construction Emissions

Construction emissions are referred to generally as temporary impacts of a project, but they have the potential to represent a significant impact with respect to air quality. Fugitive dust emissions are among the pollutants of greatest concern with respect to construction activities. Emissions from construction activities can lead to adverse health effects and nuisance concerns, such as reduced visibility and soiling of exposed surfaces. General site grading operations are the primary sources of fugitive dust emissions. However, these emissions can vary greatly, depending on the level of activity, the specific operations taking place, the number and type of equipment operated, vehicle speeds, local soil conditions, weather conditions, and the amount of earth disturbance from site grading and excavation.

Emissions of ozone precursors NO_X and ROG are generated during the operation of off-road construction equipment and sources, such as construction worker vehicles and vendor trips. As mentioned under methodology, no haul trips were included in the construction emissions estimation as grading activities would result in site balancing, and the import or export of materials would be unnecessary.

Emissions vary depending on the type and number of construction-related equipment. Table 4.2-7 provides the CalEEMod results for the project from the Air Quality Impact Analysis, and summarizes the estimated maximum daily construction emissions each year during the construction period. Each year includes the estimated emissions from all construction-related activities expected to occur. Site preparation and grading would only occur during 2020, building construction would occur during all three years, and paving and architectural coating would occur during only during 2022. These results include compliance with SCAQMD Rule 403 and 1113, but do not include additional mitigation.

Table 4.2-7 Estimated Construction Emissions without Mitigation

Construction Year	Maximum Emissions[1] (lbs/day)					
	ROG	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
2020 Maximum	7.8	0.2	63.8	48.4	11.8	6.6
2021 Maximum	7.2	0.2	55.9	45.3	11.5	4.1
2022 Maximum	97.0	0.2	63.8	64.4	13.9	5.1
Maximum	**97.0**	**0.2**	**63.8**	**64.4**	**13.9**	**5.1**
SCAQMD Regional Thresholds	75	150	100	550	150	55
Threshold Exceeded?	Yes	No	No	No	No	No

[1]Grading phases incorporate anticipated emissions reductions, which are required by SCAQMD Rule 403 to reduce fugitive dust. The architectural coating phases incorporate anticipated emissions reductions, which are required by Rule 1113.

Source: Air Quality Study, Appendix B

Project construction emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ would not exceed SCAQMD thresholds, assuming adherence to SCAQMD Rule 403 and 1113. However, maximum daily emissions of ROG generated during the architectural coating phase, would be approximately 97.0 during construction in 2022, which would exceed SCAQMD thresholds and result in a potentially significant impact. Therefore, mitigation would be required to reduce maximum daily ROG emissions to below threshold levels through the use of “Super-Compliant” low VOC paints.

Localized Significance Thresholds

The SCAQMD developed LSTs to address concerns about exposure of individuals to criteria pollutants in communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor. The sensitive receptors nearest the project site are single-family residences, Calvary Baptist Church, and Fremont Elementary School. The nearest receptor, a single-family residence, is approximately 16 feet north of the project boundary. Consistent with SCAQMD LST methodology, a 25-meter receptor distance was utilized in the air quality analysis.

In determining the applicable LST thresholds, the air quality analysis used a maximum daily disturbed-acreage calculation of 3.5 acres per day for site preparation and 4 acres per day for grading. Since the maximum daily disturbed-acreage would be less than five acres, the SCAQMD screening look-up tables were used. A linear regression was used to extrapolate the 3.5-acre and 4-acre values from the SCAQMD thresholds at 1 acre, 2 acres, and 5 acres. Table 4.2-8 compares the maximum daily onsite emissions during construction to the SCAQMD LST thresholds. These results include assumed compliance with SCAQMD Rule 403, but do not include additional mitigation.

Table 4.2-8 LST Site Preparation and Grading Emissions Analysis without Mitigation

Construction Phase	Maximum Emissions[1] (lbs/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Site Preparation Emissions				
Maximum Daily Onsite Emissions	63.8	22.4	10.7	6.5
SCAQMD LSTs	220	1,230	10	6
Threshold Exceeded?	No	No	Yes	Yes
Grading Emissions				
Maximum Daily Onsite Emissions	60.9	32.4	6.3	3.7
SCAQMD LSTs[2]	237	1,346	11	7
Threshold Exceeded?	No	No	No	No

[1] Grading phases incorporate anticipated emissions reductions, which are required by SCAQMD Rule 403 to reduce fugitive dust.
[2] Thresholds were derived using a regression from the amount of site preparation and grading that would occur, consistent with SCAQMD guidance. A 25-meter receptor distance was used for LSTs.
Source: Air Quality Study, Appendix B

PM_{10} and $PM_{2.5}$ emissions would be approximately 10.66 and 6.53, which would exceed the maximum daily LST during site preparation activities. Therefore, mitigation would be required to reduce maximum daily PM_{10} and $PM_{2.5}$ emissions to below threshold levels. During site preparation and grading activity, mitigation measure would require watering the project site at two-hour watering intervals (i.e., four times per day) or a movable sprinkler system would be required to ensure soil moisture is maintained for actively graded areas.

Mitigation Measures

Implementation of mitigation measures AQ-1 and AQ-2 would be required to reduce emissions of VOC from paints and PM_{10} and PM $_{2.5}$ during project construction.

AQ-1 Super-Compliant Low VOC Paints

During the architectural coating phase of construction, the project shall utilize “Super-Compliant” low VOC paints formulated to exceed the regulatory VOC limits put forth by SCAQMD Rule 1113. Super-Compliant low VOC paints shall contain no more than 10 grams of VOC per liter. Alternatively, the applicant may utilize tilt-up concrete panels that do not require architectural coatings.

AQ-2 Site Preparation and Grading Watering

During site preparation and grading activity phases of construction, all actively graded areas shall be watered at two-hour watering intervals (i.e., four times per day) or a movable sprinkler system shall be in place to ensure a minimum soil moisture of 12 percent is maintained. Moisture content shall be verified with the use of a moisture probe by the grading contractor four times per day during grading activities.

Significance After Mitigation

With the implementation of Mitigation Measures AQ-1, the project would reduce ROG emissions during construction to less than significant levels as seen in Table 4.2-9.

Table 4.2-9 Estimated Construction Emissions with Mitigation

	Maximum Emissions[1] (lbs/day)					
Construction Year	ROG	SO_x	NO_x	CO	PM_{10}	$PM_{2.5}$
2020 Maximum	7.8	0.2	63.8	48.4	11.8	5.3
2021 Maximum	7.2	0.2	55.9	45.3	11.5	4.1
2022 Maximum	70.1	0.2	63.8	64.4	13.9	5.1
Maximum	**70.1**	**0.2**	**63.8**	**64.4**	**13.9**	**5.1**
SCAQMD Regional Thresholds	75	150	100	550	150	55
Threshold Exceeded?	No	No	No	No	No	No

[1] Grading phases incorporate anticipated emissions reductions required by SCAQMD Rule 403 to reduce fugitive dust. The architectural coating phases incorporate anticipated emissions reductions required by Rule 1113.

Source: Air Quality Study, Appendix B

With the implementation of Mitigation Measure AQ-2, the project would reduce emissions of PM_{10} and $PM_{2.5}$ to less than significant levels as seen in Table 4.2-10.

Table 4.2-10 LST Site Preparation and Grading Emissions Analysis with Mitigation

	Maximum Emissions[1] (lbs/day)			
Construction Phase	NO_x	CO	PM_{10}	$PM_{2.5}$
Site Preparation Emissions				
Maximum Daily Onsite Emissions	63.8	22.4	8.0	5.2
SCAQMD LSTs[2]	220	1,230	10	6
Threshold Exceeded?	No	No	No	No
Grading Emissions				
Maximum Daily Onsite Emissions	60.9	32.4	5.0	3.2
SCAQMD LSTs[2]	237	1,346	11	7
Threshold Exceeded?	No	No	No	No

[1] Mitigated emissions incorporate anticipated emissions reductions required by SCAQMD Rule 403 as well as additional daily watering to reduce fugitive dust.

[2] Thresholds were derived using a regression from the amount of site preparation and grading that would occur, consistent with SCAQMD guidance. A 25-meter receptor distance was used for LSTs.

Source: Air Quality Study, Appendix B

Threshold 2:	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact AQ-3 OPERATIONAL EMISSIONS FROM THE PROJECT WOULD EXCEED SCAQMD THRESHOLDS FOR NOX FROM MOBILE SOURCES. IMPLEMENTATION OF MITIGATION MEASURES AQ-3 AND AQ-4 WOULD REDUCE IMPACTS TO THE MAXIMUM EXTENT FEASIBLE. SINCE NO FEASIBLE MITIGATION MEASURES EXIST TO CONTROL TAILPIPE EMISSIONS, IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Operational emissions are those associated with the general use of the project after construction. Operational emissions include mobile source emissions, energy emissions, and area source emissions for the various land uses proposed on the site. The increase in motor vehicle trips generated by the project would generate mobile source emissions. The TIA (Appendix L) provided vehicle trip generation rates from the project. Emissions attributed to energy use include natural gas consumption for space and water heating, as well as electricity. Area source emissions are generated by landscape maintenance equipment, consumer products, and architectural coating. Long-term air pollutant emissions are those associated with stationary sources and mobile sources. Operation of the proposed project would result in an increase in both stationary and mobile source emissions. Stationary source emissions would come from additional natural gas consumption and electrical demand by on-site buildings. Mobile source emissions would come from project-related vehicle trips.

Operational emissions of the proposed project would increase air pollutant emissions compared to the current, undeveloped state of the project site. Table 4.2-11 summarizes the increase in emissions associated with operation of the project. No reduction measures were included in the base CalEEMod model for operation of the proposed project.

Table 4.2-11 Estimated Project Operational Emissions without Mitigation

	Estimated Emissions (lbs/day)					
Sources	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X
Area	21.2	8.5	43.4	0.9	0.9	<0.1
Energy	1.0	9.2	6.9	0.7	0.7	<0.1
Mobile	24.6	168.8	212.6	61.5	16.9	0.90
Total Gross Emissions	**46.9**	**186.4**	**262.9**	**63.1**	**18.4**	**1.0**
SCAQMD Thresholds	55	55	550	150	55	150
Threshold Exceeded?	No	**Yes**	No	No	No	No

Note: numbers may not add up due to rounding. Emissions reported are from the higher of winter or summer modelling scenarios.
Source: Air Quality Study, Appendix B

The project would not exceed SCAQMD maximum daily emissions thresholds for ROG, CO, PM_{10}, $PM_{2.5}$ or SO_X. The project would exceed SCAQMD thresholds for NO_X by about 131 pounds per day. NO_x emissions from mobile sources (i.e., vehicle exhaust) represent 90 percent of the total gross NO_x emissions operation of the proposed project would create. If area and energy NO_x emissions were removed completely, the project would still exceed SCAQMD thresholds by 111.3 pounds per day from mobile emissions. Because neither the project proponent nor the lead agency has regulatory authority over tailpipe emissions, no feasible mitigation measures exist that would reduce NO_x emissions to less than significant levels. Therefore, the project would have significant impacts. The following mitigation would be required to reduce maximum daily NO_x emissions to the greatest extent feasible.

Mitigation Measures

Implementation of mitigation measures AQ-3 and AQ-4 would reduce operational emission impacts to the maximum extent feasible.

AQ-3 Exceedance of California Building Code Title 24

Prior to the issuance of building permits, the project applicant shall submit energy usage calculations to the City of Riverside Building Division showing that the project is designed to achieve a minimum five percent efficiency beyond the existing California Building Code Title 24 and Building and Safety Requirements. Examples of measures that reduce energy consumption include, but are not limited to, the following:

- Increase insulation such that hear transfer and thermal bridging is minimalized
- Limit air leakage through the structure and/or within the heating and cooling distribution system
- Use energy-efficient space heating and cooling equipment
- Install electrical hook-ups at loading dock areas
- Install dual-paned or other energy efficient windows
- Use interior and exterior energy-efficient lighting that exceeds current California Title 24 Energy Efficiency performance standards
- Install automatic devises to turn off lights where they are not needed;
- Apply a paint and surface color palette that emphasizes light and off-white colors to reflect heat away from buildings
- Design buildings with “cool roofs” using products certified by the Cool Roof Rating Council, and/or exposed roof surface using light off-white colors;
- Design buildings to accommodate photo-voltaic solar electricity systems or install photo-voltaic solar electricity systems
- Install ENERGY STAR-qualified, energy-efficient appliances, heating, and cooling systems, office equipment, and/or lighting products

The items listed above are not all required, but present examples of efficiency measures. Neither is the list all-inclusive; other features that reduce energy consumption could be acceptable at the discretion of the City Building Official.

AQ-4 Enhanced Water Conservation

Prior to the issuance of building permits, the project applicant shall prepare a Water Conservation Strategy and demonstrate a minimum 30 percent reduction in outdoor water use compared to baseline water demand. Baseline water demand is the total expected water demand without implementation of the Water Conservation Strategy. The project Water Conservation Strategy shall be subject to review and approval by the City. The project shall also implement the following:

- Install a landscaping palette emphasizing drought tolerant plants
- Use water-efficient irrigation techniques
- Implement USEPA Certified WaterSense-labeled or equivalent faucets, high-efficiency toilets, and water-conserving shower heads

Significance After Mitigation

Implementation of mitigation measures AQ-3 and AQ-4 would reduce the project's operational air quality impacts associated with the use of energy and water as seen in Table 4.2-12 below.

Table 4.2-12 Estimated Project Operational Emissions with Mitigation

	Estimated Emissions (lbs/day)					
Sources	**ROG**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_X**
Area	21.2	8.5	43.4	0.9	0.9	<0.1
Energy	1.0	8.9	6.7	0.7	0.7	<0.1
Mobile	24.4	166.4	204.70	58.5	16.0	0.9
Total Gross Emissions (lbs/day)	**46.6**	**183.7**	**254.8**	**60.0**	**17.6**	**1.0**
SCAQMD Thresholds	55	55	550	150	55	150
Threshold Exceeded?	No	**Yes**	No	No	No	No

Note: numbers may not add up due to rounding.
Source: Air Quality Study, Appendix B

With the incorporation of additional conservation measures and compliance with CalGreen and Title 24 requirements, the project's area and energy emissions would be reduced below thresholds, but the project would still exceed daily maximum thresholds for NO_x emissions by 128.7 pounds per day. Operational-related regional emissions cannot be reduced to below SCAQMD thresholds for NO_x and therefore, impacts are considered to be significant and unavoidable.

Threshold 3: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Impact AQ-4 **ALTHOUGH THE PROJECT WOULD INCREASE TRAFFIC ALONG LOCAL ROADWAYS, INCREASED PROJECT-RELATED TRAFFIC WOULD NOT RESULT IN THE CREATION OF CO HOTSPOTS; NEITHER WOULD THE PROJECT RESULT IN A CUMULATIVELY CONSIDERABLE INCREASE OF CRITERIA POLLUTANTS, INCLUDING THOSE DESIGNATED NON-ATTAINMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT.**

CO Hotspots

Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO, known as CO hotspots. A project's localized air quality impact is considered significant if CO emissions create a hotspot where either the California one-hour standard of 20 ppm or the federal and state eight-hour standard of 9.0 ppm is exceeded. This typically occurs at severely congested intersections (LOS E or worse). Pursuant to SCAQMD guidance, a CO hotspot analysis should be conducted for intersections where the project would have a significant impact at a signalized intersection, causing the LOS to change to E or F, or when the volume to capacity ratio increases by two percent or more as a result of a proposed project for intersections rated D or worse (SCAQMD 2003).

As discussed in Section 4.12, *Transportation and Traffic*, 17 intersections studied in the TIA (Appendix L). Under existing conditions, all intersections operate at LOS D or better during AM and PM peak hours, except for Orange Street and Oakley Avenue/State Route (SR) 60 westbound off-ramp (LOS E during PM peak hours), West La Cadena Drive and Interchange Street/I-215 southbound ramps (LOS E during PM peak hours), and East La Cadena Drive and I-215 northbound ramps (LOS F during AM and PM peak hours). As a result of project implementation, Orange Street and Strong Street intersection would operate at an unacceptable LOS (LOS E for PM peak hours) and Main Street and Strong Street would have a greater than 10 second delay during PM peak hours.

Under cumulative conditions, two intersections would exceed thresholds above projected cumulative conditions as a result of project generated traffic: Orange Street and Russell Street (LOS E AM peak hour and LOS F PM peak hour) and East La Cadena Drive and Colombia Avenue (LOS E AM peak hour). However, mitigation measures T-1 though T-11, detailed in Section 4.12, *Transportation and Traffic*, include the installation of a traffic signal, restriping, and constructing right and left turn lanes, and contributing their fair-share amounts for recommended improvements. Implementation of these measures would reduce impacts below thresholds.

The Bay Area Air Quality Management District (BAAQMD) has established a screening threshold that is used as an industry standard for determining significance. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour - or 24,000 vehicles per hour where vertical and/or horizontal air does not mix - to generate a significant CO impact (BAAQMD 2017). With project-generated traffic, the highest AM/PM trips would be on the La Cadena Drive and Columbia Avenue street segment, at 3,519 vehicles and 3,682 vehicles per hour, respectively (Air Quality Report Appendix B). Therefore, implementation of the proposed project would not produce the traffic volumes required to generate a CO hot spot in the context of BAAQMD screening thresholds, and localized air quality impacts related to CO hot spots would be less than significant.

Criteria Pollutant Exposure

Pollutant emissions are considered to have a significant effect if they result in concentrations that create a violation of an ambient air quality standard, contribute to an existing air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The existing air quality setting notes the Basin is designated a nonattainment area for the federal and state one-hour and eight-hour ozone standards, the state PM_{10} standards, the federal 24-hour $PM_{2.5}$ standard, and the federal and state annual $PM_{2.5}$ standard. For emissions that already exceed SCAQMD standards, established criteria exist to determine significance for pollutants. These standards were established to safeguard public health and welfare with specific emphasis on protecting individuals susceptible to respiratory distress. Table 4.2-13 shows the criteria pollutants used in the HRA analysis (Appendix E) and their estimated exposure concentrations.

Table 4.2-13 Estimated Criteria Pollutant Exposures

	Estimated Emissions					
Criteria Pollutants	PM_{10} – 24 hour	$PM_{2.5}$ – 24 hour	PM_{10} – annual	CO – 1 hour	CO – 9 hour	NO_2 – 1 hour
Project Emissions	0.6 μg/m^3	0.3 μg/m^3	0.6 μg/m^3	2.6 ppm	2.7 ppm	0.1
SCAQMD Thresholds	2.5 μg/m^3 (operation)	2.5 μg/m^3 (operation)	1.0 μg/m^3	Exceedance of 20 ppm	Exceedance of 9 ppm	Exceedance of 0.18 ppm
Threshold exceedance?	No	No	No	No	No	No

Note: numbers may not add up due to rounding.
ppm = parts per million
Source: HRA (Appendix E) and SCAQMD 2015f

PM_{10} concentrations for 24-hour and annual averaging times would not exceed SCAQMD thresholds, neither would $PM_{2.5}$ maximum 24-hour average concentration exceed thresholds, according to the HRA. The HRA determined the maximum modeled one-hour concentration for CO of 0.29 ppm when added to the existing concentration of 2.3 ppm, would total project concentrations of 2.59 ppm. This would not cause an exceedance of the CAAQS of 20 ppm. Eight-hour averages estimated maximum predicted concentrations of 0.25, which would equal a total project concentration of 2.65 ppm. This would not exceed the CAAQS of 9 ppm. For $NO_{2,}$ the estimated maximum one-hour concentration was 0.032 ppm. When added to a background concentration of 0.069 ppm, this amount would equal project concentrations of 0.10 ppm and would not exceed the CAAQS limit of 0.18 ppm. Therefore, the criteria pollutants would be within acceptable limits and would not result in a cumulative considerable net increase of a criteria pollutant that is currently in nonattainment, and impacts would be a less than significant.

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

Threshold 4:	Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-5 THE PROJECT WOULD EXPOSE SURROUNDING SENSITIVE RECEPTORS TO CONSTRUCTION DUST AND TOXIC AIR CONTAMINANTS, AND WOULD EXPOSE SENSITIVE RECEPTORS TO TACS FROM ADJACENT FREEWAYS. HOWEVER, CONSTRUCTION EMISSIONS AND TACS WOULD NOT EXCEED SCAQMD THRESHOLDS AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Implementation would result in emissions during project construction and operation. Construction of the proposed project would temporarily generate air pollutants that would affect local air quality and the surrounding residences, school, and church. Construction impacts would be reduced to less than significant with the incorporation of mitigation as discussed under Impact AQ-2. Operation emissions would exceed SCAQMD thresholds for NOx due to mobile source emissions and are discussed in Impact AQ-3.

Construction Dust

The nearest existing sensitive receptors to the area proposed for construction are the single-family residences along Strong Street and Fremont Elementary on Orange Street. As described under Impact AQ-2, with implementation of the proposed mitigation measures AQ-1 and AQ-2, project construction emissions of fugitive dust would not exceed SCAQMD LST daily thresholds.

Short-term Construction Toxic Air Contaminants

Exposure to concentrations of TACs was assessed based on the project's potential to result in increased exposure of sensitive receptors to TAC emission sources. The project could potentially expose the adjacent sensitive receptors to temporary health hazards associated with TACs from diesel particulate matter from the operation of construction equipment. High concentrations of diesel particulate matter from construction equipment have a chronic carcinogenic effect. As detailed in Impact AQ-2, construction emissions would not exceed SCAQMD thresholds, established to protect public health and air quality. Therefore, the health risk associated with construction emissions would be less than significant for the surrounding sensitive uses.

Operational Toxic Air Contaminants

High-volume TAC generators listed as potential health risk sources include the operation of commercial diesel engines and truck stops, landfills and incinerators, and chemical manufacturers. The proposed project includes the construction and operation of a gas station, identified in the ARB *Air Quality and Land Use Handbook* as a facility type that emits TACs, mainly benzene. CARB recommends avoiding the placement of large gasoline dispensing facilities (a facility with a throughput of 3.6 million gallons per year) within 300 feet of sensitive land uses, or constructing other, typical gasoline dispensing facilities (a facility with a throughput of less than 3.6 million gallons per year) within 50 feet of sensitive land uses, since health risks are drastically reduced with increasing fence line distance between the pollutant source and receptor (CARB 2005). The proposed gas station would be considered a typical gasoline facility; it would be located approximately 150 feet from Fremont Elementary School property line, 300 feet from the hardball recreational courts, and 500 feet from the nearest school building, which is also the nearest sensitive receptor. Therefore, operation of the proposed gas station would not expose residents in the vicinity to substantial pollutant concentrations. Furthermore, construction and operational emissions for the project (Table 4.2-13) would be below the SCAQMD's criteria pollutants screening level thresholds designed to protect public health.

An Air Toxic and Criteria Pollutant HRA was prepared to assess the possible health effects on future proposed residents associated with exposure to criteria pollutants and diesel particulate emissions from the adjacent SR 60 and I-215 freeways (Appendix E). The HRA was used to support the following impact analysis.

Carcinogenic Chemical Risk

Cancer risks are estimated as the probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specific duration of exposure. A risk level of one in a million implies the likelihood that up to one person out of one million equally exposed people would contract cancer when exposed continuously to the levels of toxic air contaminants over a specific duration of time. The USEPA has identified 19 compounds which elicit a carcinogenic risk. The SCAQMD significance threshold for carcinogenic chemical exposure risk is 10 in one million.

To determine the reasonable maximum exposure of on-site sensitive receptors, the HRA used air dispersion models consistent with USEPA recommendations and spatial distribution of mobile sources moving along the adjacent freeways. The modelling placed sensitive receptors across the entire residential portion of the project site, from those most adjacent to the freeway to those adjacent to Orange Street. Individual breathing rates, exposure frequency, and exposure duration were obtained using guidance from the Office of Environmental Health Hazard Assessment and SCAQMD. The carcinogenic RME to toxins from the adjacent freeways for residential receptors were calculated to be 8.06 in one million, which would not exceed the SCAQMD significance threshold of 10 in one million (HRA, Appendix E). Therefore, carcinogenic risk exposure would be within acceptable limits and impacts would be less than significant.

Non-Carcinogenic Exposures

The HRA included an evaluation of potential non-cancer effects of contaminant exposures using the hazard index approach recommended in the Office of Environmental Health Hazard Assessment guidelines for reviewing non-carcinogenic health impacts.

The SCAQMD non-carcinogenic threshold of one or less indicates that no adverse health effects are to be expected. The hazard index for each chronic non-carcinogenic toxicological endpoint totaled less than the threshold of 1.0 for all exposure scenarios, as shown in Table 4.2-14. The hazard index for each acute exposure also did not exceed the threshold of 1.0. Therefore, non-carcinogenic hazards would be within acceptable limits and impacts would be less than significant (HRA, Appendix E).

Table 4.2-14 Noncarcinogenic Acute Hazard Index

Toxicological Endpoints (Organ/Organ System)	Hazard Index		
	30-Year Exposure Scenario	1-Hour Exposure Scenario	8-Hour Exposure Scenario
Respiratory System	0.047	0.011	0.086
Central Peripheral Nervous System	0	0	0
Cardiovascular Blood System	0.063	0.019	0
Immune System	0	0.019	0
Kidney	0	0	0
Liver	0	0	0
Reproductive System	0.022	0.019	0.011
Eyes	0	0.021	0

Source: HRA, Appendix E

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

Threshold 5:	Would the project create objectionable odors affecting a substantial number of people.

Impact AQ-6 THE PROPOSED PROJECT DOES NOT CONTAIN LAND USES THAT ARE ASSOCIATED WITH ODOR COMPLAINTS AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The CARB *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) identifies land uses associated with odor complaints, typically including:

- Agricultural uses
- Auto body shops
- Manufacturing facilities
- Wastewater treatment plants
- Power plants
- Landfills
- Chemical plants
- Truck stops

The project would involve the construction of multi-family residential buildings, eight commercial buildings, two hotels, RV parking, and a vehicle fueling station. The project does not contain land uses typically associated with objectionable odors. The proposed operation of a convenience store, quick-serve restaurant, gas station, and drive-thru carwash are not typically associated with objectionable odors, although odors from gasoline product could be noticeable in the immediate vicinity of the site. The gas station would be located in the southwest corner of the project site, adjacent to the Orange Street/SR 60 off ramp and across Orange Street from existing commercial uses. The gas station would be approximately 330 feet from Fremont Elementary School and it is unlikely odors from the project would be distinguishable from existing sources of vehicle emissions associated with adjacent roadways and freeways near the project site. Furthermore, the project would be required to comply with CARB's Vapor Recovery Program to control vapor emissions that would reduce odor impacts (CARB 2018b). Therefore, operation of the project would not generate odors that would affect a substantial number of people.

Odors from construction activities are associated with construction equipment exhaust and the application of asphalt and architectural coatings. Odors emitted from construction activities would be temporary and cease upon completion of project construction. Therefore impacts related to objectionable odors during construction or operation of the project would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

4.2.3 Cumulative Impacts

The planned and pending projects near the proposed project are listed in Table 3-1 (Section 3, *Environmental Setting*) and include residential, warehouse, commercial, hotel, school, and recreational land uses. The projects in the immediate vicinity of the proposed project include two residential subdivisions with 19 dwelling units (3719 Strong Street), a gas station and convenience store (2234 Main Street), a warehouse (4253 Fairgrounds Street), and a senior housing development (2450 Market Street).

The Basin is designated a nonattainment area for the federal and state one-hour and eight-hour ozone standards, the state PM_{10} standards, the federal 24-hour $PM_{2.5}$ standard, and the federal and state annual $PM_{2.5}$ standard. The Basin is in attainment of all other federal and state standards.

Any growth in the area has the potential to contribute to cumulatively significant impact related to existing exceedances of ambient air quality standards. The SCAQMD's approach to determining whether a project's emissions of criteria air pollutants are cumulatively considerable is to first determine if an individual project would result in project-level impacts to regional air quality based on SCAQMD significance thresholds. If the proposed project does not generate emissions in excess of SCAQMD thresholds, but related projects exist within a 1.0-mile radius that are part of an ongoing regulatory program (e.g., SCAQMD's Air Toxics Control Plan and AB 2588 Program aimed at reducing criteria pollutants from certain source) or are to be considered in a program EIR, then the lead agency needs to consider the additive effects of the related projects.

Neither the proposed project nor any of the projects from the cumulative list are part of an ongoing regulatory program or being studied as part of a program EIR. Therefore, the SCAQMD recommends that project-specific air quality impacts be used to determine whether a project's emissions are cumulatively considerable. As discussed in Impact AQ-1, the project would not conflict with or obstruct with the implementation of the applicable AQMP. With the implementation of mitigation measures AQ-1 and AQ-2, the daily construction emissions would not exceed SCAQMP regional or local thresholds. Traffic generated by the project would not create a CO hotspot and the project is not associated with any uses that create objectionable odors. However, Impact AQ-3 notes the project would exceed operational NO_x emission thresholds from project-generated traffic.

Even with the complete reduction in NO_x emissions from all sources besides mobile ones, the project would exceed SCAQMD thresholds. AB1493 predicts the Advanced Clean Car program will reduce NOx emissions by 36 percent by 2035 (CARB 2018c). Also, the program would coordinate with CARB's ZEVs mandate to have one in seven new cars be a ZEV by 2025, and to have all cars sold in 2040 be a ZEV. These policies would reduce overall NO_x emissions created by the project into the future along with those generated by cumulative development in the City of Riverside. However, the project and cumulative projects in the area would still result in a cumulatively considerable increase of a criterion pollutant (NO_x, an ozone precursor) for which SCAG is in nonattainment under federal and state standards. Therefore, cumulative impacts would be significant and unavoidable.

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4.3 Biological Resources

This section analyzes the effects of the proposed mixed-use project on biological resources. The analysis is based on site-specific reconnaissance and botanical surveys and a jurisdictional delineation conducted on September 28, 2017, a second botanical survey conducted on July 20, 2018, and a functional assessment of jurisdictional waters conducted on November 29, 2018. Biologists conducted a habitat assessment for western burrowing owl (*Athene cunicularia hypugaea*), a California Species of Special Concern and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) sensitive species, during the September 28, 2017 reconnaissance. During the November 29, 2018 functional assessment, biologists used the California Rapid Assessment Method (CRAM) to assess and quantify the functional contribution the on-site jurisdictional waters provide to the watershed. Rincon prepared an MSHCP Consistency Analysis and Habitat Assessment Report and a Jurisdictional Delineation Report, provided in appendices F and G, respectively.

4.3.1 Setting

a. Existing Biological Resource Setting

The project site and vicinity are relatively flat with an average slope of 9.26 percent and some topographic relief and occur at an elevation range of 830-860 feet above mean sea level. The project site is in arid Western Riverside County, characterized by long, hot, dry summers and short, relatively wet winters. Average temperatures range from 62 to 95 degrees Fahrenheit (°F) during the summer and 42 to 67 °F during the winter. The average annual precipitation in the region is 10.32 total inches, with 75 percent of the total occurring December to March and five percent occurring between May and September (National Oceanic and Atmospheric Administration 2018).

Vegetation

Wild Oat Grassland (*Avena barbata* Herbaceous Semi-Natural Alliance) is the dominant plant community on the project site, as described in the Manual of California Vegetation (Sawyer et al. 2009; Figure 4.3-1). This community is dominated by slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), and soft chess (*Bromus hordeaceus*). Patches of non-native and ruderal (weedy) species occur throughout the grassland and include Russian thistle (*Salsola tragus*), perennial mustard (*Hirschfeldia incana*), castor bean (*Ricinus communis*), and dense patches of sorghum (*Sorghum halepense*). Trees line a soft-bottomed drainage in the northeastern portion of the site and include blue gum (*Eucalyptus globulus*), Mexican fan palm (*Washingtonia robusta*), Peruvian pepper (*Schinus molle*), and several coast live oak (*Quercus agrifolia*). Blue gum and coast live oak also occur sporadically in the western portion of the project site. Other species observed in the soft-bottom drainage include an olive tree (*Olea europaea*), opuntia cactus (*Opuntia* sp.), common sunflower (*Helianthus annuus*), jimsonweed (*Datura wrightii*), milk thistle (*Silybum marianum*), horseweed (*Erigeron canadensis*), western ragweed (*Ambrosia psilostachya*), and field bindweed (*Convolvulus arvensis*). A complete list of plants observed during the site visit is included in Appendix A of Appendix F. The habitats on the site are heavily disturbed by development, disking, grading, vehicle traffic, and trash and debris from homeless encampments on and near the project site.

Figure 4.3-1 Vegetation Communities

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General Wildlife

The project site provides habitat for wildlife species that commonly occur in residential, urban, and grassland communities in Riverside County. Wildlife observed include common species such as red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus*), Cassin's kingbird (*Tyrannus vociferans*), and mourning dove (*Zenaida macroura*). A complete list of wildlife observed is provided in the MSHCP Consistency Analysis and Habitat Assessment Report (Appendix F).

Special-status Species and Natural Communities

Special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA); those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); animals designated as Species of Special Concern, Fully Protected, and/or Watch List, (CDFW 2010); those species on the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2015) and/or the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants (CNPS 2018);those plants contained on the CNPS California Rare Plant Rank (RPR). Only listed species and RPR Lists 1 and 2 are considered special-status species in this EIR, per the RPR code definitions:

- List 1A = Plants presumed extinct in California
- List 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
- List 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened)
- List 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened or no current threats known)
- List 2 = Rare, threatened or endangered in California, but more common elsewhere
- List 3 = Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA)
- List 4.1 = Plants of limited distribution (watch list), seriously endangered in California
- List 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80 percent occurrences threatened)
- List 4.3= Plants of limited distribution (watch list), not very endangered in California

The RPR also includes Lists 3 and 4. Per the CDFW (2009), these plants typically do not warrant consideration under State CEQA Guidelines unless the specific circumstances relevant to local distributions make them of potential scientific interest. Similarly, local agencies may also consider and list additional plants to be of "local concern" or "narrow endemic" because of local or regional scarcity, as determined by that agency (State CEQA Guidelines Section 15380).

Queries of the following databases to obtain comprehensive information for federally and state-listed species, sensitive communities, and federally designated Critical Habitat known to or considered to have potential to occur on or near the project site: USFWS Critical Habitat Portal (USFWS 2018a), USFWS Environmental Conservation Online System (ECOS): Information, Planning and Conservation System (USFWS 2018b), California Natural Diversity Database (CNDDB) (CDFW 2018), and the CNPS Online Inventory of Rare, Threatened and Endangered Plants of California

(CNPS 2018) were conducted for the U.S. Geological Service 7.5 Minute Riverside East quadrangle and the surrounding eight quadrangles: Fontana, San Bernardino South, Redlands, Riverside West, Sunnymead, Lake Mathews, Steele Peak, and Perris.

Nine sensitive natural communities are known to occur in the vicinity of the project site, but none of these communities occurs on the project, verified by the reconnaissance survey. Wild Oats Grassland is the only community on the site is and it is not a sensitive community. Therefore, sensitive natural communities will be discussed no further in this report. The project site is not in a USFWS-Designated Critical Habitat Unit, but units designated for coastal California gnatcatcher (*Polioptila californica californica*) occur approximately 2.0 miles north and units for least Bell's vireo (*Vireo bellii pusillus*) and Santa Ana sucker (*Catostomus santaanae*) occur approximately 2.5 miles south, along the Santa Ana River and in the Prado Basin.

Special-status Plant and Animal Species

Riverside County is home to several species protected by federal and state agencies. The Western Riverside County MSHCP, CNDDB (CDFW 2018), CNPS (2018), and USFWS ECOS (2018b) together list 43 special-status plant species and 59 special-status wildlife species that are known to have potential to occur near the project site.

One plant habitat type is found on the project site: Wild Oats Grassland, annual non-native grassland. The project site is heavily disturbed, with limited native coast live oaks along a soft-bottom drainage, and scattered ornamental and landscaped species primarily at the interface with the adjacent residences. The level of disturbance and lack of native habitats means only species found in urban areas or areas with a high level of disturbance from development and invasive species have the potential to occur on the site. Therefore, no special-status plants have the potential to occur on-site and these plants will be discussed no further in this report.

Eight species of special-status wildlife species are known to occur in the vicinity in habitat types that occur on the project site. Two of the special-status species, Cooper's Hawk and Burrowing Owl, were determined to have high potential to occur on the site. Table 4.3-1 presents the status and habitat requirements for all eight special-status species.

Cooper's Hawk

Cooper's hawk has a high potential to occur on the site because it is known to occur in the region and is typically found nesting in tall trees in urbanized areas. Although the species was not observed during a survey of the project site, nor were any raptor nests identified, this species has a high potential to use the tall trees on and near the project site for nesting. Existing site conditions (i.e., grasslands with dotted trees) provide potential foraging areas for this species. The nearest known occurrence of Cooper's hawk recorded in the CNDDB is approximately seven miles to the southwest, along the Santa Ana River.

Burrowing Owl

Burrowing owl has a high potential to occur on the site based on the disturbed nature of the area and low-growing vegetation. However, the habitat assessment of the site did not identify owls or burrows of suitable size for use by this species; the project site was not considered usable, therefore, by burrowing owls at that time. It is possible, however, that burrowing owls could establish on the site at any time in the future. The nearest known occurrence of burrowing owl recorded in the CNDDB is approximately four miles to the northwest, on a roadside slope.

Table 4.3-1 Special-Status Wildlife Species with Potential to Occur on the Project Site

Scientific Name Common Name	Status FESA/CESA/ Other	Habitat Requirements	Potential for Occurrence and Basis for Determination
Reptiles			
Aspidoscelis tigris stehnegeri coastal whiptail	–/–/SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland and riparian areas. Micro habitat includes areas with firm, sandy, or rocky soils.	**Low Potential.** Areas of sparse vegetation and open areas are not common on the site.
Birds			
Accipiter cooperii Cooper's hawk	–/–/WL	Found in woodlands, chiefly of open, interrupted or marginal type. Nest Sites mainly in riparian growths of deciduous trees, as in canyon bottoms or river flood-plains; also live oaks.	**High Potential.** Oaks on the project site provide suitable nesting habitat for this species.
Athene cunicularia Burrowing owl	–/–/SSC, MSHCP	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**High Potential.** On-site habitat present, but habitat assessment identified very few burrows suitable for this species.
Buteo regalis ferruginous hawk	–/–/WL	Open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice, and may follow lagomorph population cycles.	**Low Potential.** Open grasslands occur, but there are few prey species and only a small foraging area for this species.
Buteo swainsoni Swainson's hawk	–/ST/–	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Low Potential.** Habitat disturbed and of limited size for foraging of this species. Area is surrounded by development and undesirable.
Elanus leucurus white-tailed kite	–/–/FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Micro habitat includes grassland, meadows or, marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Low Potential.** Although scattered oaks occur near grasslands the area is far too developed and the activities from the highways and surrounding community are not isolated enough for this species to nest.
Mammals			
Eumops perotis californicus western mastiff bat	–/–/SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Low Potential.** May forage in the grasslands on the site, but the site lacks necessary tall buildings, cliff faces, and crevices in trees or tunnels that this species requires.
Antrozous pallidus pallid bat	–/–/SSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low Potential.** Although grasslands occur on the site there are no rocky areas for roosting and there is a very high level of disturbance in the region.

ST = State Threatened
SSC = State Species of Special Concern
WL = State Watchlist Species
FP = Fully Protected Species
MSHCP = Covered Species
Source: CDFW 2018

Jurisdictional Features

Based on the Jurisdictional Delineation findings (Appendix G), two jurisdictional waters occur on the project site: the established concrete drainage channel and a soft-bottomed channel. Table 4.3-2 summarizes the findings of jurisdiction; Figure 4.3-2 shows the limits of jurisdiction.

Table 4.3-2 U.S. Army Corps of Engineers, Regional Water Quality Control Board, CDFW, and MSHCP Jurisdictional Areas

	Waters of the U.S.[1]				
Feature	Non-wetland Waters of the U.S. (a/lf)	Wetland Waters of the U.S. (a/lf)	Waters of the State[2] (a/lf)	CDFW Jurisdictional Streambed (a/lf)	MSHCP Riverine/Riparian (a/lf)
Concrete-Lined Channel	0.29 acres/ 1,394 lf	–/–	0.29 acres/ 1,394 lf	1.00 acres/ 1,394 lf	1.00 acres/ 1,394 lf
Soft-Bottom Drainage	0.06 acres/ 1,551 lf	–/–	0.06 acres/ 1,551 lf	0.10 acres/ 1,551 lf	0.10 acres/ 1,551 lf
Totals	0.36 acres/ 3,014 lf	–/–	0.36 acres/ 3,014 lf	1.15 acres/ 3,014 lf	1.15 acres/ 3,014 lf

[1]Regulated by the U.S. Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB) under the Clean Water Act (CWA)

[2]Regulated by RWQCB under the Porter-Cologne Act

a/lf = acres/linear feet

Concrete Drainage Channel

The concrete drainage channel contains perennial water flows and is part of the stormwater system for eastern Riverside. The drainage transects the length of the project site from east to west. It is likely the water flow width can vary seasonally. At the time of the site visit, the width was approximately nine feet and the entire channel bottom was covered in a thin sheet of water. The top of bank for this feature is defined as the area at the top of the concrete-sloped edges of the channel, which has a 30-foot width. The project site portion of the drainage is 1,394 linear feet.

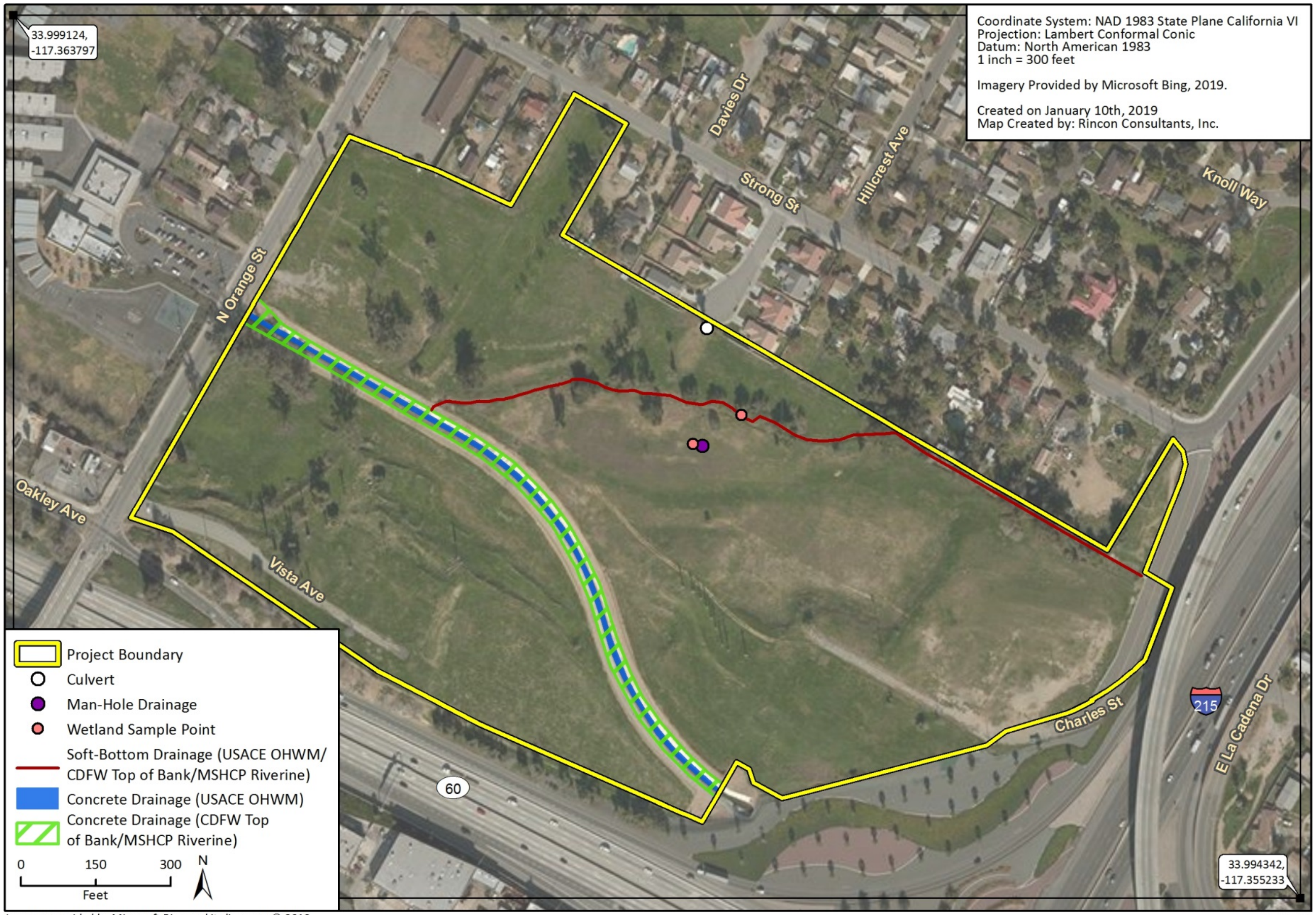
Waters in the concrete drainage channel continue off site, through the City's stormwater system, until they flow into Lake Evans, a manmade lake at Fairmount Park approximately 3,000 feet west of the project site. Overflow from Lake Evans is directed into the Santa Ana River, which occurs immediately to the west of the lake; the Santa Ana River outlets directly to the Pacific Ocean.

This concrete drainage channel meets USACE jurisdictional standards due to the presence of an ordinary high water mark (OHWM)and hydrologic connection to jurisdictional waters; these features also designate it for regulation by the RWQCB. The drainage channel is consistent with CDFW-jurisdictional streambeds (unvegetated) and qualifies as riparian/riverine under the MSHCP because it has "fresh water flow during all or a portion of the year" and it flows directly into Lake Evans, Public Quasi-Public Conserved Lands (Riverside County 2003).

SOFT-BOTTOM DRAINAGE

The soft-bottom drainage channel was likely constructed to direct stormwater flow from the urban area to the north into the concrete drainage channel on the project site. The soft-bottom drainage flows directly into the concrete drainage channel via surface flow and an adjacent underground

Figure 4.3-2 Jurisdictional Delineation



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culvert. A wetland sample point was taken in the center of the channel and the findings were negative for hydric soils (see Figure 4.3-2).

The soft-bottom drainage is mostly vegetated by slender wild oat, Brome grasses, short pod mustard, and Russian thistle in the channel, edges, and surrounding areas, with some small patches of bare ground near the culvert outlet. A variety of landscaping plants occurs in the drainage and is largely associated with the residences to the north. Landscaping plants include opuntia cactus (*Opuntia sp*.), Peruvian pepper tree, Mexican fan palm, and olive tree, among other landscape species. Vegetation near the topographic low point is much denser and includes sorghum, common sunflower, milk thistle, western ragweed, field bindweed, and horseweed. Coast live oak trees are found sporadically along the drainage. None of the species observed were facultative, facultative wetland, or obligate wetland species (Lichvar et al. 2016)

Near the center of the soft-bottom drainage channel, where a dirt access road crosses, there is a depression adjacent to the channel. A manhole occurs in the low point of the depression (see Figure 4.3-2) and drains overflows into an underground culvert connected to the concrete-lined drainage channel, approximately 450 feet to the southwest. At the time of the field survey, the soil in the depression was not moist and vegetation had been removed near the manhole drainage, exposing the inlet. A sample point was taken in the depression to determine if the feature met the USACE criteria for wetland waters of the U.S. (WoUS) (see Figure 4.3-2), which it did not. The soils in the sample point were non-hydric and were consistent with fill material soils. The depression supports dense mats of sorghum, milk thistle, and common sunflower, species typically found in uplands (Lichvar et al. 2016); hydrophytic plant species were not present.

Due to its connection with the concrete-lined channel, the feature is expected to be considered jurisdictional by USACE, RWQCB, CDFW, and MSHCP. The limits of CDFW jurisdiction is concurrent with MSHCP: 6.0 feet wide at the eastern entry point into the project site, narrowing to 4.0 feet wide when the drainage turns west, and then reducing to 2.0 feet wide near the connection with the concrete-lined channel. WoUS/waters of the state (WoS) were delineated at the OHWM for the channel and varied between one foot and two feet wide.

Wildlife Movement Corridors

Wildlife movement corridors, or habitat linkages, are defined generally as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats in the linkage do not necessarily need to be the same as the habitats being linked. Rather, the link merely needs to contain enough cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (e.g., rock outcroppings, vernal pools, or oak trees) may need to be located in the habitat link at certain intervals to allow slow-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period.

The CDFW BIOS (2018b) does not include any mapped essential habitat connectivity areas on or near the project site, nor does it contain any missing linkages, as identified by South Coast Wildlands Network. Furthermore, the site is not located in a criteria cell or an MSHCP Conservation Area, such as Public/Quasi-Public Reserves, or other areas set aside for conservation purposes.

a. Regulatory Setting

Federal

U.S. Army Corps of Engineers

Under Section 404 of the Federal CWA, the USACE has authority to regulate activities that could discharge dredge or fill material into wetlands or other WoUS. The definition of "waters of the United States" has been the subject of recent litigation, regulatory guidance, and agency rulemaking. In current practice, jurisdictional waters are defined using the USACE's and U.S. Environmental Protection Agency's joint 2015 regulatory definition (80 FR 37054). In summary, WoUS include:

- Navigable waters
- Interstate waters, including interstate wetlands
- The territorial seas
- All impoundments of waters of the United States
- All tributaries of waters of the United States
- All waters adjacent to waters of the United States
- Specific waters (including western vernal pools) if there is significant nexus to a navigable or interstate water, or territorial sea

The following waters are considered WoUS if they possess a significant chemical, hydrologic, or ecological nexus to navigable waters, interstate waters, or the territorial seas:

- All waters within or partially within 4,000 feet of the high tide line or ordinary high water mark of a navigable or interstate water, territorial sea, impoundment, or tributary
- All waters within or partially within the 100-year floodplain of a navigable or interstate water or territorial sea

The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland value or acres. In achieving the goals of the CWA, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any fill or adverse modification of wetlands that are hydrologically connected to jurisdictional waters would require a permit from the USACE prior to the start of work. Typically, when a project involves impacts to WoUS, the goal of no net loss of wetland acres or values is met through compensatory mitigation involving the creation or enhancement of similar habitats.

U.S. Fish and Wildlife Service

The USFWS implements the Migratory Bird Treaty Act (16 United States Code Section 703-711) and the Bald and Golden Eagle Protection Act (16 United States Code Section 668). The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the federal Environmental Species Act (FESA) (16 United States Code Section 153 et seq.). The USFWS generally implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in "take" of any federally listed threatened or endangered species are required to obtain authorization from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of FESA, depending on the involvement by the federal government in permitting and/or funding of the project. "Take" under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. Proposed or candidate species do not have the full protection of FESA; the USFWS and NMFS advise project applicants the species could be elevated to listed status at any time.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act of 1918 was originally enacted between the United States and Great Britain (acting on behalf of Canada) for the protection of migratory birds between the two countries. The MBTA has since been expanded to include Mexico, Japan, and Russia. Under MBTA provisions, it is unlawful "by any means or manner to pursue, hunt, take, capture (or) kill" any migratory birds as defined by the Migratory Bird Treaty Act except as permitted by regulations issued by the USFWS. The term "take" is defined by the USFWS regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture or collect" any migratory bird or any part, nest, or egg of any migratory bird covered by the conventions, or to attempt those activities.

State

Porter-Cologne Water Quality Act

The State Water Resources Control Board (SWRCB) works in coordination with nine RWQCBs to preserve, protect, enhance, and restore water quality throughout the state. Each RWQCB makes decisions related to water quality for its region, and may approve, with or without conditions, or deny projects that could affect waters of the state. Their authority to regulate activities that could result in a discharge of dredged or fill material comes from the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne).

Porter-Cologne broadly defines WoS as "any surface water or groundwater, including saline waters, within the boundaries of the state." Because Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California's jurisdictional reach overlaps and may exceed the boundaries of WoUS. For example, Water Quality Order No. 2004-0004-DWQ states that "shallow" waters of the state include headwaters, wetlands, and riparian areas. In practice, the RWQCBs may claim jurisdiction over riparian areas. Where riparian habitat is not present, such as may be the case at headwaters and urbanized areas, jurisdiction is taken to the top of bank. The SWRCB has recently developed a Preliminary Draft State Wetland Definition that addresses numerous policy elements including development of a wetland definition and description of methodology to be used in defining wetlands as part of WoS (SWRCB 2017).

Pursuant to Section 401 of the CWA, projects regulated by the USACE must obtain a Water Quality Certification from the RWQCB. This certification ensures the proposed project will uphold state water quality standards. Because California's jurisdiction to regulate its water resources is much broader than that of the federal government, proposed impacts on waters of the state require Water Quality Certification even if the area occurs outside of USACE jurisdiction.

California Endangered Species Act

California Fish and Game Code (CFGC), Chapter 1.5, Sections 2050- 2116 (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, CDFW has jurisdiction over state-listed species (Fish and Game Code 2070). The CDFW regulates activities that may result in take of individuals (i.e., hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill). Habitat degradation or modification is not expressly included in the definition of take under the CFGC. The CDFW has interpreted take, however, to include the killing of a member of a species as the proximate result of habitat modification.

California Fish and Game Code

The CDFW derives its authority from the CFGC. CESA (CFGC Section 2050 et. seq.) prohibits take of state-listed threatened or endangered species. Take of fully protected species is prohibited under CFGC Sections 3511, 4700, 5050, and 5515. Section 86 of CFGC defines "take" as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, capture, or kill. This definition does not include indirect harm by way of habitat modification.

CFGC Sections 3503, 3503.5, and 3511 restrict the take, possession, and destruction of birds, nests, and eggs. Section 3503.5 of the CFGC protects all birds-of-prey and their eggs and nests against take, possession, or destruction. Fully protected birds may not be taken or possessed except under specific permit (Section 3511).

Species of Special Concern (SSC) is a category CDFW uses for those species considered to be indicators of regional habitat changes or considered to be potential future protected species. SSC do not have any special legal status except that which may be afforded by the CFGC, as noted above. CDFW intends the SSC category as a management tool to include these species into special consideration when decisions are made concerning the development of natural lands.

The CDFW also has authority to administer the Native Plant Protection Act (CFGC Section 1900 et seq.). The Native Plant Protection Act requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the Native Plant Protection Act, the owner of land where a rare or endangered native plant grows is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of plant(s).

Perennial, intermittent, and ephemeral streams and associated riparian vegetation, when present, also fall under the jurisdiction of the CDFW. Section 1600 et seq. of the CFGC (Lake and Streambed Alteration Agreements) gives CDFW regulatory authority over work in the bed, bank, and channel (which could extend to the 100-year flood plain), consisting of, but not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake.

Regional Water Quality Control Board

The SWRCB and the local Los Angeles RWQCB have jurisdiction over WoS, with federal authority under the CWA Section 401 and state authority under Porter-Cologne to protect water quality, which prohibits discharges to such waters. WoS are defined as any surface water or groundwater, including saline waters, in the boundaries of the state.

Local

City of Riverside General Plan 2025

The City's General Plan Land Use and Urban Design and Open Space and Conservation elements in the General Plan 2025 seek to preserve existing natural resources in the City. Objectives and policies that relate to biological resources and would apply to the project include the following:

Objective LU-7: Preserve and protect significant areas of native wildlife and plant habitat, including endangered species.

> **Policy LU-7.2:** Design new development adjacent and in close proximity to native wildlife in a manner which protects and preserves habitat.
>
> **Policy LU-7.4:** Continue to participate in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).

Objective OS-5: Protect biotic communities and critical habitats for endangered species throughout the General Plan Area.

> **Policy OS-5.2:** Continue to participate in the MSHCP Program and ensure all projects comply with applicable requirements.
>
> **Policy OS-5.4:** Protect native plant communities in the General Plan Area, including sage scrub, riparian areas and vernal pools, consistent with the MSHCP.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP is a comprehensive, multi-jurisdictional habitat conservation plan that focuses on conservation of species and their associated habitats in western Riverside County. The MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 square miles); it includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, and the jurisdictional areas of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, Eastvale, Jurupa Valley, Wildomar, Menifee, and San Jacinto.

The MSHCP serves as a habitat conservation plan pursuant to Section 10(a)(1)(B) of FESA, as well as a natural communities conservation plan under the Natural Communities Conservation Plan Act of 2001. The MSHCP is used to allow the participating jurisdictions to authorize "take" of plant and wildlife species identified in the MSHCP Plan Area under specific conditions/measures. Under the MSHCP, USFWS and CDFW will grant "take authorization" for otherwise lawful actions in exchange for the assembly and management of a coordinated MSHCP conservation area.

4.3.2 Impacts Analysis

a. Methodology and Significance Thresholds

Data used for this analysis included aerial photographs, topographic maps, a CNDDB database query, accepted scientific texts to identify species, previous biological studies, survey reports prepared for the project site and the surrounding area, results of the reconnaissance field surveys, and other available literature regarding existing biological resources in and around the project area.

In accordance with Appendix G Section IV (Biological Resources) of the State CEQA Guidelines, the project would have a significant impact on biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
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
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
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

Impacts to biological resources may be considered less than significant where their effects have little or no importance to a given habitat. For example, disturbance to cultivated agricultural fields, or small acreages of nonnative, ruderal habitat, would be considered less than significant.

b. Project Impacts and Mitigation Measures

Threshold 1	Would the project have a significant adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact BIO-1 IMPLEMENTATION OF THE PROJECT COULD RESULT IN DIRECT OR INDIRECT IMPACTS TO BURROWING OWL THROUGH REMOVAL OF GROUND COVER AND HABITAT, AND FROM CONSTRUCTION DURING THE BREEDING SEASON. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

The project site contains disturbed areas and low-growing vegetation that provides potential habitat for burrowing owls; the project site is in an MSHCP survey area for burrowing owl, which means the species is known to occur in the region. No burrowing owl or signs of burrowing owl use were detected during surveys of the site and a habitat assessment for the burrowing owl determined low potential exists for the species to occur, based on a lack of burrows. However, with the presence of suitable habitat on the project site there is a potential for burrowing owl to move into the area. If burrowing owl were present during project construction, there would be the potential to impact the species directly or indirectly from noise or vibration. Pre-construction surveys and avoidance measures pursuant to Objective 6 of the MSHCP Species Conservation Objectives for burrowing owl, described below, would ensure avoidance and/or minimization of potential impacts.

Mitigation Measures

The following mitigation measures would be required to address potential impacts to burrowing owl.

BIO-1a Burrowing Owl Preconstruction Survey

Pre-construction presence/absence surveys for burrowing owl shall be conducted in the survey area where suitable habitat is present prior to ground disturbance in new areas, throughout the construction phase of the project. Pre-construction surveys shall be conducted by a qualified biologist in the development footprint and a 500-foot buffer no more than 30 days prior to grading or other significant site disturbance. The surveys should be conducted in accordance with the most recent CDFW and California Burrowing Owl Consortium guidelines. A burrow shall be considered occupied when there is confirmed use by burrowing owl based on observations made by a qualified biologist. If owls are not found to be occupying habitat in the survey area during the pre-construction survey, the proposed disturbance activities may proceed. Take of active nests shall be avoided.

BIO-1b Burrowing Owl Avoidance Measures

If owls are discovered on and/or within 500 feet of the proposed project site, avoidance measures shall be developed in compliance with the MSHCP and in coordination with the CDFW and/or Western Riverside County Regional Conservation Authority. Such measures will include but not be limited to the following:

- Burrowing owls shall not be disturbed on-site and/or within a 500-foot buffer between February 1 and August 31 to avoid impacting nesting.
- Prior to any ground disturbance, all limits of project construction shall be delineated and marked to be clearly visible to personnel on foot and in heavy equipment. All construction-related activities shall occur inside the limits of construction and designated staging areas. Construction staging and equipment storage shall be situated outside of any occupied burrowing owl burrow locations. All construction-related movement shall be restricted to the limits of construction and staging areas.
- Avoidance measures shall include passive relocation by a qualified biologist to remove the owls between September 1 and January 31, which is outside of the typical nesting season.

Significance After Mitigation

Implementation of mitigation measures BIO-1a and BIO-1b would reduce potential impacts to special-status species to less than significant levels by avoiding impacts to individual burrowing owl in accordance with the guidelines in the MSHCP.

Impact BIO-2 IMPLEMENTATION OF THE PROJECT COULD RESULT IN DIRECT OR INDIRECT IMPACTS TO NESTING BIRDS AND RAPTORS THROUGH REMOVAL OF TREES AND VEGETATION THAT SERVE AS NESTING HABITAT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

As detailed in Section 4.3.1, Regulatory Setting, the nests of most native birds and raptors are federally and state protected. No nests were specifically identified during field reconnaissance or jurisdictional delineation, but it is likely birds use the project site for nesting (generally from early February through late August) given the presence of trees, shrubs, and grassland habitats, as well as the number of bird species and individuals observed during the surveys. Cooper's hawk, a California Watchlist species and an MSHCP-covered species also has the potential to nest on the project site.

Project implementation has potential to result in direct and indirect impacts to nesting birds, including common passerine species protected under the Migratory Bird Treaty Act and CFGC, if they nest on the project site and/or in the immediate vicinity during construction activities. Construction would occur where non-native grassland and native and ornamental trees are present. Direct impacts from construction activities include ground disturbance and removal of trees, which could contain bird nests. Indirect impacts include construction noise, lighting, and fugitive dust. These impacts could lead to individual mortality or harassment that might reduce nesting success. Therefore, potential impacts would be significant.

Native and non-native trees and ruderal vegetation likely provide foraging habitat for raptors, such as red-tailed hawk and Cooper's hawk. Development of the project would result in the permanent loss of approximately 34 acres of vegetation that could serve as foraging habitat. However, this area is not essential for successful breeding near the project site as other large open spaces exist in the area, including Rancho Jurupa Park, Box Springs Park, and Sycamore Canyon Wilderness Park at the edges of the City of Riverside. Therefore, the impact of the project on foraging habitat and reproductive capacity of raptors through loss of foraging habitat would be less than significant.

Mitigation Measures

The following mitigation measure would be required to address potential impacts to nesting birds.

BIO-2 Nesting Bird Avoidance

Prior to issuance of grading permits, the following measures shall be implemented:

To avoid disturbance of nesting and special-status birds such as Cooper's hawk, and including other raptorial species protected by the Migratory Bird Treated Act and CFGC, activities related to the project, including but not limited to, vegetation removal, ground disturbance, and construction and demolition shall occur outside of the bird breeding season (February 1 through August 30). If construction must begin during the breeding season, then a pre-construction nesting bird survey shall be conducted no more than 30 days prior to initiation of construction activities. The nesting bird pre-construction survey shall be conducted on foot inside the project site disturbance areas, and including a 500-foot buffer. Inaccessible areas (e.g., private lands) will be surveyed from afar using binoculars to the extent practical. The survey shall be conducted by a qualified biologist familiar with the identification of avian species known to occur in western Riverside County. If nests are found, an appropriate avoidance buffer will be determined by a qualified biologist and demarcated by a qualified biologist with bright orange construction fencing, flagging, construction lathe, or other means to mark the boundary. Effective buffer distances are highly variable and based on specific project stage, bird species, stage of nesting cycle, work type, and the tolerance of a particular bird pair. The buffer may be up to 500 feet in diameter, depending on the species of nesting bird found and the biologist's observations.

If nesting birds are located adjacent to the project site with the potential to be affected by construction activity noise above 60 dBA Leq (see Section 4.10, Noise, for definitions and discussion of noise levels), a temporary noise barrier would be erected. The barrier would consist of large panels designed specifically to be deployed on construction sites for reducing noise levels at sensitive receptors. If 60 dBA Leq is exceeded, an acoustician would require the construction contractor to make operational and barrier changes to reduce noise levels to 60 dBA during the breeding season (February 1 through August 30). Noise monitoring shall occur during operational changes and installation of barriers to ensure their effectiveness. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No parking, storage of materials, or construction activities shall occur within this buffer until the avian biologist has confirmed that breeding/nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist, if it is determined such encroachment will not adversely impact the nesting birds.

Significance After Mitigation

Implementation of Mitigation Measure BIO-2 would reduce potential impacts to nesting birds to a less than significant level.

Threshold 2	Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified 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 BIO-3 THE PROJECT PROPOSES TO PERMANENTLY DEVELOP OVER A CONCRETE-LINED CHANNEL AND A SOFT-BOTTOM DRAINAGE THAT CONTAIN HABITAT THE CDFW AND RWQCB CONSIDER SENSITIVE. IMPACTS TO THE CONCRETE-LINED CHANNEL AND THE SOFT-BOTTOM DRAINAGE WOULD RESULT IN ADVERSE IMPACTS TO RIPARIAN HABITAT. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

The residential component of the proposed project would be developed on top of the on-site soft-bottom drainage and the majority of the existing concrete-lined channel would be covered with parking and drive aisles to serve the commercial and hotel components of the project. The jurisdictional delineation conducted by Rincon Consultants, Inc. in July 2018 (and updated in December 2018) identified the 1,551-foot-long soft-bottom drainage as containing 0.06 acre of non-wetland WoUS/WoS under the jurisdiction of the USACE and RWQCB, respectively, pursuant to sections 401 and 404 of CWA. The soft-bottom drainage also contains 0.10 acre of CDFW streambed habitat, pursuant to CFGC Sections 1600-1603. The 1,394-foot-long concrete-lined channel was identified as containing 1.00 acre of CDFW streambed habitat. Approximately 0.29 acre of the concrete-lined channel is considered non-wetland WoUS/WoS, under USACE and RWQCB jurisdiction (see discussion under Threshold 3). Impacts to the concrete-lined channel and the soft-bottom drainage would be potentially significant and require the implementation of mitigation measures

Mitigation Measures

BIO-3 Avoidance and Minimization

Jurisdictional areas outside the footprint of direct development impact (i.e., the eastern portion of the concrete channel) shall be avoided. Any material/spoils generated from project activities shall be located away from jurisdictional areas and protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate. Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage from contaminating the ground and generally at least 50 feet from the top of bank. Any material spills will be stopped if this can be done safely. The contaminated area will be cleaned and any contaminated materials properly disposed. For all spills, the project foreman will be notified.

BIO-4 Consultation and Compensatory Mitigation

Prior to ground disturbance activities that will impact waters and WoUS and/or WOS, the project proponent shall consult with USACE on the need for a CWA Section 404 permit, the RWQCB regarding compliance with Section 401 of the CWA, CDFW on the need for a Streambed Alteration Agreement, and the Western Riverside Conservation Authority, which oversees compliance with the MSCHP. Discussions with these agencies were initiated in October 2018 and are ongoing. Appropriate permits shall be obtained prior to disturbance of jurisdictional resources. Impacts to jurisdictional waters shall be mitigated through the purchase of the appropriate number of riparian/riverine restoration credits from the nearby Riverside-Corona Resource Conservation District. These impacts will be mitigated at no less than a 1:1 ratio.

Significance After Mitigation

With the implementation of mitigation measures BIO-3 and BIO-4, impacts to riparian resources and sensitive natural communities would be reduces to less than significant.

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

Impact BIO-4 CONSTRUCTION OF THE PROJECT WOULD PERMANENTLY IMPACT 0.36 ACRE OF NON-WETLAND WOUS, PROTECTED UNDER THE CWA. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

A wetland delineation conducted by Rincon Consultants, Inc. in July 2018 found that 0.29 acre of the concrete-lined channel and 0.06 acre of the soft-bottom channel are under USACE jurisdiction. The majority of the concrete-lined channel and the entire soft-bottom channel would be covered with parking and drive aisles serving the commercial and hotel components of the project and would therefore be subject to Section 404 of the CWA. Consultation with USACE was initiated in October 2018 to obtain a linear foot waiver to qualify for Nationwide Permit 29 (Residential Developments); this is ongoing. With the implementation of the mitigation, minimization, and avoidance measures derived through this consultation process, impacts to the concrete-lined channel would be less than significant.

Mitigation Measures

Mitigation measures BIO-3 and BIO-4 would require the project to avoid impacts to jurisdictional features to the extent feasible, to consult with applicable agencies to obtain appropriate permits prior to ground-disturbing activities, and to purchase riparian/riverine restoration credits for impacts to jurisdictional waters at no less than a 1:1 ratio.

Significance After Mitigation

Implementation of mitigation measures BIO-3 and BIO-4, as defined under Impact BIO-3, would reduce potential impacts to WoUS to less than significant.

Threshold 4	Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact BIO-5 NO PROPOSED OR EXISTING MSHCP CORE AREAS, LINKAGES, OR HABITAT BLOCKS ARE ON OR NEAR THE PROJECT SITE. THERE WOULD BE NO IMPACT.

Per review of MSHCP boundaries, the project site is not within an MSHCP Criteria Cell and no proposed or existing core areas, linkages, nursery sites, or habitat blocks are near the project site. No habitat would be fragmented or interrupted because of project implementation. The proposed project would have no impact on the movement of wildlife species.

Mitigation Measures

No mitigation measures would be required.

Significant After Mitigation

There would be no impact.

Threshold 5	Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
Threshold 6	Would the project conflict with the provision of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans?

Impact BIO-6 THE PROJECT IS LOCATED IN THE MSHCP PLAN AREA AND WILL BE REQUIRED TO CONDUCT PRE-CONSTRUCTION SURVEYS FOR BURROWING OWL AND TO PAY AN MSHCP DEVELOPMENT MITIGATION FEE TO REDUCE POTENTIAL IMPACTS. THE PROJECT SITE ALSO CONTAINS TWO DRAINAGE FEATURES UNDER JURISDICTION OF USACE, CDFW, AND RWQCB. IMPLEMENTATION OF MITIGATION MEASURES WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

The project site is located in the MSHCP plan area, but does not occur in an area requiring surveys for amphibians, mammals, narrow endemic plant species, or criteria area species. The project site is in the MSHCP survey area for western burrowing owl (*Athene cunicularia hypugaea*), a California SSC. A habitat assessment for burrowing owl was conducted. Assessments for riparian/riverine habitat, riparian/riverine species, and vernal pool/fairy shrimp habitat were also completed.

Burrowing Owl

The project site contains elements of suitable habitat for burrowing owl, including flat, open areas occupied by non-native grasses, manmade concrete/cement structures containing culverts, and a vacant urban lot. A chain-link fence surrounds the project site. Fences are known to provide perching points for burrowing owl to attain good visibility for foraging. Burrowing owls have been observed to utilize urban habitats for nesting and/or foraging. No subterranean burrows, burrow facsimiles, or burrow creating species such as California ground squirrel (*Otospermophilus beecheyi*) were observed during the site reconnaissance visit. However, a pre-construction survey would be required for burrowing owl to confirm the continued absence of this species from the site as described in Mitigation Measure BIO-1. Implementation of Mitigation Measure BIO-1 would ensure potential impacts to burrowing owl are less than significant.

Development Mitigation Fee

Pursuant to MSHCP Section 8.5, Local Funding Program, local cities and the County have implemented an MSCHP Development Mitigation Fee. In the City of Riverside, this fee is calculated pursuant to Chapter 16.72 of the Municipal Code. Payment of the MSHCP Development Mitigation Fee would be required to maintain consistency with the MSCHP and reduce impacts to special-status plant and wildlife species covered under the "take" provisions of the MSHCP to less than significant.

Riparian/Riverine Habitat and Vernal Pools

The project site supports two drainage features: a concrete-lined channel and a soft-bottom drainage. The concrete-lined channel contains no hydrophytic vegetation, but is considered under the jurisdiction of the USACE, RWQCB, CDFW, and the MSHCP because it has a direct connection to the Santa Ana River. The soft-bottom drainage consists of a small drainage feature covered entirely in upland plants dominated by a wild oats (*Avena barbatata*) grassland. This drainage is under the jurisdiction of USACE, RWQCB, CDFW, and MSHCP because it connects directly to the concrete-lined channel

A Determination of Biologically Equivalent or Superior Preservation report was prepared in December 2018 to determine appropriate mitigation measures for impacts to riparian/riverine resources (Appendix Q). Impacts to riparian habitats and proposed mitigation for such impacts must be reviewed and approved by USACE, CDFW, and the Western Riverside Conservation Authority. Implementation of Mitigation Measures BIO-3 and BIO-4 would ensure impacts to riparian/riverine resources are less than significant.

Mitigation Measures

Mitigation measures BIO-3 and BIO-4 would require the project to avoid impacts to jurisdictional features to the extent feasible, to consult with applicable agencies to obtain appropriate permits prior to ground disturbing activities, and to purchase riparian/riverine restoration credits for impacts to jurisdictional waters at no less than a 1:1 ratio.

Significance After Mitigation

Implementation of mitigation measures BIO-3 and BIO-4 would reduce potential impacts to riparian/riverine resources to a less than significant level by avoiding impacts to jurisdictional features to the extent feasible and ensuring there is no net-loss to these resources. This would reduce potential conflicts with the adopted MSHCP to less than significant.

4.3.3 Cumulative Impacts

The following factors are considered with respect to analyzing cumulative impacts to biological resources:

- The cumulative contribution of other approved and proposed projects to fragmentation of open space in the project vicinity
- The loss of sensitive habitats and species
- The contribution of the project to urban expansion into natural areas
- Isolation of open space in the vicinity by proposed/future projects

Cumulative impacts depend on the proximity of cumulative projects to the project site and impacts from past projects in the vicinity. Native vegetation communities and open areas have almost entirely been developed in the region of the project. Over the last half-century or more, naturally vegetated open areas diminished as the landscape surrounding the project site has been built out with residential and commercial uses. Protected natural areas do occur in the region, including at Rancho Jurupa Park, Box Springs Park, and Sycamore Canyon Wilderness Park, at the edge of the urbanized areas. The planned and pending projects in the project vicinity are listed in Table 3-1 (see Section 3, Environmental Setting) and include residential, warehouse, commercial, hotel, school, and recreational land uses.

The existing on-site grassland is small, low-quality, and isolated. It is frequently mowed and currently provides little to no high-quality, native habitat. Furthermore, this site is surrounded on all sides by urban development and offers no connectivity to open spaces. The western and southern edges of the site are bounded by six-lane freeways that precludes much of the potential for wildlife movement through the site. Although this project would have the potential to adversely impact sensitive habitats such as riverine resources, and biological resources, such as nesting birds and burrowing owls, these resources are common in the region and the cumulative effect will be minimal from proposed developments. A large portion of the riverine resources on site are concrete-lined and currently provide little to no wildlife habitat. Loss of riverine habitat will be minimal and will be mitigated as described above. It is anticipated that for other developments that would have significant impacts on these resources, mitigation measures such as pre-construction surveys for sensitive biological resources, mitigation for impacts to sensitive habitats and/or sensitive biological resources, and payment of all MSHCP fees including the Development Mitigation Fee, would be required. Other developments would also be required to comply with all applicable laws and regulations governing biological resources including all MSHCP policies and measures regarding cumulative impacts.

With the proposed mitigation measures identified in this section of the EIR, coupled with policies and regulations applying to this and other projects, impacts to sensitive habitats and biological resources would be less than significant at the project level. In addition, individual development proposals are reviewed separately by the appropriate jurisdiction and undergo appropriate environmental review when it is determined that the potential for significant impacts exist. If future projects would result in impacts to sensitive habitats and biological resources, impacts to such resources would be addressed on a case-by-case basis. Furthermore, all projects are required to comply with the MSHCP. As such, projects, including the proposed project, would not contribute to cumulative impacts on sensitive habitats and biological resources outside the project site. Therefore, impacts related to sensitive habitats and biological resources would not be cumulatively considerable.

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4.4 Cultural Resources

This section analyzes the effects of the proposed mixed-use project on cultural resources. Rincon Consultants, Inc. (Rincon) completed a project-specific cultural resources report in August 2018. The report is summarized below and included in its entirety as Appendix H to this Environmental Impact Report (EIR). The following discussion and analysis also includes findings about cultural resources from the Initial Study, included in its entirety as Appendix A of this EIR. Additionally, the discussion and analysis contained herein is informed by comments received during the NOP public review period.

4.4.1 Setting

a. Existing Cultural Resources Setting

This section provides an overview of the existing physical setting and historical context of the project site. The project site is vacant land and situated at an elevation of 850 feet above mean sea level. Vegetation mainly consists of overgrown, dried non-native grasses and some riparian species, and oak and pepper trees and the remnants of palm trees, detailed in Section 4.3, *Biological Resources*.

Geologic Setting

The project area is in the alluvial plain of the Santa Ana River in the geologically complex Peninsular Ranges geomorphic province (California Geological Survey 2002). A geomorphic province is a region of unique topography and geology, distinguished from other regions by its landforms and geologic history. The Peninsular Ranges are a northwest-southeast-oriented complex of blocks that extend 125 miles from the Transverse Ranges and Los Angeles Basin to the tip of Baja California. The Colorado Desert bounds the Peninsular Ranges in the east and they range in width from 30 to 100 miles (Norris and Webb 1990). The project area is situated within the Perris Block, a relatively stable rectangular structural unit of the Peninsular Ranges, positioned between the Elsinore and San Jacinto fault zones (Morton and Miller 2006). The geology near the project area includes Mesozoic metasedimentary rocks and Cenozoic igneous rocks overlain unconformably by Pleistocene sedimentary deposits and Quaternary alluvium.

Paleontological Resources

Paleontological resources (fossils) are the remains and/or traces of prehistoric life. Fossils are typically preserved in layered sedimentary rocks and the distribution of fossils is a result of the sedimentary history of the geologic units within which they occur. Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on a number of factors. Although it is not possible to determine whether a fossil will occur in any specific location, it is possible to evaluate the potential for geologic units to contain scientifically significant paleontological resources, and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they do occur during construction.

The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. CEQA does not define "a unique paleontological resource or site," but the Society of Vertebrate Paleontology (SVP) broadly defines significant paleontological resources as follows:

> Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources that meet the criteria above (i.e., considered a significant paleontological resource) would be considered a significant impact under CEQA.

Prehistoric Context

The prehistoric chronology for southern California is generally divided into the following periods: the Early Man Horizon (ca. 10,000-6,000 BCE), the Milling Stone Horizon (6,000-3,000 BCE), the Intermediate Horizon (3,000 BCE-CE 500), and the Late Prehistoric Horizon (CE 500- Historic Contact).

The Early Man Horizon (ca. 10,000-6,000 BCE) is generally characterized by an economy with a diverse mixture of hunting and gathering, including a significant focus on aquatic resources on the coast and on inland Pleistocene lakeshores (Jones et al. 2002; Moratto 1984).

The Milling Stone Horizon (6,000-3,000 BCE) is defined by a widespread use of milling stones indicating a subsistence strategy focused on collecting plant foods (Wallace 1955: 219). The mortar and pestle, associated with acorns or other foods processed through pounding, were first used during the Milling Stone Horizon and increased dramatically in later periods (Wallace 1955, 1978; Warren 1968). Variability in artifact collections over time and from the coast to inland sites indicates that Milling Stone Horizon subsistence strategies adapted to environmental conditions (Byrd and Raab 2007: 220).

The Intermediate Horizon (3,000 BCE to CE 500) is characterized by a shift toward a hunting and maritime subsistence strategy, as well as greater use of plant foods (Wallace 1955). During the Intermediate Horizon, a noticeable trend occurred toward greater adaptation to local resources including a broad variety of fish and land mammals. Tool kits for hunting, fishing, and processing food and materials reflect this increased diversity, with flake scrapers, drills, various projectile points, and shell fishhooks being manufactured.

During the Late Prehistoric Horizon (CE 500 to Historic Contact) the diversity of plant food resources and land and sea mammal hunting increased even further than during the Intermediate Horizon (Wallace 1955, 1978). More classes of artifacts were observed during this period and high quality exotic lithic materials were used for small finely worked projectile points associated with the bow and arrow. Steatite containers were made for cooking and storage and an increased use of asphalt for waterproofing is noted. More artistic artifacts were recovered from Late Prehistoric sites and cremation became a common mortuary custom. Larger, more permanent villages supported an increased population size and social structure (Wallace 1955:223).

Ethnographic Overview

The project site is in area near the boundaries of several Native American groups identified by anthropologists in the early 20th century (Kroeber 1907). The historically-identified territories occupied by the Cahuilla, Gabrieleño, Luiseño, and Serrano all exist within a 15- to 20-mile range of the project site.

Cahuilla

The project site is in a region historically occupied by a Native American group known as the Cahuilla, though near the boundary with the Juaneño and Luiseño (Heizer 1978, Bean 1978, Kroeber 1925). The term Cahuilla likely derived from the native word *káwiya*, meaning “master” or “boss” (Bean 1978:575). Traditional Cahuilla ethnographic territory extended west to east from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from the San Jacinto Valley to the San Bernardino Mountains.

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water. The nearest named village to the project site is the village of *Wa’achanga* or Guachama, located near Loma Linda approximately seven miles east of the project site, though ethnographers are unclear whether this village was of Cahuilla or Gabrieleño origin (Kroeber 1907; Thompson 2007).

Each lineage group maintained their own houses (*kish*) and granaries, and constructed ramadas for work and cooking. Each community also had a separate house for the lineage or clan leader. Houses and ancillary structures were often spaced apart, and a “village” could extend over a mile or two. Each lineage had ownership rights to various resource collecting locations (Bean and Smith 1978).

The Cahuilla hunted a variety of game, including mountain sheep, cottontail, jackrabbit, mice, and wood rats, as well as predators such as mountain lion, coyote, wolf, bobcat, and fox. Various birds were consumed, including quail, duck, and dove, plus various types of reptiles, amphibians, and insects. The Cahuilla employed a wide variety of tools and implements to gather and collect food resources.

Foodstuffs were processed using a variety of tools, including portable stone mortars, bedrock mortars and pestles, basket hopper mortars, manos and metates, bedrock grinding slicks, hammer stones and anvils, and many others. Food was consumed from a number of woven and carved wood vessels and pottery vessels. The ground meal and unprocessed hard seeds were stored in large finely woven baskets, and the unprocessed mesquite beans were stored in large granaries woven of willow branches and raised off the ground on platforms to keep it from vermin. Pottery vessels were made by the Cahuilla, and traded with the Yuman-speaking groups across the Colorado River and to the south.

The Cahuilla had adopted limited agricultural practices by the time Euro-Americans traveled into their territory. Bean (1978:578) suggested their “proto-agricultural techniques and a marginal agriculture” consisting of beans, squash, and corn may have been adopted from the Colorado River groups to the east. Certainly by the time of the first Romero Expedition in 1823-24, they were observed growing corn, pumpkins, and beans in small gardens around springs in the Thermal area of the Coachella Valley (Bean and Mason 1962:104). The introduction of European plants such as barley and other grain crops suggest an interaction with the missions or local Mexican rancheros. Despite the increasing use and diversity of crops, no evidence indicates that this small-scale agriculture was anything more than a supplement to Cahuilla subsistence, and it apparently did not alter social organization.

By 1819, several Spanish mission outposts, known as *asistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto, including the *asistencia* near Redlands, approximately 7.5 miles from the project site. Cahuilla interaction with Europeans at this time was not as intense as it was for native groups living along the coast. This was likely due to the local topography and lack of water, which made the area less attractive to colonists. By the 1820s, however, European interaction increased as mission ranchos were established in the region and local Cahuilla were employed to work on them.

The Bradshaw Trail was established in 1862 and was the first major east-west stage and freight route through the Coachella Valley. Traversing the San Gorgonio Pass, the trail connected gold mines on the Colorado River with the coast. Bradshaw based his trail on the Cocomaricopa Trail, with maps and guidance provided by local Native Americans. Journals by early travelers along the Bradshaw Trail told of encountering Cahuilla villages and walk-in wells during their journey through the Coachella Valley. The continued influx of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic that swept through Southern California in 1862-63, significantly reducing the Cahuilla population. By 1891, only 1,160 Cahuilla remained in what was left of their territory, down from an aboriginal population of 6,000–10,000 (Bean 1978:583-584). By 1974, approximately 900 people claimed Cahuilla descent, most of who resided on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla in their traditional territory. These reservations include: Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez (Bean 1978:585). Four of the reservations are shared with other groups, including the Chemehuevi, Cupeño, and Serrano.

Luiseño

The project site is near the area traditionally occupied by the Luiseño, who inhabited the north half of San Diego County and western edge of Riverside County (Kroeber 1925; Bean and Shipek 1978; Heizer 1978). The term Luiseño was applied to the Native Americans managed by Mission San Luis Rey and later used for the Payomkawichum nation that lived in the area where the mission was founded (Mithun 2001: 539-540). Luiseño territory encompassed the drainages of the San Luis Rey River and the Santa Margarita River, covering numerous ecological zones (Bean and Shipek 1978).

Prior to European contact, the Luiseño lived in permanent, politically autonomous villages, ranging in size from 50-400 people, and associated seasonal camps. Each village controlled a larger resource territory and maintained ties to other villages through trade and social networks. Trespassing in another village’s resource area was cause for war (Bean and Shipek 1978). Villages consisted of dome-shaped dwellings (*kish*), sweat lodges, and a ceremonial enclosure (*vamkech*). Leadership in the villages focused on the chief, or Nota, and a council of elders (*puuplem*). The chief controlled religious, economic, and war-related activities (Bean 1976: 109-111; Bean and Shipek 1978).

Luiseño subsistence focused on the acorn, supplemented by gathering other plant resources and shellfish, fishing, and hunting. Plant foods typically included pine nuts, seeds from various grasses, manzanita, sunflower, sage, chia, lemonade berry, prickly pear, and lamb’s quarter. Acorns were leached and served in different ways. Seeds were ground. Prey included deer, antelope, rabbit, quail, ducks, and other birds. Fish were caught in rivers and creeks. Fish and sea mammals were taken from the shore or caught from dugout canoes. Shellfish were collected from the shore and included abalone, turbans, mussels, clams, scallops, and other species (Bean and Shipek 1978).

Serrano

The Serrano form another Native American group that occupied territory near the project site, in the area in and around the San Bernardino Mountains, between approximately 1,500-11,000 feet above mean sea level. Their territory extended west of the Cajon Pass, east past Twentynine Palms, north of Victorville, and south to Yucaipa Valley. The Serrano language is part of the Serran division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 2006:539, 543).

Most Serrano lived in small villages located near water sources (Bean and Smith 1978:571). Houses measuring 12 to 14 feet in diameter were domed, constructed of willow branches and tule thatching. A single extended family occupied these houses. Many of the villages had a ceremonial house, used as a religious center and as the residence of the lineage leaders. Additional structures in a village might include granaries and a large circular subterranean sweathouse. The sweathouses were built along streams or pools. A village was usually composed of at least two lineages. The Serrano were loosely organized along patrilineal lines and associated themselves with one of two exogamous moieties or "clans"—the Wahiyam (coyote) or the Tukum (wildcat) moiety.

The subsistence economy of the Serrano was one of hunting and collecting plant goods, with occasional fishing (Bean and Smith 1978:571). They hunted large and small animals, including mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Plant staples consisted of seeds; acorn nuts of the black oak; piñon nuts; bulbs and tubers; and shoots, blooms, and roots of various plants, including yucca, berries, barrel cacti, and mesquite. The Serrano used fire as a management tool to increase yields of specific plants, particularly chía. Trade and exchange was an important aspect of the Serrano economy. Those living in the lower-elevation, desert floor villages traded foodstuffs with people living in the foothill villages who had access to a different variety of edible resources.

Contact between Serrano and Europeans was minimal prior to the early 1800s. As early as 1790, however, Serrano began to be drawn into mission life (Bean and Vane 2002). More Serrano were relocated to Mission San Gabriel in 1811 after a failed indigenous attack on that mission. Most of the remaining western Serrano were moved to an *asistencia* built approximately 7.5 miles from the project site, near Redlands in 1819 (Bean and Smith 1978:573).

A smallpox epidemic in the 1860s killed many indigenous southern Californians, including many Serrano (Bean and Vane 2002). Oral history accounts of a massacre in the 1860s at Twentynine Palms may have been part of a larger American military campaign that lasted 32 days. Surviving Serrano sought shelter at Morongo with their Cahuilla neighbors; Morongo later became a reservation. Other survivors followed the Serrano leader Santos Manuel down from the mountains and toward the valley floors and eventually settled in what later became the San Manuel Band of Mission Indians Reservation, formally established in 1891.

In 2003, most Serrano lived either on the Morongo or San Manuel reservations (California Indian Assistance Program 2003). The Morongo Band of Mission Indians of the Morongo Reservation, established through presidential executive orders in 1877 and 1889, includes both Cahuilla and Serrano members. Established in 1891, the San Manuel Band of Mission Indians Reservation included Serrano members. Both Morongo and San Manuel are federally recognized tribes. People of both reservations participate in cultural programs to revitalize traditional languages, knowledge, and practices.

Gabrieleño

The project site is in an area historically occupied by the Gabrieleño. Archaeological evidence points to the Gabrieleño arriving in the Los Angeles Basin sometime around 500 BCE, but this has been a subject of debate (Bean and Smith 1978). Many contemporary Gabrieleño identify as descendants of the indigenous people living across the plains of the Los Angeles Basin and use the native term Tongva (King 2011).

The name "Gabrieleño" denotes those people administered by the Spanish from the San Gabriel Mission, which included people from the Gabrieleño area proper and other social groups (Bean and Smith 1978:538; Engelhardt 1927b; Kroeber 1925: Plate 57). Therefore, in the post-Contact period, the name does not necessarily identify a specific ethnic or tribal group. Many modern Gabrieleño identify as descendants of the indigenous people living across the plains of the Los Angeles Basin and refer to themselves as the Tongva (King 2011). This term is used in the remainder of this section to refer to the pre-contact inhabitants of the Los Angeles Basin and their descendants. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands (San Clemente, San Nicolas, and Santa Catalina). The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population is estimated of at least 5,000 (Bean and Smith 1978:540), but recent ethnohistoric work suggests a number approaching 10,000 (O'Neil 2002). The Tongva constructed houses that were large, circular, domed structures made of willow poles thatched with tule that could hold up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields were created for races and games, such as lacrosse and pole throwing, adjacent to Tongva villages (McCawley 1996:27). Archaeological sites composed of villages with various sized structures have been identified.

The Tongva subsistence economy centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. As for most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, and large and small mammals were also consumed (Bean and Smith 1978:546; Kroeber 1925:631–632; McCawley 1996:119–123, 128–131).

The Tongva used a wide variety of tools and implements to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used ocean-going plank canoes and tule balsa canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996:7). Tongva people processed food with a variety of tools, including hammer stones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925:629; McCawley 1996:129–138).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast, and cremation dominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996:157). Cremation ashes have been found in archaeological contexts buried in stone bowls and in shell dishes (Ashby and Winterbourne 1966:27), as well as scattered among broken ground stone implements (Cleland et al. 2007). Archaeological data such as these correspond with ethnographic descriptions of an elaborate mourning ceremony that included a wide variety of offerings, including seeds, stone grinding tools, otter skins, baskets, wood tools, shell beads, bone and shell ornaments, and projectile points and knives. At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996:157).

Historic Overview

Post-European contact history for the state of California is divided generally into three periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present).

Spanish Period (1769-1822)

Spanish exploration of what was then known as Alta (upper) California began when Juan Rodriguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003). Spanish entry into what was to become Riverside County did not occur until 1774 when Juan Bautista de Anza led an expedition from Sonora, Mexico to Monterey in northern California (Lech 1998).

The establishment of the Spanish missions between 1769 and 1823 marks the first sustained occupation of Alta California. In 1819, an *asistencia* was established near present-day Redlands to serve as an outpost for cattle grazing activities carried out by Mission San Gabriel's Rancho San Bernardino (San Bernardino County 2017). The Spanish colonists enlisted the labor of the surrounding Native American population to manage and expand their herds of cattle on large ranchos (Engelhardt 1927a). The influx of European settlers brought the local Native American population in contact with European diseases against which they had no immunity, resulting in catastrophic reduction in native populations throughout the state (McCawley 1996).

Mexican Period (1822–1848)

The Mexican Period commenced when news of the success of the Mexican War of Independence (1810-1821) reached California in 1822. This period saw the federalization of mission lands in California with the passage of the Secularization Act of 1833. This Act enabled Mexican governors in California to distribute former mission lands to individuals in the form land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time (Shumway 2007). About 15 land grants (ranchos) were located in Riverside County. The project site is in what was once Rancho Jurupa, which included the western portion of the City of Riverside.

American Period (1848–Present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for ceded territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming, and pay an additional $3.25 million to settle American citizens' claims against Mexico. Settlement of southern California increased dramatically in the early American Period. Many ranchos in Riverside County were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns.

Southern California remained dominated by cattle ranches in the early American period, though droughts and increasing population resulted in farming and more urban professions supplanting ranching through the late nineteenth century. In 1850, California was admitted into the United

States and by 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to move into the state, particularly after completion of the transcontinental railroad in 1869.

Local Overview

In 1870, solicited by John W. North, investors from the Southern California Colony Association laid out a mile-square town site. The town was called Jurupa originally, but was changed to Riverside in 1871. Agriculturalists, investors, and immigrants settled in the area because of the success of citrus crops. The California Fruit Growers Exchange, later Sunkist, was founded in the late 1800s, along with the Citrus Experimentation Station (at what is now the University of California, Riverside), making Riverside a key center of citrus machinery production.

In 1877, construction started on the Lower Canal, which traversed the project site until the canal was abandoned in 1914 (Padon 1991). Land uses in the project vicinity were largely rural through the 19th and early 20th centuries with a mixture of ranches, orchards, and rural homesteads. Residential development on the project site began in the early 1900s with the construction of several homes along Orange Street and the decommissioned Vista Street, which at one time traversed the current project site but is no longer present.

Riverside became a charter city in 1907, with a mayor-council form of government. A new City Charter was established in 1950 in response to population growth and city operations problems. A City Board of Freeholders was elected and a new Charter employing a Council-Manager form of government was implemented in 1952. Since the City's founding, Riverside has grown immensely and its economy has become diverse. Today, the Riverside-San Bernardino Metropolitan Area (the Inland Empire) is one of the most populous metropolitan areas in the country (City of Riverside 2017).

b. Regulatory Setting

Federal

National Register of Historic Places

Cultural resources are considered during federal undertakings chiefly under Section 106 of the National Historic Preservation Act of 1966 (as amended) through one of its implementing regulations, 36 Code of Federal Regulations (CFR) 800 (Protection of Historic Properties), as well as the National Environmental Policy Act. Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of the National Historic Preservation Act. Other federal laws include the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of the National Historic Preservation Act (16 United States Code 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP), and to give the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Significant cultural resources are those listed in or eligible for listing in the NRHP per the criteria listed below (36 CFR 60.4).

Certain properties are usually not considered for eligibility for the NRHP. These include ordinary cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or use for religious purposes, moved or reconstructed structures, properties primarily commemorative in nature, or properties that have become significant within the last 50 years. These types of properties can qualify if they are an integral part of a district that does meet the criteria, or if they fall within certain specific categories relating to architecture or association with historically significant people or events. The vast majority of archaeological sites that qualify for listing do so under Criterion D, Research Potential.

State

California Register of Historic Resources

The California Register of Historical Resources (CRHR) is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The CRHR helps government agencies identify, evaluate, and protect California's historical resources, and indicates properties to be protected from substantial adverse change (California Public Resources Code [PRC], Section 5024.1(a)). The CRHR is administered through the State Office of Historic Preservation (OHP) that is part of the California State Parks system.

A historical resource is one listed in or determined to be eligible for listing in the CRHR, a resource included in a local register of historical resources, or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (State CEQA Guidelines, Section 15064.5[a][1-3]). A resource shall be considered *historically significant* if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting one or more of the above criteria, the CRHR requires sufficient time to have passed to allow a "scholarly perspective on the events or individuals associated with the resource." Fifty years is a general estimate of the time needed to understand the historical importance of a resource, according to the state Office of Historic Preservation. The CRHR also requires a resource to possess integrity, defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association." Archaeological resources can sometimes qualify as "historical resources" (State CEQA Guidelines, Section 15064.5[c][1]).

According to CEQA, all buildings constructed over 50 years ago and that possess architectural or historical significance may be considered potential historic resources. Most resources must meet the 50-year threshold for historic significance, but resources less than 50 years in age may be eligible for listing on the CRHR if it can be demonstrated that sufficient time has passed to understand their historical importance.

If a project can be demonstrated to cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b], and [c]).

PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, the probability is high it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

The state administers two other programs: California Historical Landmarks and California Points of Historical Interest. California Historical Landmarks are buildings, sites, features, or events of statewide significance with anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value. California Points of Historical Interest are buildings, sites, features, or events local (county or city) significance with anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value.

Public Resources Codes Governing Human Remains

The disposition of human remains is governed by Health and Safety Code Section 7050.5 and PRC Sections 5097.94 and 5097.98. It falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the county coroner must be notified within 48 hours and there no further disturbance to the site where the remains were found should occur. If the remains are determined by the coroner to be Native American, the coroner is responsible to contact the NAHC within 24 hours. Pursuant to PRC Section 5097.98, the NAHC will immediately notify those persons it believes to be most likely descended from the deceased Native Americans, so they can inspect the burial site and make recommendations for treatment or disposal.

PRC Section 5097.5 addresses Paleontological Resources, stating that:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

In this PRC section, “public lands” means those owned by or under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, local agencies are required to comply with PRC 5097.5 for activities that include construction, maintenance, and permit actions (e.g., encroachment permits) undertaken by others.

Local

Riverside Municipal Code Title 20

The City's historical preservation program is among the most active in the state. Riverside adopted Title 20 of the Riverside Municipal Code (RMC), otherwise known as the "preservation ordinance," and created the Cultural Heritage Board in 1969. This ordinance forms the primary body of local historical preservation law. The California Office of Historic Preservation designated Riverside as a Certified Local Government; a distinction that ensures the City's preservation program meets all federal and state standards.

RMC Title 20 establishes procedures for preserving, protecting, and designating significant cultural resources should the resource be considered a historical/cultural resource, and outlines the criteria for Cultural Heritage Landmarks (RMC, Title 20, Section 20.50.010[U]), Structures or Resources of Merit (RMC, Title 20, Section 20.50.010[FF]), and Historic Districts (RMC, Title 20, Section 20.50.010[O]). A cultural resource may be eligible for one of the three City designations:

CULTURAL HERITAGE LANDMARK DESIGNATION CRITERIA

"Landmark" means any improvement or natural feature that is an exceptional example of a historical, archaeological, cultural, architectural, community, aesthetic or artistic heritage of the City, retains a high degree of integrity, and meets one or more of the following criteria:

1. Exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural, or natural history
2. Is identified with persons or events significant in local, state or national history
3. Embodies distinctive characteristics of a style, type, period or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship
4. Represents the work of a notable builder, designer, or architect, or important creative individual
5. Embodies elements that possess high artistic values or represents a significant structural or architectural achievement or innovation
6. Reflects significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning, or cultural landscape
7. Is one of the last remaining examples in the City, region, state, or nation possessing distinguishing characteristics of an architectural or historical type of specimen
8. Has yielded or may likely to yield, information important in history or prehistory

RESOURCE OR STRUCTURE OF MERIT CRITERIA

"Resource or Structure or Resource of Merit" means any improvement or natural feature that contributes to the broader understanding of the historical, archaeological, cultural, architectural, community, aesthetic or artistic heritage of the City, retains sufficient integrity, and:

1. Has a unique location or singular physical characteristics or is a view or vista representing an established and familiar visual feature of a neighborhood community or of the City
2. Is an example of a type of building which was once common but is now rare in its neighborhood, community or area

3. Is connected with a business or use which was once common but is now rare
4. A Cultural Resource that could be eligible under Landmark Criteria no longer exhibiting a high level of integrity, however, retaining sufficient integrity to convey significance under one or more of the Landmark Criteria
5. Has yielded or may be likely to yield, information important in history or prehistory
6. An improvement or resource that no longer exhibits the high degree of integrity sufficient for Landmark designation, yet still retains sufficient integrity under one or more of the Landmark criteria to convey cultural resource significance as a Structure of Merit

HISTORIC DISTRICT

A "Historic District" contains either:

1. A concentration, linkage, or continuity of cultural resources, where at least fifty percent of the structures or elements retain significant history integrity (a "geographic Historic District")
2. A thematically-related grouping of cultural resources that contribute to each other and are unified aesthetically by plan or physical development, and which have been designated or determined eligible for designation as a historic district by the Historic Preservation Officer, Board, or City Council, or is listed in the National Register of Historic Places or the California Register of Historical Resources, or is a California Historical Landmark or a California Point of Historical Interest (a "thematic Historic District")

In addition to either number 1 or 2 above, the area must also:

1. Exemplify or reflect special elements of the City's cultural, social, economic, political, aesthetic, engineering, architectural, or natural history
2. Identify with persons or events significant in local, state, or national history
3. Embody distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship
4. Represent the work of notable builders, designers, or architects
5. Embody a collection of elements of architectural design, detail, materials, or craftsmanship that represents a significant structural or architectural achievement or innovation
6. Reflect significant geographical patterns, including those associated with different eras of settlement and growth, particular transportation modes, or distinctive examples of park or community planning
7. Convey a sense of historic and architectural cohesiveness through its design, setting, materials, workmanship or association
8. Yield or may be likely to yield, information important in history or prehistory

City of Riverside General Plan 2025

The Historic Preservation Element of the General Plan 2025 contains policies related to the historic and prehistoric cultural resources in the City. The policies are used in conjunction with present and future goals of land use planning for the preservation of cultural resources. The Historic Preservation Element contains information pertaining to the City's historic context, which identifies themes important in the development of the City, and can be used to identify historic resources that reflect those themes. The Historic Preservation Element also discusses available federal, state, and local incentives for historic preservation. Objectives and policies from the Historic Preservation Element that are relevant to the project include:

Objective HP-1: To use historic preservation principles as an equal component in the planning and development process.

> **Policy HP-1.3:** The City shall protect sites of archaeological and paleontological significance and ensure compliance with all applicable State and federal cultural resources protection and management laws in its planning and project review process.
>
> **Policy HP-1.4:** The City shall protect natural resources such as geological features, heritage trees, and landscapes in the planning and development review process and in park and open space planning.
>
> **Policy HP-1.6:** The City shall use historic preservation as a tool for "smart growth" and mixed use development.

Objective HP-2: To continue an active program to identify, interpret and designate the City's cultural resources.

> **Policy HP-2.2:** The City shall continually update its identification and designation of cultural resources that are eligible for listing in local, state and national registers based upon the 50 year age guideline for potential historic designation eligibility.

Objective HP-4: To fully integrate the consideration of cultural resources as a major aspect of the City's planning, permitting and development activities.

> **Policy HP-4.3:** The City shall work with the appropriate tribe to identify and address, in a culturally appropriate manner, cultural resources and tribal sacred sites through the development review process.

Objective HP-5: To ensure compatibility between new development and existing cultural resources.

> **Policy HP-5.1:** The City shall use its design and plot plan review processes to encourage new construction to be compatible in scale and character with cultural resources and historic districts.
>
> **Policy HP-5.2:** The City shall use its design and plot plan review processes to encourage the compatibility of street design, public improvements, and utility infrastructure with cultural resources and historic districts.

4.4.2 Impact Analysis

a. Methodology

Cultural Resources

The analysis of cultural resources impacts is based on empirical research presented in the Cultural Resources Assessment prepared for the project. The full report is included as Appendix H of this EIR. Beyond those described in Section 4.4.1, Regulatory Setting, the methodologies and significance thresholds employed for the cultural resources impact analyses follow.

Cultural Resources Records Search

A cultural resource records search and literature review was conducted at the Eastern Information Center, at the University of California, Riverside, of the California Historical Resources Information System on August 15, 2017. The search was conducted to identify all previous cultural resources work and previously recorded cultural resources within a 1.0-mile radius of the project site. The California Historical Resources Information System search included a review of the NRHP, the CRHR, the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. The records search also included a review of all available historic U.S. Geologic Survey 7.5-, 15-, and 30-minute quadrangle maps.

Previously Conducted Studies

The records search indicated 44 previous studies have occurred within a 1.0-mile radius of the project site. Of these, two studies were conducted inside the project boundary. One study, the Hunter Park Specific Plan Area, encompassed most of the project site, but did not include a pedestrian survey. The other study encompassed the project site and nearby areas, and included a pedestrian survey that identified a historic resource (Cultural Resources Report, Appendix H).

Previously Identified Cultural Resources

The Eastern Information Center records search identified 81 previously recorded cultural resources within a 1.0-mile radius of the project site. One of these, CA-RIV-4299, is on the project site, and was recorded in 1991 by Patricia Jertberg. The site consists of structural remains associated with a 1920s residence and outbuildings. The previous address for the residence was 3485 Vista Street. Features include a series of joined concrete walls, concrete posts, railing, and retaining walls. No historic artifacts were observed when the site was recorded.

The resource has been found ineligible for listing in the CRHR and NRHP, due to a lack of integrity and historical association. Based on the findings of the current survey, Rincon concurred with this recommendation. The site's integrity has diminished since its original recording and no longer possesses integrity of design, setting, workmanship, feeling, or associate. It cannot be demonstrated that it is associated with events or persons significant in our past (Criteria 1 and 2; Padon 1991). The concrete foundations and structural remnants do not embody the distinctive characteristics of a type, period, or method of installation (Criterion 3). Historic refuse was identified in association with the site, but no diagnostic artifacts were identified nor was there any indication that the artifact types present may yield information important to history (Criterion 4). The refuse deposit represents only a small amount of rural household refuse ubiquitous throughout the area in association with most rural residences.

Cultural Resources Survey

Rincon archaeologists conducted a pedestrian survey of the project site on October 9, 2017 using transects spaced no greater than 45 feet apart. Ground visibility on the project site was poor throughout (approximately 30 percent visibility), due to heavy vegetation consisting primarily of dry grasses and overgrown weeds. Disturbances on the project site include grading, terracing, and other land modifications from the historic-period construction of residential structures and streets, ensuing demolition of those structures and streets, and the construction of the University Wash/Thornton Storm Drain on project site currently.

Historic aerial photographs suggest that, as late as the 1930s, properties near the subject resource were dedicated to agriculture, including orchards (NETR 2017). Single-family residential development expanded into the vicinity of the subject resource following the post-World War II population boom throughout Riverside, during the 1940s and 1950s; this trend was more marked west of Orange Street than on the eastern side of the street where the resource is located (City of Riverside 2009; NETR 2017). By 1966, State Route 60 and an Orange Street interchange had been constructed adjacent to the subject parcel and only a small cluster of buildings remained on the north side of Vista Street. These remained in place until sometime between 1980 and 1994.

Remnants of CA-RIV-4299 were identified during the pedestrian survey conducted as part of the current technical analysis (Appendix H). Foundation remnants from 1806 Orange Street identified by a Historic Property Clearance Report prepared in 1991 (Padon 1991) were also noted during the current survey. The 1991 evaluation found the structures at 1806 Orange Street ineligible for listing in the NRHP and they were subsequently demolished for the Freeway Interchange construction. It is presumed, thus, that the California Department of Transportation concurred with recommendation that found the structures at 1806 Orange Street ineligible as construction of the 1991 project took place. Because 1806 Orange Street was found ineligible at that time and the foundations represent the only remains of the property, the foundations were not recorded as a new resource because they would not add valuable information to the historic record of Riverside County. Rincon identified and recorded one new resource: the 1806 Orange Street Storm Drain, discussed in further detail below. No prehistoric cultural resources were identified during the pedestrian survey, but ground visibility was poor.

The Lower Canal was constructed in the 1870s and traversed the project site then, but no physical remains were identified during any surveys of the project site (Jertberg 1991; JM Research and Consulting 2005). No segments of the Lower Canal were recorded within a 1.0-mile radius of the project site. The Lower Canal ceased operation in 1914 and its route was demolished by construction activities. When the project site was surveyed in 1991, Howard Creason, retired manager of the Riverside Water Company, was interviewed. He identified the Lower Canal right-of-way and noted that none of the concrete structural remains recorded as part of CA-RIV-4299 were associated with the Lower Canal (Jertberg 1991).

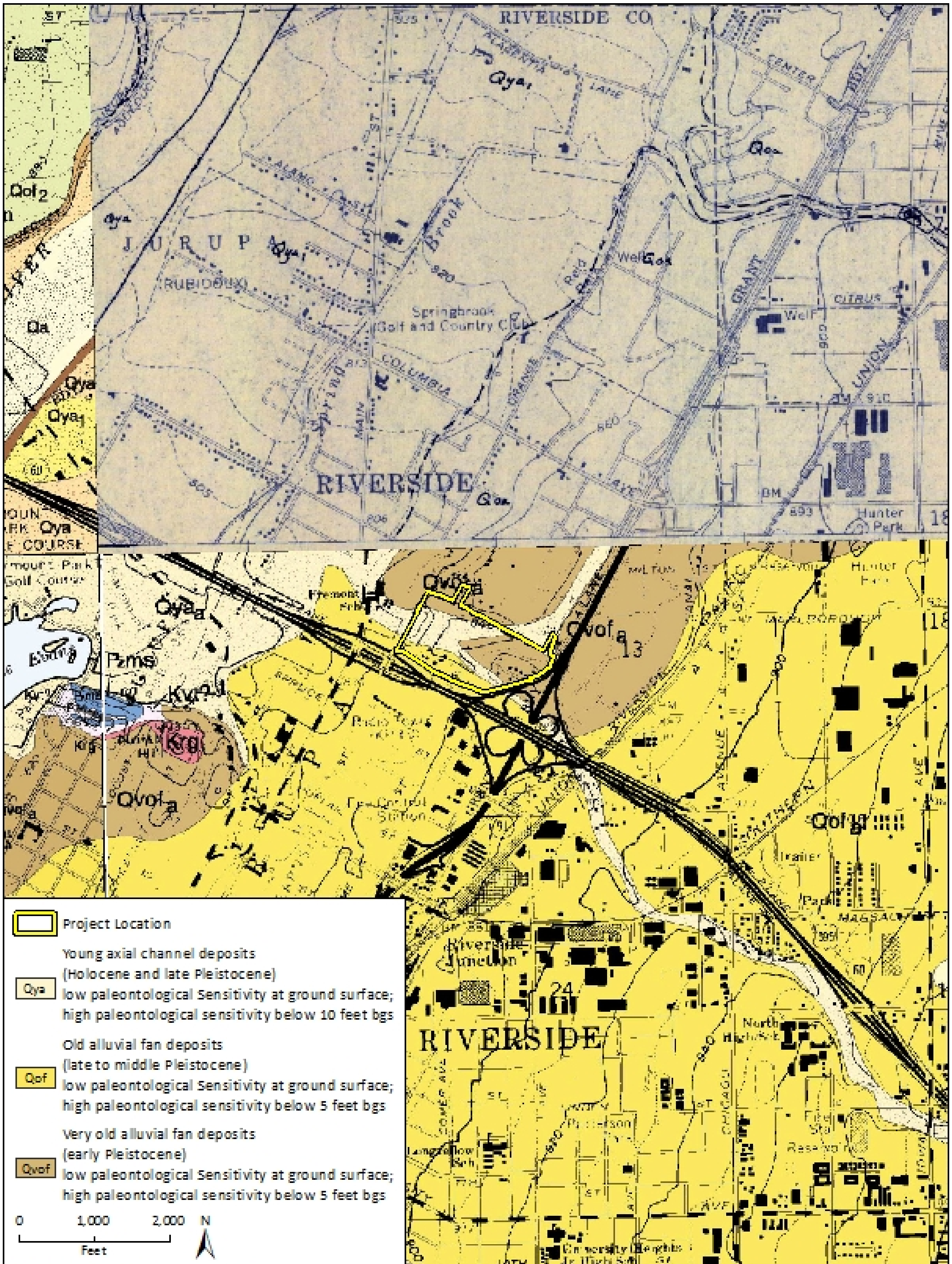
Constructed in 1948 by the City of Riverside Public Works Department, the 1806 Orange Street Storm Drain was a box-shaped, stormdrain-related structure located along the western boundary of the project site, in a predominantly residential section of the City. Most of the resource lies on a public roadside easement (confirmed in an interview with the Riverside Department of Public Works [Riverside 2018]), while the remainder is located on the 1806 Orange Street private parcel. By all appearances, the open ditch associated with the resource was either filled or replaced.

Paleontological Resources

A separate paleontological resources assessment was not prepared for the project. For the paleontological impact analysis, Rincon evaluated the paleontological sensitivity of the geologic units that underlie the project area using the results of the paleontological locality search and review of relevant scientific literature. Rincon reviewed fossil collections records from the University of California Museum of Paleontology online database, which contains known fossil locations for Riverside County.

The project area is underlain by three Quaternary geologic units mapped by Morton et al. (2002) at the ground surface (Figure 4.4-1): Holocene to late Pleistocene young alluvial fan deposits (Qya), late to middle Pleistocene old alluvial fan deposits (Qof), and early Pleistocene very old alluvial fan

Figure 4.4-1 Geologic Units and Paleontological Sensitivity in the Project Area



Imagery provided by Google and its licensors © 2018.
Geologic base map provided by Morton, D.M., Cox, B.F., Dawson, Michael, and O'Brien, Timothy, 2002,
Geologic map of the Riverside East 7.5' quadrangle, Riverside County, California: U.S. Geological Survey, Open-File Report OF-2001-452, scale 1:24,000.

GeoFig X Geologic Units in the Project Area deposits (Qvof) (Morton et al. 2002). The Quaternary alluvial fan deposits are composed of moderately- to well-consolidated, light to dark brown, gravel, coarse sand, and silt deposits, derived from nearby igneous and metamorphic bedrock, with moderate soil development at ground surface.

Pleistocene alluvial, fluvial, and lacustrine deposits have proven to yield scientifically significant paleontological resources throughout southern California from the coastal areas to the inland valleys (Springer et al. 2009; University of California Museum of Paleontology [UCMP] 2018). Southeast of the project area near Lakeview, a diverse assemblage of fossil resources were recovered, including specimens of *Mammuthus* (mammoth), *Smilodon* (saber-toothed cat), *Equus* (extinct horse), *Bison antiquus* (bison), and numerous small mammals, reptiles, invertebrates, and plant remains. Further southeast of the project area, the largest known open-environment non-asphaltic late Pleistocene fossil assemblage has been documented in the Diamond and Domenigoni valleys. Discovered during excavations of the Diamond Valley Lake, this locality has yielded nearly 100,000 identifiable fossils representing over 105 vertebrate, invertebrate, and plant taxa. Holocene age alluvial deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized remains, but they may overlie sensitive older Pleistocene deposits at shallow depth (SVP 2010).

A search of paleontological records on the UCMP online collections database resulted in no previously recorded fossil localities within the project area, but at least four were identified near the project site in Riverside County. Records retrieved from the UCMP database do not provide the exact location of recovered fossil specimens, as only a rough description of the locality is given and depth of recovery was unreported. Approximately 13 vertebrate fossil specimens, including mammal, rodent, and reptile, were included in this fossil localities (UCMP 2018). Table 4.4-1 summarizes the results of the museum records search.

Table 4.4-1 Vertebrate Localities Reported near the Project Area in Riverside County

Age	Geologic Unit	Age	Taxa
UCMP RV8601	Quaternary older alluvium	Pleistocene	*Microtus californicus* (California vole) and *Neotoma* (packrat)
UCMP V7006-V7007	Quaternary older alluvium	Pleistocene	*Gopherus* (gopher tortoise) and unspecified vertebrates
UCMP V65248	Quaternary older alluvium	Pleistocene	*Mammuthus*

Source: UCMP 2018

Paleontological Resources Sensitivity

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are nonrenewable resources. Such impacts have the potential to be significant and, under CEQA guidelines, may require mitigation. Sensitivity is determined by rock type, geologic history of the rock unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

The SVP Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010) provides guidelines for categorizing paleontological sensitivity of geologic units in a project area. The SVP guidelines describe sedimentary rock units as having a high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrate or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. Significant paleontological resources are fossils or assemblages of fossils that are unique, unusual, rare, uncommon, diagnostically or stratigraphically important, and that add to an existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally. While these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines. Rincon has evaluated the paleontological sensitivity of the project site according to the three SVP categories of high, low, and no sensitivity.

b. Thresholds

Cultural and Archaeological Resources

In accordance with Appendix G of the State *CEQA Guidelines*, an impact to Cultural Resources is considered significant if it can be demonstrably argued that the project would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
4. Disturb any human remains, including those interred outside of dedicated cemeteries

The Initial Study concluded that no potential impact would occur to historical resources since the project site does not contain any buildings or structures in use. Further analysis of threshold 1, cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5, is not warranted; refer to Section 4.15, *Impacts Found to be Less than Significant*.

Grading and ground-disturbing activity could potentially impact currently unknown subsurface archaeological or paleontological resources, or human remains. Therefore, impacts associated with thresholds 2, 3 and 4, are analyzed below.

c. Project Impacts and Mitigation Measures

Threshold 2:	Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?

Impact CR-1 NO KNOWN ARCHAEOLOGICAL RESOURCES ARE PRESENT ON THE PROJECT SITE. HOWEVER, CONSTRUCTION OF THE PROJECT WOULD INVOLVE GROUND-DISTURBING ACTIVITIES, SUCH AS GRADING AND SURFACE EXCAVATION, WITH THE POTENTIAL TO UNEARTH OR ADVERSELY IMPACT PREVIOUSLY UNIDENTIFIED ARCHAEOLOGICAL RESOURCES. THEREFORE, THE PROJECT WOULD RESULT IN LESS THAN SIGNIFICANT IMPACTS WITH MITIGATION INCORPORATED.

Resource CA-RIV-4299 has been recommended as ineligible for listing on the CRHR and NRHP due to lack of integrity and historical association. Subsurface archaeological materials consisting of historic refuse have been uncovered from heavy equipment excavations in the area. Refuse included glass windowpane shards, whiteware ceramic sherds, and bottle glass. No diagnostic artifacts were identified in the refuse, but it is presumed to date to the period of occupation of the residence associated with CA-RIV-4299. It is possible that subsurface deposits associated with CA-RIV-4299 are present and could be encountered during project-related ground-disturbing activities. Furthermore, the project site is considered moderately sensitive for buried prehistoric resources due to its proximity to the Santa Ana River.

Project construction activities on the project site, including ground clearing, grading, and excavation, could have significant impacts on previously unidentified historical and archaeological resources. Based on the preliminary analysis of site conditions and grading plans, the project's anticipated depth of excavation would be approximately 20 feet plus additional depth for foundation, footings, and utilities. Pre-construction reconnaissance would be needed due to the possibility for encountering subsurface archaeological resources during construction activities, including site excavation. Previously unrecorded archaeological resources, if present within the project site, could be damaged or destroyed during ground disturbance undertaken for project implementation. Adverse physical effects to or destruction of archaeological resources would result in a significant impact. Implementation of mitigation measures described below would reduce impacts to archaeological resources to less than significant.

Mitigation Measures

Avoidance or preservation in place of previously unknown cultural or archaeological resources would be preferred in the event that such resources are discovered on the project site during ground-disturbing activities. If avoidance or preservation in place of such resources are not feasible and/or recommended by the qualified archaeologist or Native American monitor(s), mitigation measures CR-1 through CR-3 would be implemented to reduce potential project impacts to a less than significant level and ensure proper handling of the discovered resource.

CR-1 Archaeological Monitoring Plan

At least 30 days prior to issuance of grading permit and before any grading, excavation, and/or ground disturbing activities take place, the developer shall retain a qualified archaeologist, defined as an archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983), to carry out all mitigation measures related to archaeological and historic resources.

The project archaeologist, in consultation with consulting tribes, the developer, and the City, shall develop an Archaeological Monitoring Plan to address the details, timing, and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the plan shall include:

1. Project grading and development scheduling
2. A rotating or simultaneous schedule in coordination with the developer and the project archaeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation, and ground-disturbing activities on the site, including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all project archaeologists
3. Protocols and stipulations that the developer, tribes, and project archaeologist/paleontologist shall follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits, or non-renewable paleontological resources that shall be subject to a cultural resources evaluation
4. Treatment and final disposition of any cultural and paleontological resources, sacred sites, and human remains if discovered on the project site
5. The scheduling and timing of the Cultural and Archaeological Sensitivity Training noted in mitigation measure CR-2

CR-2 Cultural and Archaeological Sensitivity Training

A qualified archaeologist and any consulting tribes shall attend the pre-grading meeting with the developer's contractors to conduct a Worker's Environmental Awareness Program training for cultural and archaeological sensitivity for all construction personnel prior to the commencement of any ground-disturbing activities. Archaeological sensitivity training shall include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, procedures to follow during ground disturbance in sensitive areas, and protocols in the event unanticipated resources are discovered. Only construction personnel who received this training can conduct construction and disturbance activities in sensitive areas. All attendees shall confirm attendance by signing a sign-in sheet to be submitted to the City of Riverside.

CR-3 Treatment and Disposition of Cultural Resources

In the event cultural resources are encountered inadvertently during ground-disturbing activities, work in the immediate area must halt and the qualified archaeologist must be immediately contacted and may consult with the tribal monitor(s) to evaluate the find and develop a plan for treatment of the find/archaeological site. The following procedures shall be carried out for treatment and disposition of the discoveries:

1. **Temporary Curation and Storage.** During the course of construction, all discovered resources shall be temporarily curated in a secure location on site or at the offices of the project archaeologist. The removal of any artifacts from the project site shall need to be inventoried thoroughly with tribal monitor oversight, as necessary, of the process.
2. **Treatment and Final Disposition.** The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains, as part of the required mitigation for impacts to cultural resources. The landowner(s)

shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same:

a. Accommodate the process for on-site reburial of the discovered items with the consulting tribes. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation are completed.

b. Secure a curation agreement with an appropriate qualified repository in Riverside County that meets federal standards per 36 CFR Part 79 and will professionally curate and make available findings to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility in Riverside County, to be accompanied by payment of the fees necessary for permanent curation.

c. If more than one consulting tribe is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default.

d. At the completion of grading, excavation, and ground-disturbing activities on the site, a Phase IV Monitoring Report shall be submitted to the City documenting monitoring activities conducted by the project archaeologist and Native Tribal Monitors, as necessary, within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced shall be submitted to the City of Riverside, Eastern Information Center, and consulting tribes.

Significance After Mitigation

Implementation of Mitigation Measures CR-1 through CR-3 would reduce impacts to previously unidentified archaeological resources to a less than significant level.

Threshold 3:	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
Threshold 4:	Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Impact CR-2 **NO KNOWN PALEONTOLOGICAL RESOURCES OR HUMAN REMAINS ARE PRESENT ON THE PROJECT SITE. HOWEVER, CONSTRUCTION OF THE PROJECT WOULD INVOLVE GROUND-DISTURBING ACTIVITIES SUCH AS GRADING AND SURFACE EXCAVATION, WHICH HAVE THE POTENTIAL TO UNEARTH OR ADVERSELY IMPACT PREVIOUSLY UNIDENTIFIED PALEONTOLOGICAL RESOURCES OR HUMAN REMAINS. THEREFORE, THE PROJECT WOULD RESULT IN LESS THAN SIGNIFICANT IMPACTS WITH MITIGATION INCORPORATED.**

Based on the literature review and records search results, the paleontological sensitivity of the geologic units underlying the project area were determined in accordance with criteria set forth by the SVP. The Pleistocene very old and older alluvial fan deposits (Qvof, Qof) have a high paleontological sensitivity because the unit has proven to yield significant Pleistocene vertebrate fossils near the project area and elsewhere in Riverside County. Based on field observations during the cultural survey, previous ground disturbance in the project area (e.g., grading, terracing, and other land modifications) occurred because of construction of residential structures, streets, and the University Wash/Thornton Storm Drain. Depth of previous disturbance is estimated to reach at least 5 feet below ground surface; therefore, the Pleistocene alluvial deposits have high paleontological sensitivity below 5 feet.

The Quaternary younger alluvium (Qya) is determined to have a low paleontological sensitivity at the surface where the Holocene sediments are too young to preserve fossilized remains. However, these alluvial deposits may grade into sensitive Pleistocene age deposits at moderate depth. As such, their sensitivity is determined to be low to high, increasing at a depth of 10 feet below ground surface. Figure 4.4-1 shows the paleontological sensitivity of the geologic units underlying the project area.

Ground-disturbing activities in previously undisturbed portions of the project area underlain by geologic units with a high paleontological sensitivity may result in significant impacts to paleontological resources under Appendix G of State *CEQA Guidelines*. Impacts would be significant if construction activities result in the destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. The activities may include grading, excavation, drilling, or any other activity that disturbs the surface or subsurface geologic units with a high paleontological sensitivity.

The discovery of human remains is always a possibility during ground disturbing activities. As of the date of this document, there is no evidence indicating the possible presence of human remains in the project site. If human remains are found during project development, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the County coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a most likely descendant, who shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. With adherence to existing regulations, impacts to human remains would be less than significant.

Mitigation Measures

CR-4 Paleontological Resources Monitoring

The following mitigation measure would address the potentially significant impacts relating to the discovery of paleontological resources during project implementation and ground-disturbing activities. This measure would apply to all phases of project construction and would ensure that any significant fossils present on-site are preserved. The following procedures shall be carried out:

a. Prior to the commencement of ground-disturbing activities under the project, a qualified professional paleontologist shall be retained to conduct paleontological monitoring during project ground disturbing activities. The Qualified Paleontologist (Principal Paleontologist) shall meet the education and professional experience standards as set forth by the SVP, which recommends the paleontologist shall have at least a Master’s Degree or equivalent work experience in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques.

b. Ground-disturbing construction activities (including grading, trenching, drilling with an auger greater than three feet in diameter, and other excavation) below five feet and within project areas with high paleontological sensitivity (i.e., Pleistocene alluvium; Qvof, Qof) shall be monitored on a full-time basis. Spot-check monitoring is recommended for ground disturbance below ten feet for project areas underlain by geologic units with low paleontological sensitivity (i.e., younger Quaternary alluvium; Qyf) to determine underlying sensitive units are being impacted. Monitoring shall be supervised by the Qualified Paleontologist and shall be conducted by a qualified paleontological monitor, who is defined as an individual who meets the minimum qualifications per standards set forth by the SVP, which includes a BS or BA degree in geology or paleontology with one year of monitoring experience and knowledge of collection and salvage of paleontological resources.

c. The duration and timing of the monitoring shall be determined by the Qualified Paleontologist. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, he or she may recommend reducing monitoring to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist.

d. If a paleontological resource is discovered, the monitor shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Once salvaged, significant fossils shall be prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center in Hemet). Curation fees are the responsibility of the project owner.

e. A final report shall be prepared describing the results of the paleontological mitigation monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to the lead agency(s) for the project. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.

Significance After Mitigation

Implementation of Mitigation Measure CR-4 would reduce impacts to previously unidentified paleontological resources to a less than significant level.

4.4.3 Cumulative Impacts

The planned and pending projects in the project vicinity are listed in Table 3-1 (see Section 3, Environmental Setting) and include residential, warehouse, commercial, hotel, school, and recreational land uses. The proposed project, in conjunction with other planned and pending projects in the project vicinity, would cumulatively increase the potential to encounter sensitive cultural, archaeological, and paleontological resources. In the event that cultural, archaeological, and/or paleontological resources are discovered, each individual project would be required to comply with the applicable regulatory requirements and mitigate any potential impacts to resources on the individual project site. Potential impacts of the proposed project would be reduced to a less-than-significant level due to implementation of mitigation measures that would protect cultural, archaeological, and paleontological resources. Compliance with CEQA requirements, including the implementation of recommendations provided in project-specific cultural resource studies, on all new development would ensure that the proposed project would not be cumulatively significant.

Such recommendations may include site avoidance, in-situ preservation, site salvage and documentation, and/or other measures determined to be necessary based on the resources identified. Therefore, cumulative impacts would be less than significant.

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4.5 Energy

This section analyzes the energy impacts of implementing the proposed project. This analysis is based on Appendix F, *Energy Conservation*, of the California Environmental Quality Act (CEQA) Guidelines. To assure project decisions consider energy implications, CEQA requires that Environmental Impact Reports (EIR) include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The analysis is supported by data and information from the Air Quality Impact Analysis (Appendix B), Greenhouse Gas (GHG) Report (Appendix C), and Traffic Impact Analysis (TIA) (Appendix L). Air quality impacts are discussed in Section 4.2 *Air Quality*, GHG and climate change impacts are discussed in Section 4.7, *Greenhouse Gas Emissions*, and traffic impacts are discussed in Section 4.12, *Transportation and Traffic,* of this EIR. Additionally, the discussion and analysis contained herein is informed by comments received during the Notice of Preparation of an EIR public review period.

4.5.1 Setting

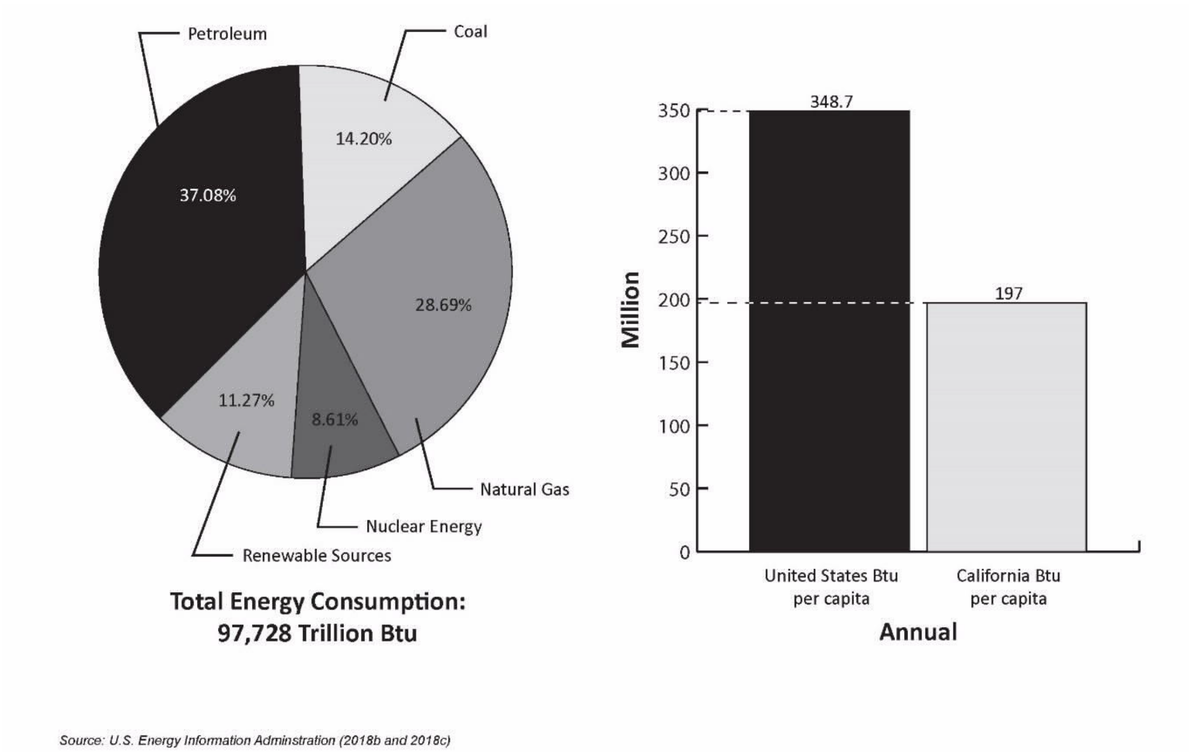
a. Existing Energy Setting

Energy use can affect air quality and other natural resources adversely. Energy is primarily categorized in three areas: electricity, used in buildings and cities for lighting and other services; natural gas used for building heating, cooking, and other industrial processes; and fuels used for transportation. Fossil fuels used for any of these types of energy must be burned to create electricity that powers homes and commercial/industrial buildings, to create heat, and to power vehicles. The burning or combusting of fuels releases pollutants and GHG emissions. Many factors affect the level of impact from fuels. When used in transportation, the impact from energy is corresponds to the fuel efficiency of cars, trucks, and public transportation; the mode of travel, such as auto, carpool, and public transit; and miles traveled by these modes as well as the type of fuel. Construction and routine operation and maintenance of transportation infrastructure also consume energy as do residential, commercial, and industrial land uses. This typically occurs through the use of natural gas for heating, cooking, and industrial processes along with the use of electricity.

Energy Consumption and Sources

Total energy consumption in the U.S. in 2017 was approximately 97.8 quadrillion British thermal units (Btu) (Energy Information Administration [EIA] 2018a). Of this, fossil fuels provided approximately 80 percent (EIA 2018a). As shown in Figure 4.5-1, petroleum constituted approximately 37 percent, natural gas approximately 29 percent, coal approximately 14 percent, total renewable sources approximately 11 percent, and nuclear electric power approximately 9 percent of energy consumed in the U.S. in 2017. On a per capita basis in 2015, California was ranked the third lowest state in terms of energy use (197 million Btu [MBtu] per person), or about 44 percent less than the U.S. average per capita consumption of 348.7 MBtu per person (EIA 2018b). This is attributed to mild weather throughout the state, vehicle fuel efficiency standards, and green building policies.

Figure 4.5-1 U.S. Energy Consumption by Resource



Energy Supply

The two largest sources of energy produced in California in 2016 were crude oil, at approximately 1,064.7.7 trillion Btu, and renewable energy sources, at approximately 903.9 trillion Btu (EIA 2016). Crude oil was used as transportation fuel primarily, with a portion used in industrial processes. In this analysis, renewable energy sources include geothermal, solar, wind, biomass, and hydroelectric energy generation. Other sources of energy produced in California include nuclear electric power and natural gas. Natural gas-fired power plants provided approximately 36 percent of the state's generated electricity in 2016 (California Energy Commission [CEC] 2017).

Electricity

In 2016 the California electric system used 290,567 Gigawatt hours (GWh) of electricity, of which 198.227 GWh was produced in-state (CEC 2017). Specifically, Riverside County consumed approximately 15,928 GWh of electricity (CEC 2016a). Table 4.7-1 indicates that Riverside County accounted for approximately five percent of the state's electricity consumption in 2016, and had a per capita electricity consumption of approximately 6,572.9 kilowatt-hours (kWh).

Table 4.7-1 2016 Riverside County Electricity Consumption

County Consumption (GWh)[1]	Percent of Statewide Consumption	County Per Capita Consumption (kWh)[1]
15,927.9	5	6,572.9

[1] Electricity consumption is quantified in GWh, while per capita electricity is quantified in kWh.

Sources: CEC 2016a; U.S. Census Bureau 2017

Riverside Public Utilities (RPU) would supply energy for the project. RPU was established in 1895 and is a consumer-owner water and electrical utility. It is connected with the California transmission grid at Southern California Edison's Vista Substation and the electrical system includes 15 substations (RPU 2014). RPU receives its energy from a variety of sources including natural gas, coal, nuclear, biomass, geothermal, solar, wind, and hydroelectric. RPU also owns and operates four 10-megawatt (MW) natural gas-fired turbines at the Springs Generation Plant and four 49-MW natural gas-fired turbines at the Riverside Energy Resource Center. RPU owns and operates the Clearwater Cogeneration Power Plant in Corona, California (RPU 2015a). RPU operates 98 miles of transmission lines and approximately 1,327 miles of distribution lines. Through the connection from the Vista Substation, RPU has a maximum of 557 MW that can reach the City as of 2015 (RPU 2015b).

According to the City's 2018 Power Supply Integrated Resource Plan, there were 109,300 metered customers across the City, consisting of residential, commercial and industrial uses, and a larger service-area population of more than 314,000 over 82 square miles (City of Riverside 2018). A majority of RPU's customers (90 percent) are residential households (RPU 2015a). Table 4.5-2 shows the total electricity consumption in the RPU service area in 2016.

Table 4.5-2 Electricity Consumption in the Riverside Public Utilities Service Area in 2016

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total Usage
26.7	1,081.5	45.1	295.4	13.3	721	20.9	2,203.9

Notes: All usage expressed in GWh

Source: CEC 2016c

As shown in Table 4.5-2, RPU produced approximately 2,204 GWh, or 2.2 billion kWh, in 2016. Table 4.5-3 shows the breakdown of energy resources from RPU versus California's total power mix in 2017.

Table 4.5-3 Riverside Public Utilities 2017 Power Content Mix

Energy Resources	Power Mix	2017 CA Power Mix**
Eligible Renewable	**36%**	**29%**
Biomass & biowaste	0%	2%
Geothermal	21%	4%
Eligible hydroelectric	0%	3%
Solar	11%	10%
Wind	4%	10%
Coal	26%	4%
Large Hydroelectric	1%	15%
Natural Gas	5%	34%
Nuclear	4%	9%
Other	0%	<1%
Unspecified sources of power*	28%	9%
Total	**100%**	**100%**

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.
** Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year.
Source: RPU 2017

The City is dedicated to conserving energy generated by fossil fuels and increasing the renewable energy portfolio. In 2017, 36 percent of RPU's power supply was generated from renewable energy sources, including geothermal, wind, and solar power (RPU 2017). RPU anticipates increasing renewable resources to 44 percent by 2020, and phasing out its reliance on coal-fired plants for electricity supply by 2025. Surpassing a 33-percent Renewable Portfolio Standard (RPS) by 2020 will put RPU in compliance with all current California renewable energy goals and mandates (see Section 4.2, Air Quality, for details on these).

Natural Gas

Natural gas forms a third of energy commodities consumed in California and consumers fall into four sectors: residential, commercial, industrial, and electric power generation (CEC 2016b). By sector, industrial uses consumed approximately 36 percent of the California's natural gas, followed by approximately 35 percent from electric power generation, approximately 17.5 percent from residential uses, approximately 10.3 percent from commercial uses, and approximately 1.5 percent from transportation uses (EIA 2017).

In 2016, California also consumed about 12,700 million U.S. therms (Mthm), or 1,180 trillion Btu, of natural gas in 2016 (CEC 2016b). Riverside County consumed approximately 396 million Mthm of natural gas in the same year, which accounted for three percent of the statewide consumption, as detailed in Table 4.7-4.

Table 4.7-4 2016 Riverside County Natural Gas Consumption

County Consumption (MThm)[1]	Percent of Statewide Consumption	County per Capita Consumption (thm)[2]
395.9	3	163.3

[1] Natural gas consumption is quantified in MThm

[2] Per capita natural gas consumption is quantified in therms (thm)

Sources: CEC 2016b; U.S. Census Bureau 2017

Southern California Gas Company (SoCalGas) provides natural gas service to the City, including the project site. SoCalGas is the principal distributor of natural gas in Southern California and provides natural gas for residential, commercial, and industrial markets, as well as for electric generation (California Gas and Electric Utilities 2018). SoCalGas does not base its service levels on City demand, but provides upgrades to offer service for specific projects. SoCalGas is continuously expanding its network of gas pipelines to meet the needs of new commercial and residential developments in Southern California (City of Riverside 2007).

SoCalGas currently projects gas demands in all of its market sectors to decrease at an annual average rate of approximately 0.7 percent from 2018 to 2035 (California Gas and Electric Utilities 2018). This is due to modest economic growth, California Public Utilities Commission (CPUC)-mandated energy efficiency standards and programs, stricter standards through Title 24 Codes, renewable energy goals, and a decline in commercial and industrial demand (California Gas and Electric Utilities 2018). Table 4.5-5 shows the natural gas consumption by sector in the SoCalGas service area. In 2016, SoCalGas distributed approximately 5,123 MBtu, or 5.1 billion Btu, of which residential and industry sectors constituted the greatest demand.

Table 4.5-5 Natural Gas Consumption in SoCalGas Service Area in 2016

Agriculture and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Total Usage
77.1	896.6	56.6	1,720.1	236.8	2,136.0	5,123.2

Notes: All usage expressed in MBtu

Source: CEC 2016d

Petroleum

Petroleum products consumed by the transportation sector accounted for roughly 85 percent of California's total petroleum demand in 2016, or approximately 3,065 trillion Btu (EIA 2018c). In 2016, approximately 40 percent of the state's energy consumption was used for transportation activities (EIA 2018d). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific formulations required by the California Air Resources Board (CARB). California's transportation sector, including on-road and rail transportation, consumed roughly 672 million barrels of petroleum fuels in 2016 (EIA 2018c). The TIA (Appendix L) estimated the project would result in 23,605,082 annual vehicle miles traveled (VMT).

Alternative Vehicle Fuels

Various statewide regulations and plans encourage alternative fuel use to reduce GHG emissions and criteria pollutant emissions. These include the Low Carbon Fuel Standard and Senate Bill (SB) 32, as well as myriad other statewide and local air district regulations. Conventional gasoline and diesel may be replaced with different alternative fuels, depending on the capability of the vehicle. Descriptions of the most widely used alternative fuels include the following.

- **Hydrogen** is being explored for use in combustion engines and fuel cell electric vehicles. The interest in hydrogen as an alternative transportation fuel stems from its clean-burning qualities, its potential for domestic production, and the fuel cell vehicle's potential for high efficiency: hydrogen is two to three times more efficient than gasoline. Currently, California has 34 hydrogen refueling stations, and one is in Riverside at 8095 Lincoln Avenue. Currently, the fueling site is offline for repair (U.S. Department of Energy [DOE] 2018a). Fuel cells are being explored as a way to use electricity generated on-board the vehicle to power electric motors.
- **Biodiesel** is a renewable alternative fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant grease. Biodiesel is biodegradable and cleaner-burning than petroleum-based diesel fuel. Generally, biodiesel can run in any diesel engine without alterations, but fueling stations have been slow to make it available. There are ten biodiesel refueling stations in California, but none in the City or in Riverside County (DOE 2018a).
- **Electricity** can power electric and plug-in hybrid electric vehicles directly from the power grid. Generally, these vehicles draw from the electricity grid and store the energy in their batteries.
- **Natural Gas** is considered an alternative fuel and is currently being used in vehicles in two forms: compressed natural gas and liquefied natural gas. Compressed natural gas is used in light-, medium, and heavy-duty vehicles and gets about the same fuel economy. Liquefied natural gas is costly to produce and therefore is used in limited applications, typically in medium- and heavy-duty vehicles (DOE 2018b).

Energy and Fuel Efficiency

Though the demand for gasoline and diesel fuel continues to increase, it can be offset partially by efficiency improvements. Land use policies, such as SB 375, encourage infill and growth near transit centers, improvements to fuel efficiency, and replacement of older vehicles with more energy-efficient newer ones all of which will contribute to reduced fuel demand.

b. Regulatory Setting

Programs and policies at the federal, state, and local levels have emerged to enhance the previous trend towards energy efficiency; these are discussed in the following section.

Federal

Energy Policy and Conservation Act

Enacted in 1975, this legislation established fuel economy standards for new light-duty vehicles (autos, pickups, vans, and sport-utility vehicles). The law placed responsibility on the National Highway Traffic and Safety Administration, a part of the U.S. Department of Transportation, for establishing and regularly updating vehicle standards. The United States Environmental Protection Agency (USEPA) administers the Corporate Average Fuel Economy program, which determines vehicle manufacturers’ compliance with existing fuel economy standards. Since the inception of the program, the average fuel economy for new light-duty vehicles steadily increased from 13.1 miles per gallon (mpg) for the 1975 model year to 30.7 mpg for the 2014 model year and can increase to 54.5 by 2025.

Energy Star Program

In 1992, the USEPA introduced Energy Star as a voluntary labeling program to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components, such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specification for maximum energy use established under the program are certified to display the Energy Star label. In 1996, the USEPA joined with the Energy Department to expand the program, which now includes qualifying commercial and industrial buildings as well as homes.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 was designed to improve vehicle fuel economy and help reduce nationwide dependence on foreign oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting global climate change. Specifically, it increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard by requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, and reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020.

State

California Energy Action Plan

The CEC, in collaboration with CPUC, is responsible for preparing the California Energy Action Plan (EAP), which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The 2003 California Energy Action Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs; and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

In the October 2005 Energy Action Plan II (EAP II), the CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as information on the emerging importance of climate change, transportation-related energy issues, and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the state’s ongoing actions in the context of global climate change. In 2008, the CEC determined an update to the plan was not needed due to state regulations such as Assembly Bill (AB) 32.

California Energy Code

The Building Energy Efficiency Standards were first adopted in 1976 and have been updated periodically since then. The standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The goal is to reduce energy costs for owners, increase reliability and availability of electricity for the state, improve building occupant comfort, and reduce environmental impact.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), the CEC and CARB prepared and adopted a joint-agency report, *Reducing California's Petroleum Dependence*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT. One performance-based goal for AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. Furthermore, in response to the CEC's 2003 and 2005 Integrated Energy Policy Reports, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

Integrated Energy Policy Report

SB 1389 (Chapter 568, Statutes of 2002) required the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies and recommendations to conserve resources, protect the environment, ensure energy reliability, enhance the State's economy, and protect public health and safety.

Senate Bill X1-2: California Renewable Energy Resources Act

In 2011, the Governor signed SB X1-2, which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 33 percent of their electricity supply from renewable sources by 2020. The CPUC and CEC implement the statewide RPS program through rulemakings and monitoring the activities of electric energy utilities in the State.

Senate Bill 1078: California Renewables Portfolio Standard Program

SB 1078 (Chapter 516, Statutes of 2002), and as expanded under SB X1-2, establishes an RPS for electricity supply. The initial RPS program only required electrical corporations to provide 20 percent of their supply from renewable sources by increasing its total procurement at least one percent each year to reach the 20 percent goal. SB X1-2 expanded this law by making it applicable to all retail sellers of electricity and required procurement from eligible renewable energy resources to 33 percent by 2020.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers through energy efficiency and conservation by December 31, 2030.

Assembly Bill 1493: Reduction of Greenhouse Gas Emissions

AB 1493 (Chapter 200, Statutes of 2002), known as the Pavley Bill, amended Health and Safety Code sections 42823 and added 43018.5 requiring CARB to develop and adopt regulations that achieve maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles, light-duty trucks, and other vehicles used for noncommercial personal transportation in California.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan (SAF Plan) in partnership with CARB and in consultation with other federal, state, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan, Executive Order S-06-06

Executive Order (EO) S-06-06, April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California, while providing environmental protection and mitigation. The EO establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California by 2010, 40 percent by 2020, and 75 percent by 2050. EO S-06-06 also calls for the state to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the State can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 Plan and provides a more detailed action plan to achieve the following goals:

- Increase environmentally and economically sustainable energy production from organic waste
- Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications
- Create jobs and stimulate economic development, especially in rural regions of the State
- Reduce fire danger, improve air and water quality, and reduce waste

Title 24, California Code of Regulations

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods.

In 2016, the CEC updated Title 24 standards with more stringent requirements effective January 1, 2017. All buildings for which an application for a building permit is submitted on or after January 1, 2017 must follow the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided these standards exceed those provided in Title 24.

California Green Building Standards Code (2016), California Code of Regulations Title 24, Part 11

California's green building code, referred to as CalGreen, was developed to reduce GHG emissions from buildings, promote environmentally responsible, cost-effective, healthier places to live and work, reduce energy and water consumption, and respond to the environmental directives of the administration . The most recent version of CalGreen (January 2016) lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved efficiency and process improvements. It also includes voluntary tiers to encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design. If the project is submitted for building plan check on January 1, 2020 or after, the 2019 code cycle will be effective.

California Air Resources Board

CARB has a number of regulations and standards that seek to limit emissions from mobile sources and pollution from specific types of operation or source pollution. These policies indirectly impact energy consumption. These include:

- In-Use Off-Road Diesel Rule: Imposes limits on idling, restricts the addition of older vehicles, and requires the retirement or replacement of older engines depending on their fleet size category.
- Phase 1 Medium- and Heavy-Duty Engine and Vehicle GHG Emission Standards: establishes standards for new medium- and heavy-duty engines and vehicles sold in California
- Advanced Clean Cars Plan: Coordinates regulating smog-causing pollutants and GHG emissions through developing more stringent emissions standards for vehicles and improving the number of zero-emission vehicles on the roadways.

Local

City of Riverside General Plan 2025

The City's General Plan 2025 contains objectives and policies that seek to reduce energy use in the City and to provide renewable energy sources. The Open Space and Conservation Element and Public Facilities Element contain energy conservation items. Objectives and policies that relate to the project include:

OPEN SPACE AND CONSERVATION ELEMENT

Objective OS-8: Encourage the efficient use of energy resources by residential and commercial users.

> **Policy OS-8.2**: Require incorporation of energy conservation features in the design of all new construction and substantial rehabilitation projects pursuant to Title 24, and encourage the installation of conservation devices in existing developments.
>
> **Policy OS-8.3**: Encourage private energy conservation programs that minimize high energy demand and that use alternative energy sources.
>
> **Policy OS-8.4**: Incorporate solar considerations into development regulations that allow existing and proposed buildings to use solar facilities.

Policy OS-8.5: Develop landscaping guidelines that support the use of vegetation for shading and wind reduction and otherwise help reduce energy consumption in new development for compatibility with renewable energy sources (i.e., solar pools).

Policy OS-8.6: Require all new development to incorporate energy efficient lighting, heating and cooling systems pursuant to the Uniform Building Code and Title 24.

Policy OS-8.7: Encourage mixed-use development as a means of reducing the need for auto travel.

Policy OS-8.9: Encourage construction and subdivision design that allows the use of solar energy systems.

Policy OS-8.10: Support the use of public transportation, bicycling and other alternative transportation modes in order to reduce the consumption of nonrenewable energy supplies.

Policy OS-8.11: Support public education programs for City residents and businesses to provide information on energy conservation and on alternative to nonrenewable energy resources.

Policy OS-8.12: Require bicycle parking in new nonresidential development.

PUBLIC FACILITIES AND INFRASTRUCTURE ELEMENT (PF)

Objective PF-6: Provide affordable, reliable, and, to the extent practical, environmentally sensitive energy resources to residents and businesses.

Policy PF-6.3: Promote and encourage energy conservation.

Policy PF-6.4: Encourage energy-efficient development through its site plan and building design standard guidelines.

Policy PF-6.5: Promote green building design.

City of Riverside Economic Prosperity Action Plan and Climate Action Plan

The City's Restorative Growthprint- Climate Action Plan, adopted in 2016, identifies strategies for reducing GHG emissions in the City in order to comply with State regulations as detailed in Section 4.7, *Greenhouse Gas Emissions.* Many of the measures and strategies in the Restorative Growthprint-Climate Action Plan seek to reduce energy consumption, which subsequently reduces GHG emissions. The CAP contains GHG reduction measures organized into four primary sectors:

- Energy: Promote energy efficiency and renewable energy for municipal operations and the community
- Transportation and Land Use: Measures to reduce single-occupancy travel, increase non-motorized travel, improve transit access, encourage alternative fuels, and promote sustainable growth patterns
- Water: Measures to reduce water demand by community and municipal operations and to conserve potable water
- Solid Waste: Measures to reduce solid waste during construction and operational activities

City of Riverside Green Action Plan

The City's Green Action Plan was adopted in 2009 and updated twice, in 2009 and 2012, establishing the City as a leader in clean and green practices. The Green Action Plan contains 19 green action goals in eight focus areas: Energy, Greenhouse Gas Emissions, Waste Reduction, Urban Design, Urban Nature, Transportation, Water, and Healthy Communities, in which to transform the City into an innovative and sustainable City (City of Riverside 2012). Goals that relate to the project or that the project helps to meet include:

Goal 5: Create a climate action plan to reduce GHG emissions to 7% below the 1990 City baseline utilizing the City boundaries as defined in 2008.

Goal 8: Increase green development throughout Riverside.

Goal 11: Ensure that 90% of City residents have access to a park, recreational or public open space within half a mile of home.

Goal 12: Increase the City's urban forest.

Goal 14: Decrease vehicle miles traveled 15% by 2015 based on the 2009 baseline

Goal 15: Reduce mobile sources of pollution 5% by 2020.

Goal 16: Reduce per capita water usage 20% citywide by 2020.

4.5.2 Impact Analysis

a. Significance Criteria

Public Resources Code Section 21100(b)(3) and State CEQA Guidelines Appendix F, Section 15126.4 require EIRs to describe, where relevant, the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Neither Appendix F of the State CEQA Guidelines nor Public Resource Code Section 21100(b)(3) offers a threshold of significance to evaluate the potential significance of energy consumption of a proposed project. Rather, they emphasize reducing "the wasteful, inefficient, and unnecessary consumption of energy."

Appendix F does provide guidance, however, for evaluating whether a development project may result in significant impacts with regard to energy. Appendix F, Section II C, provides suggestions of the environmental impact areas associated with energy consumption that could be assessed as part of the EIR:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials maybe discussed
- The effects of the project on local and regional energy supplies and on requirements for additional capacity
- The effects of the project on peak and base period demands for electricity and other forms of energy
- The degree to which the project complies with existing energy standards
- The effects of the project on energy resources
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives

Using the guidance provided in Appendix F, three thresholds have been developed to assess project-specific impacts on energy conservation. Would the project:

1. Result in wasteful, inefficient, or unnecessary consumption of energy
2. Conflict with existing energy standards and regulations

3. Place a significant demand on local and regional energy supplies or require a substantial amount of additional capacity.

b. Methodology

Appendix F requires an EIR to present the total energy required by a project by fuel type and end-use during operation and construction. Impact E-1 below describes the methodology used to estimate the construction-phase energy use. With respect to energy consumption during project operation, CalEEMod (Version 2016.3.2) modeling results from the Air Quality and Greenhouse Gas reports provided the estimated increase in electricity and natural gas demand (Appendix B and Appendix C).

c. Project Impacts and Mitigation Measures

Threshold 1:	Would the project result in wasteful, inefficient, or unnecessary consumption of energy?
Threshold 2:	Would the project conflict with existing energy standards and regulations?
Threshold 3:	Would the project place a significant demand on local and regional energy supplies or require a substantial amount of additional capacity?

Impact E-1 THE PROJECT WOULD CONSUME ELECTRICITY, NATURAL GAS, AND FUEL DURING CONSTRUCTION AND OPERATION. HOWEVER, THE PROJECT WOULD NOT PLACE SIGNIFICANT DEMAND ON RPU OR SOCALGAS AND WOULD COMPLY WITH APPLICABLE ENERGY CONSERVATION STANDARDS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction Energy Demand

During project construction, energy would be consumed in the form of petroleum-based fuels used to power off-road construction vehicles and equipment on the project site, construction worker travel to and from the project site, and vehicles used to deliver materials to the site. The manufacturing of construction materials would also involve energy use. Due to the large number of materials and manufacturers involved in the production of construction materials, including manufacturers in other states and countries, upstream energy use cannot be estimated reasonably or accurately. However, it is reasonable to assume that manufacturers of building materials such as concrete, steel, lumber, or other building materials would employ energy conservation practices in the interest of minimizing the cost of doing business. Consistent with CEQA Guidelines Section 15145, this analysis does not evaluate upstream energy use as it is too speculative.

The proposed project would require site preparation and grading; pavement and asphalt installation; building construction; architectural coating; and landscaping and hardscaping. All construction would be typical for the region and building types. The total consumption of gasoline and diesel fuel during project construction was estimated using the assumptions and factors from CalEEMod used to estimate construction air emissions in the Air Quality Report (Appendix B). Table 4.5-6 presents the estimated construction phase energy consumption, indicating off-road construction equipment, vendor trips, and worker trips would consume approximately 348,789 gallons of diesel fuel over the project construction period. Construction equipment would consume approximately 42,568 gallons of fuel; vendor trips would consume approximately 9,539 gallons of fuel; and worker trips would consume approximately 296,682 gallons of fuel over the project's construction period of 21 months. They represent a small percentage of the total energy used in the

City and the state. More importantly, for reasons presented below, this consumption would not represent a wasteful or inefficient use of energy resources.

Table 4.5-6 Project Construction Fuel Consumption

Fuel Type	Gallons	MBtu
Diesel Fuel (Construction Equipment)[1]	338,802.5	43,185.1
Diesel Fuel (Vendor Trips)[2]	232.9	29.7
Other Petroleum Fuel (Worker Trips)[3]	692.4	76.0
Total	339,727.8	45,290.8

[1] Fuel demand rate for construction equipment is derived from the equipment's horsepower, assumed diesel fuel consumption (gallons of diesel fuel per horsepower), the number of equipment, and the number of days each equipment is expected to be in use, which are all taken from CalEEMod outputs (see Appendix B). Fuel consumed for all construction equipment is assumed to be diesel.

[2] Fuel demand rate for vendor trips is derived from vendor trip number, vendor trip length, and vendor vehicle class from "Trips and VMT" Table contained in Section 3.0, *Construction Detail*, of the CalEEMod results (see AQ Report, Appendix B). The fuel economy for vendor trip vehicles is assumed to be 6.4 mpg, derived from the heavy duty vehicle class from (EIA 2018f). Fuel consumed for all vendor vehicles is assumed to be diesel.

[3] The fuel economy for worker trip vehicles is derived from passenger vehicle and light/medium duty vehicle average from Table 4.7-2(20.7 mpg) (EIA 2018f). Fuel consumed for all worker trips is assumed to be gasoline.

Notes: CaRFG CA-GREET 2.0 fuel specification of 109,786 Btu/gallon used to identify conversion rate for fuel energy consumption for worker trips specified above (CARB 2015). Low-sulfur Diesel CA_GRETT 2.0 fuel specification of 127,464 Btu/gallon used to identify conversion rate for fuel energy consumption for construction equipment specified above.

Totals may not add up due to rounding.

Similar to the manufacturers utilizing energy conservation methods to reduce costs, it is reasonable to assume contractors would avoid wasteful, inefficient, and unnecessary fuel consumption during construction to reduce construction costs. The project would comply with the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation, which imposes limits on idling and restricts the use of older vehicles. This would reduce fuel consumption and lead to the use of fuel-efficient vehicles on the construction site. Construction equipment would be maintained to all applicable standards, and construction activity and associated fuel consumption and energy use would be temporary and typical for construction sites. Therefore, the proposed project would not involve the inefficient, wasteful, and unnecessary use of energy during construction, and the construction-phase impact related to energy consumption would be less than significant.

Operational Energy Demand

The operation of the project would increase area energy demand from greater electricity, natural gas, and gasoline consumption at a currently undeveloped site. Natural gas and electricity would be used for heating and cooling systems, lighting, appliances, water use, and the overall operation of the residences, retail shops, restaurants, and hotels. Gasoline consumption would be attributed to the future residents, employees, and patrons accessing the site. The project includes a number of design features that would reduce energy use of the project:

- On-demand hot water systems
- Individual unit water-use monitoring
- LED lighting
- New heating and air conditioning systems

- Designated ride-sharing pick-up and drop-off location
- U.S. Post Office/FedEx concierge service

The estimated energy consumption from gasoline use was determined based on the average daily trips of the project from the Traffic Impact Analysis (Appendix L) and the estimated trip rates and length from the associated land uses within the project. Table 4.5-7 shows the estimated electricity usage per year based on the land use type. Electricity consumption is based on CalEEMod outputs presented in the GHG Study (Appendix C). The outputs included Title 24 standards for the various land uses of the project and are based on baseline values determined through CEC surveys and studies.

Table 4.5-7 Project Anticipated Electricity Consumption per Year

Land Use	Total Estimated Electricity Consumption (Kilowatt hours/year)
Low Rise Apartments (482 units)	2,342,650
Convenience Market with Gas Pumps	28,529
Fast Food Restaurant with Drive Thru	189,920
High Turnover (Sit Down Restaurant)	1,044,560
Hotels	6,031,700
Parking Lot	219,380
Regional Shopping Center	233,655
Total	**10,090,394 kWh/yr (10,090 MWh/year)**

Source: Table 5.3 “Energy by Land Use- Electricity” in GHG Report CalEEMod output (see Appendix C).

Operation of the project is estimated to consume approximately 10,090,394 KWh per year. As mentioned in the *Energy Supply* section, RPU would serve the project, and the company produced approximately 2.2 billion KWh in 2016 (CEC 2016c). Operation of the project would represent less than 0.5 percent of the electricity RPU produced in 2016. Therefore, the project would not place a significant demand on RPU’s electricity supply.

Natural gas would be consumed during the operation of the project including, but not limited to, space heating, water heating, and appliance use. Table 4.5-8 shows estimated natural gas consumption to operate the project, based on the associated land uses and CalEEMod outputs presented in the GHG Report (Appendix C).

Table 4.5-8 Project Anticipated Natural Gas Consumption per Year

Land Use	Total Estimated Electricity Consumption (British Thermal Units/year)
Low Rise Apartments (482 units)	7,506,910
Convenience Market with Gas Pumps	5,015
Fast Food Restaurant with Drive Thru	1,093,760
High Turnover (Sit Down Restaurant)	6,015,680
Hotel	19,953,800
Parking Lot	0
Regional Shopping Center	41,070
Total	**34,616,235 Btu/yr (34.62 MBtu/year[1])**

[1] 34,616,235/1,000,000 = 34.62

Source: Table 5.2 "Energy by Land Use- Natural Gas" GHG Report CalEEMod output (see Appendix C).

The project would consume an estimated 34.62 MBtu per year during operation. SoCalGas would provide natural gas to the project, and the company distributed approximately 5.1 billion Btu in 2016 as shown in Table 4.5-5 (CEC 2016b). The project would consume less than 0.7 percent of the total natural gas produced by SoCalGas in 2016 and, therefore, would not place a significant demand on the company's natural gas supply.

The estimated number of average daily trips associated with the proposed project is used to determine the energy consumption associated with fuel use from the operation of the project. The majority of the fuel consumption would be from motor vehicles traveling to and from the project site. According to the GHG Report, the project would result in 23,605,082 annual VMT (Appendix C). Table 4.7-9 shows the estimated total annual fuel consumption of the project using the estimated VMT in the TIA (Appendix L) and the assumed vehicle fleet mix. One gallon of gasoline is equivalent to approximately 109,786 Btu (CARB 2015), while one gallon of diesel is equivalent to approximately 127,460 Btu (Schremp 2017).

Table 4.7-9 Estimated Project Transportation Energy Consumption

Vehicle Type[1]	Percent of Vehicle Trips[2]	Annual Vehicle Miles Traveled[3]	Average Fuel Economy (miles/gallon)[4]	Total Annual Fuel Consumption (gallons)	Total Fuel Consumption (MBtu)[6]
Passenger Cars	54.6	12,877,210	24.0	536,550	58,905.8
Light/Medium Trucks	22.3	5,261,290	17.4	302,373	33,196.3
Heavy Trucks/Other	22.7	5,359,251	6.4	724,223	79,509.5
Motorcycles	0.45	107,332	43.8[5]	2,445	268.4
Total	**100.00**	**23,605,082**	**–**	**1,565,591**	**171,880**

[1] Vehicle classes provided in CalEEMod do not correspond exactly to vehicle classes in DOT fuel consumption data, except for motorcycles. Therefore, it was assumed that passenger cars correspond to the light-duty, short-base vehicle class, light/medium trucks correspond to the light-duty long-base vehicle class, and heavy trucks/other correspond to the single unit, 2-axle 6-tire or more class.

[2] Percent of vehicle trips from Table 4.4 “Fleet Mix” in GHG Report, CalEEMod output (see Appendix C).

[3] Mitigated annual VMT found in Table 4.2 “Trip Summary Information” in GHG Report CalEEMod output (see Appendix C).

[4] Average Fuel Economy: U.S. Department of Transportation 2016.

[5] U.S.Department of Transportation 2013

[6] CaRFG fuel specification of 109,786 Btu/gallon used to identify conversion rate for fuel energy consumption for vehicle classes specified above (CARB 2015).

Notes: Totals may not add up due to rounding.

The project would consume approximately 1,565,591 gallons of fuel each year for transportation uses, which equates to 171,880 MBtu in transportation energy consumption per year, and it would use electricity and natural gas for the operation of the residential, commercial, and visitor-serving uses. The estimated electricity and natural gas use would not have a substantial effect on energy supplies or place significant demand on RPU or SoCalGas, which would serve the site. Furthermore, the project would be subject to applicable building codes at the time of construction, which are continuously evolving to include more energy-efficient requirements. The project would also exceed regulatory standards (Title 24) by five percent with the implementation of Mitigation Measure AQ-3 and reduce water use by 30 percent below baseline levels with the implementation of Mitigation Measure AQ-4, which would further reduce electricity and natural gas use. In addition, the implementation of Mitigation Measure AQ-4 would reduce outdoor water use, which would also reduce associated electricity consumption.

In conclusion, the construction of the project would be temporary and typical of similar projects, and not result in wasteful use energy. The operation of the project would increase the use of electricity, natural gas, and gasoline from existing conditions on-site. However, the increase would be minimal and the energy providers have sufficient sources to serve the project. Energy use from the project would be typical of other mixed use projects and would comply with all applicable regulations. Therefore, the operation would not result in wasteful or unnecessary energy consumption or conflict with existing energy standards and regulations. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.5.3 Cumulative Impacts

As discussed in Section 3, *Environmental Setting*, cumulative development in the City of Riverside and surrounding cities and county would include residential development, warehouses, commercial, office, and public facilities. Each of the proposed developments would increase the consumption of energy and energy demand in the region. Energy consumption by the cumulative projects would be regulated by Energy Efficiency Standards embodied in Title 24 of the California Building Code, which apply to new construction of both residential and non-residential buildings, and indirect energy reduction measures from GHG reduction policies. Therefore, the cumulative projects would not result in the wasteful use of energy.

The City of Riverside has a number of green power projects that would reduce overall energy consumption in the City. The City is funding various solar projects throughout the City that will reduce energy use from current users and from ongoing, the cumulative projects in the City. The City also initiated an LED streetlight replacement program in 2016 that will eventually replace all city-owned streetlights by 2019 with more energy efficient LED lights to reduce overall energy use in the City. RPU has a number of incentive programs for residences and businesses to reduce their electricity consumption and that will result in cumulative reducing GHG emissions from energy use.

Moreover, as mentioned in the *Energy Consumption and Sources* section, Riverside County consumed five percent and RPU consumed 0.8 percent of the state's electricity use and SoCalGas represents three percent of the state's natural gas use. The cumulative projects in the area would consume a fraction of the energy supplies in RPU and SoCalGas and have an insignificant demand in the state's overall energy supply. Moreover, SoCalGas projects natural gas demands to decrease at an annual average rate of approximately 0.74 percent from 2018 to 2035 and RPU projects its electrical portfolio will be 40 percent renewable resources by 2020. Therefore, SoCalGas and RPU would have adequate supplies and the cumulative projects would not place a significant demand on the suppliers. Impacts would be less than significant.

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4.6 Geology and Soils

Based on Appendix G of the State CEQA Guidelines, this section analyzes the project's potential impacts with regard to geology and soils. The analysis in this section is based, in part, on the July 30, 2018 Soils Investigation Report prepared by John R. Byerly Incorporated, included as Appendix 3 of the Preliminary Water Quality Management Plan prepared by Adkan Engineers and attached as Appendix K of this EIR. The discussion and analysis contained herein is informed by comments received during the Notice of Preparation public review period.

4.6.1 Setting

a. Existing Geologic and Soil Setting

The project site is in the City of Riverside, in the northern portion of the Peninsular Ranges geomorphic province, an area characterized by northwest-trending geologic structures. While topographically similar to the Coastal Ranges, the Peninsular Ranges are geologically similar to the Sierra Nevada, with geology comprising both granite and older metamorphic rock (California Geological Survey [CGS] 2012). Major mountain ranges near the City include the San Jacinto Mountains approximately 10 miles to the east, the Santa Ana Mountains approximately 15 miles to the south, and the San Bernardino Mountain approximately 20 miles to the north (City of Riverside 2013). Smaller ranges near the City include the Jurupa Mountains to the west, the Box Springs Mountains to the east, and the Sierra Temescal Mountains to the south. The Santa Ana River flows along the northwestern edge of the City, approximately one mile west of the project site.

Elevations in the City range from around 700 feet above mean sea level (amsl) near the Santa Ana River to over 1,400 feet amsl west of La Sierra University (City of Riverside 2013). Elevations on the project site range from around 868 feet amsl on the eastern border near the terminus of La Cadena Drive to just under 830 feet amsl where the on-site concrete-lined channel exits the project site, under Orange Street to the west.

Geologic and Soil Conditions

Based on the most recent Soil Survey for Western Riverside Area (CA679), the site consists primarily of four mapped soil types. Eroded Buren fine sandy loam (two to eight percent slopes) is located on higher elevations in the southeastern and northwestern portions of the project site. The series consists of well-drained, slow to moderately slowly permeable soils which form along alluvial fans and terraces. Eroded San Emigdio fine sandy loam is located along and south of the on-site soft-bottom drainage, characterized by very deep, well-drained soils formed on in dominantly sedimentary alluvium. Much of the remainder of the project site is composed of eroded Pachappa fine sandy loam, consisting of well-drained (minimal) Noncalcic Brown soils developed from moderately coarse textured alluvium. A small section of the southeastern corner of the project site near the SR 60/I-215 Interchange contains Hanford coarse sandy loam, a moderately coarse-textured granite-derived soil typically found in stream bottoms, floodplains, and alluvial fans. Each of the soil classes on the project site has a linear extensibility percent of approximately 1.5, indicating low shrink-swell potential (United States Department of Agriculture Natural Resources Conservation Service 2018). Therefore, none of the soils on the site is categorized as expansive. The site exhibits characteristics of heavy disturbance associated with prior maintenance activities, including grubbing and clearing. The baseline condition of the project site used for the purpose of this analysis is that of an undeveloped site containing soils with moderate to high liquefaction and hydroconsolidation potential. More detailed discussion of specific geologic hazards follows.

Geologic Hazards

Surface Fault Rupture

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the CGS for the Alquist-Priolo Earthquake Fault Zone Program. By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years), but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The project site is not within an Alquist-Priolo Earthquake Fault Zone and no active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the project site. The closest Earthquake Zone of Required Investigation is associated with the San Jacinto Fault Zone, located approximately 5.5 miles northeast of the project site (CGS 2017). Other nearby active faults include the Rialto-Colton Fault, approximately 4.9 miles northeast, an unnamed inferred fault near Fontana, approximately 8.7 miles northwest, and the San Andreas Fault (South Branch) approximately 13.5 miles northeast.

Several buried thrust faults, commonly referred to as blind thrusts and often unidentified, underlie portions of southern California at depth. These faults are not exposed at the ground surface and are typically identified at depths greater than 1.9 miles. The October 1, 1987 magnitude 5.9 Whittier Narrows and the January 17, 1994 magnitude 6.7 Northridge earthquakes were a result of movement on the Puente Hills Blind Thrust and the Northridge Thrust, respectively. Thrust faults do not present a potential surface fault rupture hazard, but these active features can generate earthquakes and significant ground motion.

Seismicity

As with all of southern California, the project site has experienced historic earthquakes from various regional faults. Recorded earthquakes in the vicinity of the project site since 1900 include the 1923 magnitude 6.3 North San Jacinto Fault Earthquake (epicenter approximately 6.7 miles east of the project site), the 1920 magnitude 6.0 Elsinore Earthquake (epicenter approximately 17.7 miles south of the project site), the 1990 magnitude 5.4 Upland Earthquake (epicenter approximately 21.4 miles northwest of the project site), and the 2008 magnitude 5.4 Chino Hills Earthquake (epicenter approximately 23.1 miles west of the project site)(Southern California Earthquake Data Center 2012).

Liquefaction and Seismically-Induced Settlement Potential

Liquefaction describes a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, on-site stress conditions, and the depth to groundwater. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

The State of California Seismic Hazard Zones Map does not identify liquefaction or seismically induced landslide hazards for the Riverside East Quadrangle, the area in which the project site is located (CGS 2017). In the City of Riverside, areas particularly susceptible to liquefaction include those located along (generally within 0.5 mile of) the Santa Ana River, areas south and west of the Riverside Municipal Airport, and small areas along the City's southern and western boundaries (City of Riverside 2007). Both the City of Riverside General Plan Safety Element and the County of Riverside General Plan Safety Element identify the project site as having low to moderate liquefaction potential, with a small portion of the project site along Orange Street identified as having high liquefaction potential (City of Riverside 2007; County of Riverside 2016).

SLOPE STABILITY – LANDSLIDES AND LATERAL SPREADING

Landslides occur when slopes become unstable and masses of earth material move downslope. Landslides are generally considered to be rapid events, often triggered during periods of rainfall or by earthquakes. Mudslides and slumps are a shallower type of slope failure compared to landslides. Lateral spreading may occur when potentially liquefiable soils are present and exposed in conjunction with a sloping ground surface. If soils in the slope liquefy, temporary instability could result in movement of sediments and slope failure. The topography at the project site is relatively flat to gently sloping to the west, with slopes throughout the project site remaining below 15 percent. According to the City of Riverside's Public Safety Element, areas prone to landslides and rockfall are in the western and northeastern areas of the City (City of Riverside 2007). The County of Riverside General Plan Safety Element also shows the project site is not in an area identified as having a risk for seismically-induced landslide or rockfall (County of Riverside 2016). There are no known landslides near the project site, nor is the site in the path of any known or potential landslides.

SUBSIDENCE

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils particularly subject to subsidence include those with high silt or clay content. Soils with high shrink-swell potential can be particularly susceptible to subsidence during a loss of soil moisture. Such soils are primarily located in the western portion of the City, near the Riverside Municipal Airport; the project site is not located on soils with high shrink-swell potential (City of Riverside 2007). The project site is not located in an area of known ground subsidence, though it is in a subsidence-susceptible area (County of Riverside 2014a). No large-scale extraction of groundwater, gas, oil, or geothermal energy occurs or is planned at or near the project site that would exacerbate subsidence potential.

b. Regulatory Setting

Federal

International Building Code

The International Building Code (IBC) is published by the International Code Council. The scope of this code covers major aspects of construction and design of structures and buildings. The IBC has replaced the Uniform Building Code as the basis for the California Building Code and contains provisions for structural engineering design. The 2015 IBC addresses the design and installation of structures and building systems through requirements that emphasize performance. The IBC includes codes governing structural as well as fire and life safety provisions covering seismic, wind, accessibility, egress, occupancy, and roofs.

Earthquake Hazards Reduction Act

U.S. Congress passed the Earthquake Hazards Reduction Act in 1977 to reduce the risks to life and property from future earthquakes through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program. This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act, which refined the description of agency responsibilities, program goals, and objectives to focus on minimizing loss from earthquakes after they occur. The National Earthquake Hazards Reduction Program promotes the adoption of earthquake hazard reduction activities by all scales of government and works to develop national building standards and model codes for use by engineers, architects, and all others involved in the planning and construction of buildings and infrastructure.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act; Public Resources Code Sections 2621-2630) was passed into law following the destructive February 9, 1971 San Fernando earthquake that had a magnitude of 6.6. The Alquist-Priolo Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the Alquist-Priolo Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. Generally, siting of structures for human occupancy must be set back from the fault by approximately 50 feet. Therefore, if a project site is located in an Earthquake Fault Zone, the City must withhold development permits for sites within the fault zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

Seismic Safety Act

The California Seismic Safety Commission was established by the Seismic Safety Act in 1975 with the intent of providing oversight, review, and recommendations to the Governor and State Legislature regarding seismic issues. The Commission’s name was changed to Alfred E. Alquist Seismic Safety Commission in 2006. Since then, the Commission has prepared several documents based on recorded earthquakes, such as the 1994 Northridge earthquake, 1933 Long Beach earthquake, and the 1971 Sylmar earthquake. Some of these documents are listed as follows:

- Research and Implementation Plan for Earthquake Risk Reduction in California 1995 to 2000, report dated December 1994
- Seismic Safety in California’s Schools, 2004, “Findings and Recommendations on Seismic Safety Policies and Requirements for Public, Private, and Charter Schools,” report dated December 1994
- Findings and Recommendations on Hospital Seismic Safety, report dated November 2001

- Commercial Property Owner's Guide to Earthquakes Safety, report dated October 2006
- California Earthquake Loss Reduction Plan 2007–2011, report dated July 2007

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 was enacted, in part, to address seismic hazards not included in the Alquist-Priolo Act, including strong ground shaking, landslides, and liquefaction. Under this Act, the State Geologist is assigned the responsibility of identifying and mapping seismic hazards. CGS Special Publication 117, adopted in 1997 by the State Mining and Geology Board, constitutes guidelines for evaluating seismic hazards other than surface faulting, and for recommending mitigation measures as required by Public Resources Code Section 2695(a). In accordance with the mapping criteria, the CGS seismic hazard zone maps identifies areas with the potential for a ground shaking event that corresponds to 10 percent probability of exceedance in 50 years.

The purpose of the Seismic Hazards Mapping Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Seismic Hazards Mapping Act requires site-specific geotechnical investigations prior to permitting most urban development projects in seismic hazard zones.

California Building Code

The California Building Code (CBC), Title 24, Part 2, provides building codes and standards for the design and construction of structures in California. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of building and structures. The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

The CBC is updated every three years by order of the legislature, with supplements published in intervening years. State Law mandates that local government enforce the CBC. In addition, a city and/or county may establish more restrictive building standards reasonably necessary because of local climatic, geological, or topographical conditions. The 2016 CBC is based on the 2015 International Building Code with the addition of more extensive structural seismic provisions.

Natural Hazards Disclosure Act

The Natural Hazards Disclosure Act, as codified in California Civil Code Section 1103-1103.14, requires real estate sellers and brokers to prepare Natural Hazards Disclosure Statements upon transfer of real property if such property is located within a number of federally or state-mapped natural hazard areas. Hazard areas covered under the disclosure form include special flood hazard areas, areas of potential flooding due to dam failure inundation, fire hazard severity zones, wildland areas, earthquake fault zones, and seismic hazard zones.

The natural hazard areas most relevant to geology and soils are earthquake fault zones and seismic hazard zones. As discussed above, the project site is not located within an earthquake fault zone.

The State of California Seismic Hazard Zones Map does not identify liquefaction or seismically induced landslide hazards for the Riverside East Quadrangle, in which the project site is located (CGS 2017). However, portions of the project site have been identified locally as having high liquefaction potential (City of Riverside 2007). This analysis addresses impacts related to this seismic hazard.

National Pollutant Discharge Elimination System

The federal government administers the National Pollutant Discharge Elimination System (NPDES) permit program, which regulates discharges into surface waters under the Clean Water Act (CWA). The primary regulatory control relevant to the protection of water quality is the NPDES permit administered by the State Water Resources Control Board, which establishes requirements prescribing the quality of point sources of discharge and water quality objectives. These objectives are established based on the designated beneficial uses (e.g. water supply, recreation, and habitat) for a particular surface waterbody. The NPDES permits are issued to point source dischargers of pollutants to surface waters pursuant to Water Code Chapter 5.5, which implements the federal CWA. Examples include, but are not limited to, public wastewater treatment facilities, industries, power plants, and groundwater cleanup programs discharging to surface waters (State Water Resources Control, Title 23, Chapter 9, Section 2200). The Regional Water Quality Control Board (RWQCB) establishes and regulates discharge limits under the NPDES permits.

Construction projects which disturb one or more acres of soil or are part of a larger common plan of development that disturbs one or more acres of soil must obtain coverage under the statewide NPDES General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). In order to obtain coverage under the Construction General Permit, a project-specific Stormwater Pollution Prevention Plan (SWPPP) must be prepared. The SWPPP outlines Best Management Practices to reduce stormwater and non-stormwater pollutant discharges, including erosion control, minimizing contact between construction materials and precipitation, and strategies to prevent equipment leakage or spills.

Local

Santa Ana Regional Water Quality Control Board

The City of Riverside is under the jurisdiction of RWQCB Region 8, the Santa Ana Regional Water Quality Control Board (SARWQCB). The SARWQCB provides permits for projects that may affect surface waters and groundwater locally, and is responsible for preparing the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan designates beneficial uses of water in the region and establishes narrative and numerical water quality objectives. The Basin Plan serves as the basis for the SARWQCB’s regulatory programs and incorporates an implementation plan to ensure water quality objectives are met.

Riverside General Plan

The Public Safety Element of the City’s General Plan 2025 contains objectives and policies that seek to reduce hazards that pose a risk to residents, including geologic hazards (City of Riverside 2007). The project would be subject to the following objectives and policies:

Objective PS-1: Minimize the potential damage to existing and new structures and loss of life that may result from geologic and seismic hazards.

Policy PS-1.1: Ensure that all new development in the City abides by the most recently adopted City and State seismic and geotechnical requirements.

Objective PS-9: Minimize the effects from natural and urban disasters by providing adequate levels of emergency response services to all residents in Riverside.

Policy PS-9.8: Reduce the risk to the community from hazards related to geologic conditions, seismic activity, flooding and structural and wildland fires by requiring feasible mitigation of such impacts on discretionary development projects.

Riverside Municipal Code

TITLE 14 – PUBLIC UTILITIES

The Riverside Municipal Code contains a number of ordinances relevant to geology and soils. Title 14 addresses the City's public utilities infrastructure. Section 14.08.030 requires anyone desiring to obtain a building permit for a new house or structure to connect to the public sewer system when the property on which such house or structure is situated is not more than 160 feet from the public sewer and the right-of-way admits such connection, or if the house or structure is located within an area where the use of a septic tank poses a potential contamination risk to the City's drinking water wells in the area, as specified by resolution of City Council.

TITLE 17 – GRADING CODE

Title 17 of the Riverside Municipal Code contains the City's grading ordinance, which establishes procedures for grading plan approval, issuance of grading permits, and subsequent inspection and enforcement protocols.

With a few exceptions detailed in Section 17.12.010, the grading ordinance prohibits grading on any lot, parcel, or tract of land without issuance of a grading permit from the City's Public Works Director. Materials required as part of a grading permit application include grading plans, interim erosion control plans, and a preliminary soils report prepared by a geotechnical engineer. Pursuant to Section 17.16.010(B), recommendations specified in the preliminary soils report must be incorporated into the design of the grading plan. Additionally, the grading permit application incorporates the requirements of the NPDES Construction General Permit, such as preparation of a SWPPP, and requires documentation of water quality best management practices required under the Riverside County Drainage Area Management Plan.

Section 17.28.010 contains minimum grading standards and general requirements, including standards for cuts, fills, retaining walls, setbacks, drainage and terracing, and excavation blasting. Additionally, the grading ordinance establishes supplementary regulations for grading in hillsides and arroyos. The project site is not located in a hillside or arroyo grading area, as delineated in Exhibits A-F of the grading ordinance. The project is proposing a Grading Exception as allowed under Chapter 17.32 of the Riverside Municipal Code in order to install retaining walls on the property. The project would have to meet the required findings and approval by City Council.

4.6.2 Impact Analysis

a. Methodology

This evaluation is based on review of existing information developed for the project site, including the Soils Investigation Report (geotechnical report) (Appendix K, Appendix 3), the City of Riverside General Plan Public Safety Element (City of Riverside 2007) and the County of Riverside General Plan Safety Element (County of Riverside 2016). Exploration of the project site involved drilling of 28 borings, predominantly through exposed soil surfaces[1]. Figure 4.6-1 shows the location of soil boring logs on the project site.

A liquefaction analysis was performed for the soils underlying the project site assuming a groundwater elevation of 795 feet amsl, a magnitude 7.8 earthquake along the nearby San Jacinto Fault Zone, and a peak horizontal acceleration of 0.545g. The groundwater elevation was chosen based on groundwater data indicating an historic high groundwater elevation of 795 feet amsl, or approximately 50 feet below ground surface in the northwestern corner of the project site. Free groundwater was discovered in one of the borings during soil sampling at a depth of 48.7 feet below ground surface, or 781.3 feet amsl.

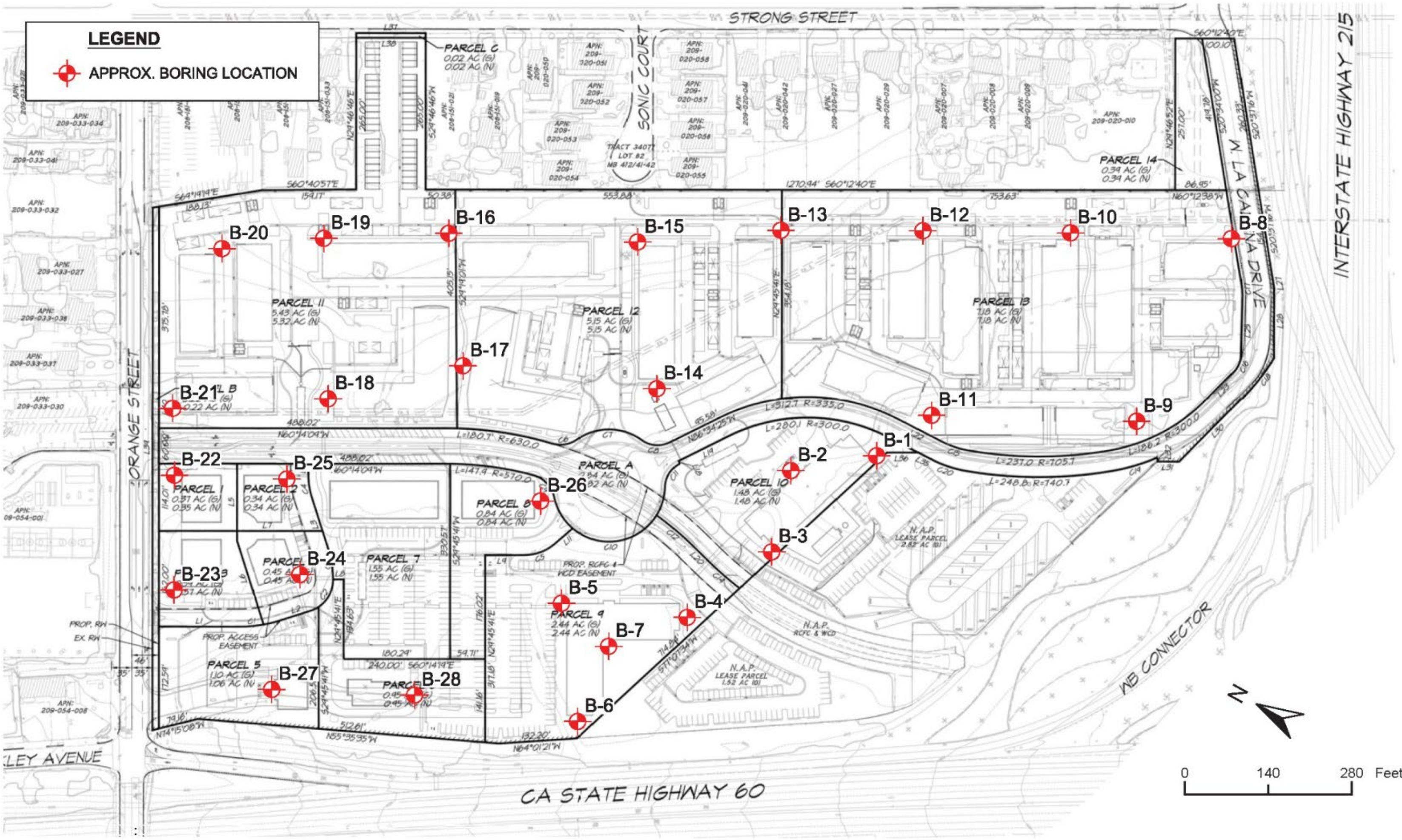
Liquefaction analyses were conducted for boring logs B10 and B23, each drilled to 51.5 feet below ground surface and located in the northeastern and southwestern portions of the project site, respectively. To evaluate the potential for liquefaction and seismically induced settlement of the subsoils, the soils were analyzed for relative density. The most effective measurement of relative density of sands with respect to liquefaction potential is standard penetration resistance. Standard penetration tests were performed using LiquefyPro Version 4.3, and a safety factor of 1.3 was applied to liquefaction calculations in accordance with the Special Publication 117A (Revised) Release, "Guidelines for Evaluating and Mitigating Seismic Hazards in California." The results of the analysis indicate low liquefaction potential on the project site.

Dynamic compaction of dry and loose sands may occur during a major earthquake. Typically, settlements occur in thick beds of such soils. Seismically-induced settlement calculations were performed by John R. Byerly Incorporated and included in the geotechnical report prepared for the project. The calculations provided for borings B10 and B23 indicate the soil above the groundwater level at each of these sites could be prone to a total potential dynamic settlement of 4.59 inches and 5.80 inches, respectively. Such settlement would occur over a large area and would not affect local buried utilities.

Collapsible soils are soils prone to hydroconsolidation, or collapse upon introduction of water. Such soils generally consist of unconsolidated, loose, dry soils in arid to semi-arid regions (County of Los Angeles 2012). Each boring contained artificial fill material consisting of loose to dense silty sands, clayey sands, and sandy silts to depths ranging from 2.5 to 10 feet. Natural soils on the project site generally consist of medium to very dense sands, silty sands, clayey sands, and stiff to hard sandy clays and sandy silts. Consolidation tests of the upper natural soils indicate significant potential for hydroconsolidation, ranging from 3.4 to 10.6 percent.

[1] Two borings, 27 and 28, were drilled through 2 to 3 inches of asphalt concrete pavement on the site, with five inches of aggregate base encountered under the pavement in Boring 27.

Figure 4.6-1 Soil Boring Locations



Source: John R. Byerly Incorporated 2018

The geotechnical report concludes that liquefaction and seismically-induced settlement need not be a consideration in the design of the project's proposed structures. Consolidation testing of soils on the project site indicated a substantial potential for hydroconsolidation, or collapse. However, with appropriate site preparation and adherence to the recommendations contained in the geotechnical report, soil conditions underlying the project site would be compatible with project construction and would not require haul trips as the site is expected to balance. The geotechnical report recommendations are summarized below:

Plan Review and Construction Monitoring

- The project foundation and grading plans shall be reviewed by the geotechnical engineer. Additional recommendations may be required at that time, including those pertaining to retaining wall and building footing placement and reinforcement, allowable foundation load capacities and lateral load resistance, over-excavation depths, and relative compaction standards.
- All grading operations, including the preparation of the natural ground surface, shall be observed and compaction tests performed by the geotechnical engineer. No fill shall be placed on any prepared surface until that surface has been evaluated by the representative of the geotechnical engineer, and all footing excavations shall be observed by the representative of the geotechnical engineer prior to placement of forms or reinforcing steel.

Site Preparation and Grading Recommendations

- All areas to be graded shall be stripped of organic matter, man-made obstructions, and other deleterious materials. Underground utilities shall be removed and relocated or abandoned.
- During site clearing, areas of suspected previously existing structures shall be explored for basements, seepage pits, and other buried obstructions. Buried structures that are encountered shall be removed. Seepage pits shall be cleaned of organic matter and backfilled to within five feet of the final ground surface with self-compacting gravel or clean sand thoroughly jetted into place. The remaining backfill shall be placed in lifts and compacted as recommended below for site fill. Significant root systems of trees to be removed shall be grubbed from the soil. All cavities created during site clearing shall be cleaned of loose and disturbed soil, shaped to provide access for construction equipment, and backfilled with fill placed and compacted to standards contained in the geotechnical report.
- Artificial fill shall be removed from all improvement areas. The depths of existing artificial fill encountered in test borings range from 2.5 to 10 feet. The existing artificial fill may extend to greater depths in areas not explored. Unsuitable debris shall be separated from the removed fill and hauled from the site.
- To assure uniform soil conditions underlying building, retaining wall, and screen wall footings, natural soil shall be over-excavated to the depths and extents specified in the geotechnical report. Slot-cutting shall be performed and handheld equipment shall be used during site preparation and compaction activities near existing streets or other improvements to remain. Hardscaped and pavement areas shall be scarified, moisture conditioned, and densified to the standards contained in the geotechnical report.
- A representative of the geotechnical engineer shall evaluate the exposed surface and observe the bottom of all excavations.
- Import fill shall meet the standards detailed in the geotechnical report and shall be sampled at the source and tested for expansion index, soluble sulfate content, and corrosion potential.

- All fill shall be placed in 8-inch or less lifts, and each lift shall be moisture conditioned to at least 120 percent of the optimum moisture content and densified to a minimum relative compaction of 90 percent.
- The surface of the site shall be graded to provide positive drainage away from structures, directed to established swales and then to appropriate drainage structures.

Geotechnical Design Considerations

Seismic Design Parameters

- The project shall use seismic design coefficients as required by the 2016 CBC and American Society of Civil Engineers Standard 7-10, as provided in the geotechnical report.

Corrosivity

- If buried ferrous-metal pipes are to be used, recommendations for corrosion protection shall be obtained from a corrosion engineer. Soils tested on the project site exhibit negligible soluble sulfate content; therefore, sulfate-resistant concrete shall not be required.

Lateral Loading

- Backfill placed within five feet of the retaining walls shall consist of granular soil exhibiting a very low expansion potential (Expansion Index of less than 21).
- Retaining walls shall be provided with a back drain system or weep holes and one cubic foot of gravel behind each weep hole to ensure that hydrostatic pressures do not develop.
- Unbraced retaining walls supporting horizontal backfill shall be designed to support an equivalent active fluid pressure of 35 pounds per square foot per foot of depth, exclusive of surcharge loads. Retaining walls that are braced at the top and support horizontal backfill should be designed to support an equivalent at-rest fluid pressure of 60 pounds per square foot per foot of depth, exclusive of surcharge loads.
- Resistance to lateral loads will be provided by passive earth pressure and basal friction. For footings bearing against compacted fill, passive earth pressure may be considered to develop at a rate of 300 pounds per square foot per foot of depth. Basal friction may be computed at 0.4 times the normal dead load. The resistance from basal friction and passive earth pressure may be combined directly without reduction. The allowable lateral resistance may be increased by one-third for wind and seismic loading.

Shallow Foundation Design

- Footings for retaining walls and one-, two-, and three-story buildings shall be at least 12 inches wide and shall be placed at least 18 inches below the lowest final adjacent grade. The spread and wall footings shall be designed for a maximum safe soil bearing pressure of 2,000 pounds per square foot for dead plus live loads. Footings for the four-story buildings shall be at least 24 inches in depth, and may be designed for a maximum safe soil bearing pressure of 2,500 pounds per square foot. These values may be increased by one-third for wind and seismic loading.
- Continuous footings shall be reinforced with at least four No. 5 bars, two placed near the top and two near the bottom of the footings. This recommendation for foundation reinforcement is based on geotechnical considerations. Structural design may require additional foundation reinforcement.

- Due to differential settlement considerations, building and retaining wall footings shall bear on at least 24 inches of compacted fill. Where necessary, the natural soil shall be over-excavated and re-compacted to provide a minimum of 24 inches of compacted fill below the footings.

Slabs-on-Grade

- Utility trench backfills and building pad subgrade soils underlying slabs-on-grade shall be compacted to a relative compaction of at least 90 percent.
- The final pad surface shall be rolled to provide a smooth dense surface upon which to place the concrete. Where the subgrade soil contains significant amounts of clay, the slab subgrade soil shall be moisture conditioned to at least three percent over the optimum moisture content to a depth of at least 18 inches below the subgrade. Moisture conditioning shall be confirmed by a representative of the geotechnical engineer no earlier than 48 hours before concrete placement. The identification of building pads where moisture conditioning will be required will be made during site grading.
- Slab-on-grade floors should be at least four inches thick. Structural considerations may require a thicker slab. The concrete slab-on-grade may be designed using a modulus of subgrade reaction of 120 pounds per cubic inch.
- Concrete slabs-on-grade and exterior concrete flatwork shall be reinforced with No. 3 bars at 24 inches on-center each way or equivalent. All slab reinforcement shall be supported by chairs or precast concrete blocks to ensure positioning of the reinforcement within the middle third of the slab. Lifting of unsupported reinforcement during concrete placement shall not be allowed.
- Slabs to receive moisture-sensitive floor coverings shall be underlain with a moisture vapor retardant membrane meeting the specifications and installed per the recommendations contained in the geotechnical report.
- Prior to placement of concrete, a two-inch layer of clean sand shall be placed over the moisture vapor retardant membrane to promote uniform setting of the concrete. Concrete may be applied without the sand layer if appropriate mix design criteria are provided by the structural engineer. Slab concrete water-cement ratio shall adhere to the recommendations contained in the report.
- Preparation of concrete floor slabs shall conform to standards outlined in the geotechnical report. Prior to placing moisture-sensitive flooring, moisture vapor emission tests shall be performed to verify acceptable moisture emission rates.
- A slip-sheet or equivalent shall be used if crack-sensitive floor coverings (such as ceramic tiles, etc.) are to be placed directly on the concrete slab-on-grade floor.

b. Significance Thresholds

In accordance with Appendix G of the *State CEQA Guidelines*, a project would result in a significant impact related to geology and soils if it would:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

   a. 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

   b. Strong seismic ground shaking

   c. Seismic-related ground failure, including liquefaction
   d. Landslides

2. Result in substantial soil erosion or the loss of topsoil
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 off-site landslide, lateral spreading, subsidence, liquefaction, or collapse
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property
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

The Initial Study (Appendix A) determined the proposed project could result in potentially significant impacts related to liquefaction (criterion 1c) and geologic instability (criterion 3). As such, an analysis of these issues is included in this section of the EIR. The Initial Study found no potentially significant impacts related to criteria 1(a), 1(b), 1(d), 2, 4, or 5; therefore, these issues are studied no further herein. For a discussion of these impacts, refer to Section 4.15, *Impacts Found to be Less Than Significant.*

c. Project Impacts and Mitigation Measures

Threshold 1c:	Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?
Threshold 3:	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

IMPACT GEO-1 A LIQUEFACTION ANALYSIS WAS CONDUCTED ON SOILS COLLECTED FROM THE PROJECT SITE AND CONCLUDED LOW POTENTIAL FOR LIQUEFACTION. SOILS ON THE PROJECT SITE SHOW SIGNIFICANT POTENTIAL FOR HYDROCONSOLIDATION, OR SOIL COLLAPSE. SITE PREPARATION, DESIGN, AND REVIEW AND MONITORING RECOMMENDATIONS IN THE GEOTECHNICAL REPORT PREPARED FOR THE PROJECT ADDRESS POTENTIAL IMPACTS ASSOCIATED WITH SOIL INSTABILITY DUE TO HYDROCONSOLIDATION. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

A liquefaction analysis was performed for the soils underlying the project site in conjunction with preparation of the geotechnical report. The liquefaction analyses for borings B10 and B23, at the northeastern and southwestern portions of the site, respectively, indicated that site has low liquefaction potential. The geotechnical report also assessed the potential for dynamic settlement of soils associated with a seismic event. The analysis, soil classifications, and other properties indicated uniform soil conditions with respect to dynamic settlement and suggested a minimal potential for differential dynamic settlement (less than one inch), assuming adherence to the remedial grading recommendations contained in the geotechnical report. The geotechnical report concluded liquefaction and seismically induced settlement need not be considerations in the design of the project's proposed structures.

Consolidation testing of soils on the project site indicated a substantial potential for hydroconsolidation, or collapse, which would result in a significant impact. However, with adherence to the recommendations contained in the report, soil conditions underlying the project site would be compatible with project construction.

In addition to construction on the project site, the project proposes a number of off-site improvements, including improvements to the nearby SR 60 Main Street off-ramp to SR-60, and traffic signal installation and lane restriping along adjacent roadways and intersections. These improvements involve upgrades to existing facilities located in the vicinity of the project site and do not involve construction of structures. As such, they would result in no greater exposure of people or structures to geologic hazards than that provided by existing facilities.

Mitigation Measures

CEQA Guidelines Section 15126.4 requires Draft EIRs to describe feasible measures that can minimize significant adverse impacts. The following mitigation measures would be required to address potential impacts to a less than significant level.

GEO-1 Plan Review and Construction Monitoring

Prior to the issuance of grading permits, project foundation and grading plans shall be reviewed by the geotechnical engineer to confirm consistency with all standards contained in the geotechnical report and required under the City's grading ordinance. Plans shall demonstrate positive drainage away from all structures, as recommended in the geotechnical report. All grading operations, including the preparation of the natural ground surface, shall be observed and compaction tests performed by the geotechnical engineer to ensure site preparation and grading adheres to over-excavation and relative compaction standards contained in the geotechnical report. Sub-excavated surfaces and all other surfaces to receive fill should be scarified to a minimum depth of 12 inches, moisture conditioned to at least 120 percent of the optimum moisture content, and densified to a minimum relative compaction of 90 percent pursuant to ASTM International standard D1557—Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort—as confirmed by the geotechnical engineer.

GEO-2 Geotechnical Recommendation Implementation

All recommendations included in the approved geotechnical report shall be implemented as project conditions of approval. Such recommendations include, but are not limited to:

- Over-excavation, moisture conditioning, densification, and relative compaction standards detailed in the geotechnical report
- Application of appropriate seismic design parameters cited in the geotechnical report
- Retaining wall design standards and soil backfill requirements
- Shallow foundation design standards, including placement of 12-inch wide footings at least 18 inches below the lowest final adjacent grade for retaining walls and one-, two-, and three-story buildings. The spread and wall footings should be designed for a maximum safe soil bearing pressure of 2,000 pounds per square foot for dead plus live loads. Footings for the 4-story buildings should be at least 24 inches in depth, and may be designed for a maximum safe soil bearing pressure of 2,500 pounds per square foot.

- Slab-on-grade design features specified in the geotechnical report, including four-inch thick floors and concrete slabs-on-grade reinforced with No. 3 bars at 24 inches on-center each way or equivalent.

The implementation of these recommendations shall be overseen by the geotechnical engineer throughout grading operations and shall be confirmed by the City of Riverside.

Significance After Mitigation

Implementation of Mitigation Measures GEO-1 and GEO-2 would ensure impacts related to hydroconsolidation and liquefaction would be less than significant.

4.6.3 Cumulative Impacts

The planned and pending projects near the project site, listed in Table 3-1 of this EIR, include residential, warehouse, commercial, office, light industrial, hotel, park, and school-related land uses. These planned and pending projects would increase structural development near the project site, in turn exposing new residents and property to potential risks from seismic hazards or soil instability in the area. Like the proposed project, all new planned and pending development in the City and adjacent jurisdictions would be subject to current seismic and erosion control standards. Although new development would be exposed to existing geologic and seismic hazards, it would not increase the potential for such hazards to occur. Geologic hazards are site-specific, and individual developments would not create additive impacts that would affect geologic conditions on other sites. Therefore, development of individual projects would not exacerbate existing geologic conditions, and cumulative impacts would be less than significant.

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4.7 Greenhouse Gas Emissions

This section analyzes greenhouse gas (GHG) emissions associated with the project and potential impacts related to climate change. The analysis is based on data and information from the Greenhouse Gas Analysis (Appendix C) and Traffic Impact Analysis (Appendix L) prepared by Urban Crossroads. Air quality impacts are discussed in Section 4.2, *Air Quality,* and energy conservation impacts are discussed in Section 4.5, *Energy Conservation.* Additionally, the discussion and analysis contained herein is informed by comments received during the Notice of Preparation of an Environmental Impact Report public review period.

4.7.1 Setting

a. Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases. The gases widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFC) and perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it only stays in the atmosphere for a short time and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

Both natural processes and human activities emit GHGs. CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH4 results from off-gassing associated with agricultural practices and landfills. Observations of CO_2 concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in CH_4 and N2O concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Manmade GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases, such as SF_6 (California Environmental Protection Agency [CalEPA] 2006). Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally 100 years). Because GHG absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one. By contrast, CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than CO_2 on a molecule per molecule basis (IPCC 2007).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (CalEPA 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT [gigatonnes]) CO_2e in 2010 (IPCC 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, carbon dioxide was the most abundant accounting for 76 percent of total 2010 emissions. Methane emissions accounted for 16 percent of the 2010 total, while nitrous oxide and fluorinated gases account for six and two percent respectively.

Total GHG emissions in the U.S. were 6,511.3 MMT CO_2e in 2016 (U.S. Environmental Protection Agency [USEPA] 2018). Total U.S. emissions have increased by 2.9 percent since 1990. Emissions decreased by 1.9 percent from 2015 to 2016 (USEPA 2018). The decrease from 2015 to 2016 was due to a decrease in the carbon intensity of fuels consumed to generate electricity due to a decrease in coal consumption, with increased natural gas consumption. Additionally, relatively mild winter conditions, especially in regions of the United States where electricity is important for heating, resulted in an overall decrease in electricity demand in most sectors. In 2016, fossil fuel combustion accounted for 76 percent of total U.S. CO_2 emissions. In 2016, the transportation and industrial end-use sectors accounted for 36 percent and 27 percent of CO_2 emissions from fossil fuel combustion (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 19 percent and 17 percent of CO_2 emissions from fossil fuel combustion, respectively.

Based on the California Air Resources Board (CARB) California Greenhouse Gas Inventory for 2000-2015, California produced 429.4 MMT CO2e in 2016 (CARB 2018). Transportation is the largest single source of GHG in California, contributing 39 percent of the state's total GHG emissions (CARB 2017b). California emissions are result in part from its large geographic size and large population compared to other states. However, the mild climate reduces California's per capita fuel use and GHG emissions compared to other states. CARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT CO_2e. These projections represent the emissions expected to occur in the absence of any GHG reduction actions.

Potential Effect of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air, land, and water temperatures and precipitation patterns.

Scientific modeling predicts continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than those observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89 degrees Celsius (°C) (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012, when described as a linear trend. Several independently analyzed data records of global and regional land-surface air temperature measurements obtained from station observations agree that land-surface air temperature and surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is taking place currently, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

According to the CalEPA's 2010 Climate Action Team Biennial Report, potential impacts of climate change in California may include decreased snow pack, sea level rise, and increase in extreme heat days per year, high ground-level O_3 days, large forest fires, and drought (CalEPA 2010). A summary follows of some of the potential impacts that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures conducive to air pollution formation could worsen air quality in many areas of California. Climate change may increase the concentration of ground-level O_3, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC] 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1 degree Fahrenheit, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; California Climate Change Center 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008).

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2009).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the local and global levels. Increasing concentrations of GHGs are likely to accelerate the rate and severity of climate change impacts. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) during the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

b. Regulatory Setting

The following regulations address both climate change and GHG emissions.

Federal

The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held the USEPA has the authority to regulate tail pipe emissions from motor-vehicles under the federal Clean Air Act.

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the USEPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons of CO_2e per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the USEPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The USEPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the USEPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the USEPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons of CO_2e per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons of CO_2e per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons of CO_2e per year.

On July 3, 2012, the USEPA issued a Final Rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In 2014, the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA* (134 S. Ct. 2427 [2014]) held that USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

State

CARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill 1493

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (Pavley), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its GHG standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels.

Executive Order S-3-05 and B-30-15

In 2005, Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015, the governor issued EO B-30-15 calling for a new target of 40 percent below 1990 levels by 2030.

Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and required CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT of CO_2e. CARB approved the Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan. Implementation activities are ongoing and CARB is the process of updating the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the state's longer-term GHG reduction strategies with other state policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (CARB 2017b).

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, CARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

Southern California Association of Governments (SCAG) was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

Senate Bill 32

On September 8, 2016, the governor signed Senate Bill 32 (SB 32) into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged).

CARB 2017 Scoping Plan

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state.

Senate Bill 350

Adopted on October 7, 2015, SB 350 supports the reduction of GHG emissions from the electricity sector through a number of measures, including requiring electricity providers to achieve a 50 percent renewables portfolio standard by 2030, a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by retail customers by 2030.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires the CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

The bill also requires the California Department of Resources, Recycling, and Recovery, in consultation with CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. For more information on the Senate Bills, Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

Title 24, California Code of Regulations

California Code of Regulations, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods.

In 2016, the CEC updated Title 24 standards with more stringent requirements effective January 1, 2017. All buildings for which an application for a building permit is submitted on or after January 1, 2017 must follow the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided these standards exceed those provided in Title 24. If the project is submitted for building plan check on January 1, 2020 or after, the new 2019 Code cycle will be effective.

Regional

As discussed above, SB 375 requires Metropolitan Planning Organizations to prepare an RTP/SCS that will achieve regional emission reductions through sustainable transportation and growth strategies. On September 23, 2010, CARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. SCAG was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. On April 7, 2016, SCAG adopted the 2016-2040 RTP/SCS. It includes a number of strategies and objectives to encourage transit-oriented and infill development and use of alternative transportation to minimize vehicle use.

Local

City of Riverside General Plan 2025

The Air Quality, Land Use and Urban Design, and Open Space and Conservation elements of the General Plan 2025 contain policies intended to reduce GHG emissions. Many of the policies described in Section 4.2, *Air Quality*, Section 4.5, *Energy Conservation*, and Section 4.9, *Land Use and Planning,* would apply to reducing GHG emissions. Additional policies that may be applicable to the project include:

Objective AQ-5: Increase energy efficiency and conservation in an effort to reduce air pollution.

Policy AQ-5.1: Utilize source reduction, recycling, and other appropriate measures to reduce the amount of solid waste disposed of in landfills.

Policy AQ-5.3: Continue and expand use of renewable energy sources such as wind, solar, water, landfill gas, and geothermal sources.

Policy AQ-5.6: Support the use of automated equipment for conditional facilities to control heating and air conditioning.

Policy AQ-5.7: Require residential building construction to meet or exceed energy use guidelines in Title 24 of the California Administrative Code.

Objective AQ-8: Make sustainability and global warming education a priority for the City's effort to protect public health and achieve state and federal clean air standards

Policy AQ 8.17: Develop measures that a minimum of 40 percent of the waste from all construction sites throughout Riverside be recycled by the end of 2008.

City of Riverside Restorative Growthprint-Climate Action Plan

The City of Riverside collaborated with the Western Riverside Council of Governments (WRCOG) on a Subregional Climate Action Plan. The City of Riverside Restorative Growthprint-Climate Action Plan (RRG-CAP) builds on the WRCOG Subregional CAP commitments and provides the City GHG reduction goals beyond 2020 to 2035. Through the WRCOG Subregional CAP process, the City has adopted a 2020 community-wide GHG emissions target of 2,224,908 MT CO_2E, which represents a 15 percent reduction from the City's 2010 GHG emissions baseline inventory, and a 2035 emissions target of 1,532,274 MT CO_2E, 49 percent below the 2007 baseline. These reduction targets are consistent with the statewide AB 32 goal of reducing emissions to 1990 levels and fulfill the requirements of SB 375 (City of Riverside 2016).

The RRG-CAP contains GHG reduction measures organized into four primary sectors to meet these targets:

- **Energy:** Promote energy efficiency and renewable energy for municipal operations and the community
- **Transportation and Land Use:** Measures to reduce single-occupancy travel, increase non-motorized travel, improve transit access, encourage alternative fuels, and promote sustainable growth patterns.
- **Water:** Measures to reduce water demand by community and municipal operations and to conserve potable water.
- **Solid Waste:** Measures to reduce solid waste during construction and operational activities.

4.7.2 Impact Analysis

a. Significance Thresholds and Methodology

Significance Thresholds

Based on Appendix G of the State CEQA Guidelines, impacts related to GHG emissions from the project would be significant if the project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

The majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (Association of Environmental Professionals [AEP] 2017).

According to CEQA Guidelines, projects can tier off of a qualified GHG reduction plan that allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the AEP in its white paper, *Beyond Newhall and 2020*, to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions (AEP 2016). The Southern California Air Quality Management District (SCAQMD) has not adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency. The City of Riverside's qualified local GHG reduction plan (Economic Prosperity Action Plan and Climate Action Plan) establishes community-wide GHG emissions targets for 2020 and 2035 and is consistent with CEQA Section 15183.5(b). However, the City of Riverside has not adopted quantitative GHG emissions thresholds, and the project includes a general plan and zone change that would allow for different types of uses and greater development density than was included in the GHG projections of the CAP.

To evaluate whether a project may generate a quantity of GHG emissions that may have a significant impact on the environment, a number of operational bright-line significance thresholds have been developed by state agencies. Significance thresholds are numeric mass emissions thresholds that identify the level at which additional analysis of project GHG emissions is necessary. Projects that attain the significance target, with or without mitigation, would result in less than significant GHG emissions. Many significance thresholds have been developed to reflect a 90 percent capture rate tied to the 2020 reduction target established in AB 32, such as SCAQMD bright-line threshold of 3,000 MT of CO_2e per year for development projects (SCAQMD 2008). These targets have been identified by numerous lead agencies as appropriate significance screening tools for projects. Therefore, if the project exceeds the SCAQMD bright-line threshold of 3,000 MT of CO_2e per year, impacts would be significant.

Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC 2007) and are the GHG emissions that the project would emit in the largest quantities. Emissions of all GHGs are converted into their equivalent GWP in terms of CO_2 (CO_2e). GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (see Appendix C for the Greenhouse Gas Analysis).

Construction Emissions

Construction activities associated with the proposed project would result in GHG emissions of CO_2, $CH_{4,}$ and N_2O. Other emissions from construction activities impacting air quality are detailed in Section 4.2, *Air Quality.* Construction activities would generate emissions primarily due to the operation of construction equipment on-site as well as from vehicles transporting construction workers to and from the project site and heavy trucks to export earth materials offsite. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. For the construction phase project emissions, GHGs are quantified and amortized over the life of the project. To be consistent with SCAQMD recommendations, GHG emissions were calculated for construction activities, divided by a 30-year project life, and added to the annual operational phase GHG emissions.

Operational Emissions

Activities associated with the operation of the project would result in emissions of CO_2, CH_4, and N_2O. Emissions were calculated from the following primary sources: area emissions, energy emissions, mobile emissions, solid waste, and water supply, treatment, and distribution. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (California Air Pollution Officers Control Association 2008) direct emissions factors for mobile combustion (Appendix O). Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

AREA SOURCE

Area source emissions would result from the use of consumer products, architectural coatings, and landscaping equipment. The primary emission generator would be from fuel combustion from landscaping equipment such as trimmers, blowers, hedge trimmers, and other maintenance equipment. CalEEMod emissions factors and standard application rates were used to calculate the emissions from consumer products and repainted surfaces.

ENERGY SOURCE

GHGs are emitted from buildings as a result from electricity use and natural gas usage. These energy source emissions are considered direct emissions associated with the building. There are also indirect emissions associated with the initial generation of electricity from fossil fuels. Energy source emissions for the project were calculated using Riverside Public Utilities energy intensity factors and CalEEMod default electricity for the different land uses proposed on site. The baseline values come from the CEC-sponsored California Commercial End Use Survey and Residential Appliance Saturation Survey studies.

Mobile Source

The project operational mobile source emissions are dependent on the overall daily trip rates and trips generated by the project. The factors that play into the mobile emissions include the trip lengths and trip rates as well as the fleet mix. Vehicle trip characteristics were derived from the Traffic Impact Analysis (Appendix L), as well as from trip length and trip rates, which are based on the land use types of the project.

Solid Waste Source

GHG emissions from the project would also be associated with disposal of solid waste into landfills. A large portion of the waste generated by the project would be diverted through a variety of means such as recycling or composting. GHG emissions associated with solid waste from the project were calculated using CalEEMod default parameters that use waste disposal rates by land use and overall composition of municipal solid waste in California.

Water Supply, Treatment, and Distribution Source

Water and wastewater from the project would produce indirect GHG emissions from the electricity used to convey, treat, and distribute it. The CalEEMod default parameters were used, unless otherwise noted in the Greenhouse Gas Analysis (Appendix C). These parameters use electricity intensity factors and the utility GHG emissions intensity factors for water supply GHG emissions. Wastewater emissions depend on the type of wastewater treatment system (e.g., septic, aerobic or lagoons).

Threshold 1:	Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact GHG-1 THE PROPOSED PROJECT WOULD GENERATE GHG EMISSIONS THAT EXCEED THE ESTABLISHED SERVICE POPULATION THRESHOLD EVEN WITH THE IMPLEMENTATION OF MITIGATION MEASURES. BECAUSE THERE ARE NO FEASIBLE MITIGATION MEASURES TO CONTROL MOBILE EMISSIONS, THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Development of the proposed project would generate GHG emissions from construction and operation of the project. As detailed above under methodology, the project would produce direct and indirect GHG emissions from the use of construction equipment, consumer products and landscaping equipment, electrical and natural gas consumption, water use and wastewater generation, and from the disposal of solid waste. Mobile emissions from the residences, employees, visitors, and costumers would be the greatest source of GHG emissions from the project. Table 4.7-1 details the GHG emissions associated with the project.

Table 4.7-1 Estimated GHG Emissions without Mitigation

Emission Source	Emissions (MT CO_2e per year)
Construction	
Amortized over 30 years	115.36
Operational (excluding Mobile)[1]	
Area	124.80
Energy	7,937.13
Solid Waste	339.16
Water	575.89
Mobile	
CO_2 and CH_4	12,392.49
N_2O	513.16
Total GHG Emissions	**21,998.0**
SCAQMD Threshold	3,000
Project Exceeds Threshold?	Yes

Source: Greenhouse Gas Analysis, Appendix C

The project would include a number of design features that would help reduce GHG emissions from energy and mobile sources:

- On-demand hot water systems
- Individual unit water-use monitoring
- LED lighting
- HVAC systems
- Designated ride-sharing pick-up and drop-off location
- U.S. Post Office/FedEx concierge service

However, the project would still result in approximately 21,998 MT CO_2e per year from construction, area, energy, waste, water usage, and mobile emission sources, which would exceed SCAQMD emission thresholds and result in a potentially significant impact. GHG emissions from mobile sources represent 59 percent of total GHG emissions that would be created as a result of construction and operation of the project. If all other GHG emissions from construction, area, energy, solid waste, and water use were removed, the project would still exceed SCAQMD thresholds by 9,906 MT CO_2e per year. Because neither the project proponent nor the lead agency has regulatory authority over tailpipe emissions, there are no feasible mitigation measures that would reduce GHG emissions to levels that are less than significant. The following mitigation measures would reduce GHG emissions to the extent feasible. However, the project would have significant and unavoidable impacts.

Mitigation Measures

Implementation of mitigation measures AQ-3 and AQ-4, detailed in Section 4.2, Air Quality, would be required to reduce GHG emissions to the extent feasible. Mitigation Measure AQ-3 would require the exceedance of California Building Code Title 24 by 5 percent through implementing recommended measures and Mitigation Measure AQ-4 would require enhanced water conservation that reduced outdoor water use by 30 percent. These amounts are typical and the most feasible as building and landscaping requirements and materials become more efficient.

Significance After Mitigation

Implementation of Mitigation Measures AQ-3 and AQ-4 would reduce GHG emissions as seen in Table 4.7-2 below.

Table 4.7-2 Estimated GHG Emissions with Mitigation

Emission Source	Emissions (MT CO_2e per year)
Construction	
Amortized over 30 years	115.36
Operational (excluding Mobile)	
Area	124.80
Energy	7,779.94
Solid Waste	339.16
Water	531.93
Mobile[1]	
CO_2 and CH_4	11,894.29
N_2O	487.50
Total GHG Emissions from Forecast Growth	**21,272.98**
SCAQMD Threshold	3,000
Project Exceeds Threshold?	Yes

[1] Mobile emissions reduced through incorporating CalEEMod mobile mitigation measures Increased Density and Increased Diversity.
Source: Greenhouse Gas Analysis, Appendix C

With the implementation of the mitigation measures, the project would result in approximately 21,272.98 MT CO_2e per year from construction, area, energy, waste, water usage, and mobile emission sources. This represents a 3.4 percent change from the project without mitigation. The project would still exceed the SCAQMD threshold of 3,000 MT CO_2e per year. GHG emissions from mobile sources would still represent 58 percent of total GHG emissions that would be created from construction and operation of the project with the incorporation of feasible mitigation measures. If all emissions from construction, area, energy, solid waste, and water use were reduced to zero, the project would still exceed SCAQMD thresholds by 9,382 MT CO2e per year. Besides the project design features detailed under Impact GHG-1, there are no feasible measures that would reduce emissions from vehicle trips generated by the proposed project to a less than significant level. Therefore, project-related GHG emissions would remain significant and unavoidable.

Threshold 2:	Would the proposed project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

Impact GHG-2 THE PROJECT WOULD BE CONSISTENT WITH THE GOALS AND STRATEGIES OF SB 375 AND SCAG'S RTP/SCS, AS WELL AS WITH APPLICABLE MEASURES IN THE 2017 SCOPING PLAN AND THE CITY'S ADOPTED CLIMATE ACTION PLAN. HOWEVER, SINCE THE PROJECT WOULD EXCEED THRESHOLDS ESTABLISHED TO MEET GHG REDUCTION TARGETS, THE PROJECT WOULD CONFLICT WITH ADOPTED POLICIES AND IMPACTS WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The project includes a general plan and zoning code amendment to develop the project site at the proposed density and with the proposed mix of uses. The 2016-2040 RTP/SCS made projections based off the current land uses of the project site. Therefore, the proposed change in land use would develop the site with uses and a density that were not fully accounted for in the 2016-2040 RPP/SCS. As detailed in Section 4.2, Air Quality, the project would create approximate 182 jobs, which represents less than 0.1 percent of SCAG's estimated job growth of 432,500 new jobs through 2040. The project would add approximately 1,897 new residents, which would represent less than three percent of the forecast population growth through 2040 for the City. Therefore, the project would not cause the area to exceed the RTP/SCS population forecasts and would not conflict with the goals of SB 375 and the 2016 RTP/SCS.

The City of Riverside's CAP determined consistency with AB 32 reduction requirements was equal to 15 percent below 2010 levels (City of Riverside 2016). The Scoping Plan provides a framework for action to reduce emissions pursuant to AB 32. Many strategies are not applicable to specific project-level applications. Table 4.7-3 highlights the Scoping Plan measures that will be applicable to the project. The project would be consistent with applicable GHG emission reduction strategies in the Scoping Plan.

Table 4.7-3 Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Measure	Comments
T-1: Pavley Motor Vehicle Standards (AB 1493)	Residents would purchase vehicles in compliance with incumbent CARB vehicle standards
T-2: Low Carbon Fuel Standard	Motor vehicles driven by residents would use fuels that are compliant with incumbent standards.
T-4: Tire Pressure	Motor vehicles driven by residents would maintain proper tire pressure when vehicles are serviced.
H-1: Moto Vehicle Air Conditioning Systems – Reduction from Non-Professional Servicing	Residents would be prohibited from performing air conditioning repairs and required to use professional servicing.
H-4: Limit High GWP Use in Consumer Products	Residents would use consumer products that would comply with the incumbent regulations.
H-5: Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	Motor vehicles driven by residents, employees, and customers would comply with the leak test requirements during smog checks.
W-1: Water Use Efficiency	Development proposals within the project site would implements measures to minimize water use and maximize efficiency. The project will be required to show consistency with the City of Riverside's municipal code requiring efficient landscape requirements (Chapter 19.08 of the City's municipal code/consistency with the City's AB 1881 Landscaping Ordinance).
GB-1: Green Buildings	Development proposals within the project site would be constructed in compliance with incumbent state or local green building standards.
GB-1: Greening New Residential and Commercial Construction	Development proposals within the project site would comply with incumbent green building standards. At this time, the project would be required to comply with the 2016 Title 24 standards and applicable green building standards.
GB-1: Greening Existing Homes and Commercial Buildings	Development proposals within the project site would comply with incumbent green building standards. At this time, the project would be required to comply with the 2016 Title 24 standards and applicable green building standards.
E-1: Energy Efficiency Measures (Electricity)	The project would comply with incumbent electrical energy efficiency standards. At this time, the project would be required to comply with the 2016 Title 24 standards and applicable green building standards.
CR-1: Energy Efficiency (Natural Gas)	Development proposals within the project site would comply with incumbent green building standards. At this time, the project would be required to comply with the 2016 Title 24 standards and applicable green building standards.

Source: CARB 2008

Consistency with the City of Riverside Economic Prosperity Action Plan and Climate Action Plan

The RRG-CAP includes individual measures that would reduce GHG emissions in the City. Not all of the GHG reduction measures included in the RRG-CAP apply or relate to the project. The measures relevant to the project and the project's consistency with the measures are included in Table 4.7-4 below.

Table 4.7-4 Project Consistency with CAP GHG Reduction Measures

Measure	Consistency Analysis
State and Regional Energy Measures	
Measure SR-2: California Building Energy Efficiency Standards	**Yes**; The project would comply with the latest California Building Energy Standards
Measure SR-6: Pavley and Low Carbon Fuel Standards	**Yes**; Motor vehicles would use fuels compliant with incumbent fuel standards.
Measure SR-12: Facilitate electric vehicle use by providing necessary infrastructure.	**Yes**; The project would include pre-wired electric vehicle charging spaces, as required by CalGreen Code.
Measure SR-13: Meet mandatory requirement to divert 50 percent of construction and demolition (C&D) waste from landfills by 2020 and exceed requirement by diverting 90 percent of C&D waste from landfills by 2035	**Yes**; The project would be required to divert 50 percent of construction waste.
Local Energy Measures	
Measure E-2: Strategically plant trees at new residential developments to reduce the urban heat island effect.	**Yes;** The project landscaping includes trees throughout the residential portion of the development in the common open spaces.
Measure T-2: Provide additional options for bicycle parking	**Yes;** The project would be consistent with the CALGreen for short and long tern bicycle facilities.
Measure T-3: Encourage use of non-motorized transportation modes by providing appropriate facilities and amenities for commuters.	**Yes;** The project includes pedestrian walkways and provides required bicycle facilities,
Measure T-4: Encourage transportation demand management strategies.	**Yes;** The proposed project would be located on a site with opportunities for residents, employees, and visitors of the project to walk, bike, or use public transit to conveniently reach places of employment, entertainment, and schools, which, in turn, would reduce vehicle trips and associated GHG emissions.
Measure T-6: Improve jobs-housing balance and reduce vehicle miles traveled by increasing household and employment densities	**Yes;** The project consists of a mixed-use development and would provide housing and employment opportunities at an infill site.
Measure T-7: Provide for a variety of development types and uses.	**Yes;** The project consists of multiple types of uses, including residential, commercial, and visitor-serving.
Measure T-8: Encourage walking by providing pedestrian-only community areas.	**Yes;** The project includes courtyards with shopping and socializing opportunities. Also, farmers markets and weekend events would close down portions of the site to pedestrian-only uses.
Measure T-19: Promote the use of alternative fueled vehicles such as those powered by electric, natural gas, biodiesel, and fuel cells by Riverside residents and workers.	**Yes;** The project includes pre-wired EV charging spaces for residential spaces.

Measure	Consistency Analysis
Local Water Measures	
Measure W-1: Reduce per capita water use by 20 percent by 2020.	**Yes;** The proposed project would implement water conservation measures, as required by the CalGreen Code and City ordinances (e.g., Water Efficient Landscape Ordinance (Municipal Code Chapter 19.570) and Water Conservation Ordinance (Municipal Code Chapter 14.22). The City's Urban Water Management Plan outlines the programs that the City is implementing to achieve the 20 percent reduction by 2020. Project compliance with City regulations and participation in City conservation programs, which include future increases in the use of recycled water and continued implementation of water conservation measures, would allow the City to maintain a per capita water use that meets its water conservation goals.
Measure SW-2: Provide green waste collection bins community-wide	**Yes**; Landscape maintenance at the proposed project would be provided by the property manager, which would allow for separate green waste collection and disposal
Measure SW-2: Divert food and paper waste from landfills by implementing commercial and residential collection programs.	**Yes;** The proposed project would provide separate recycling bins for residential and commercial uses, in accordance with Chapter 19.554 of the RMC.
Source: City of Riverside 2016	

The project is consistent with the applicable GHG reduction measures provided in the 2016 RRG-CAP and reduction strategies in the Scoping Plan. However, the project would exceed thresholds established to meet GHG reduction targets due to projected mobile emissions. Therefore, even though the project would meet applicable measures in the Scoping Plan and RRG-CAP, the project would not be in compliance with the associated emission thresholds and impacts would be significant and unavoidable.

Mitigation Measures

58 percent of the project's GHG emissions are from mobile sources. Even with the removal of all GHG emissions from construction, area, energy, solid waste, and water use, the project would still exceed SCAQMD thresholds, as detailed in Impact GHG-1. Therefore, there are no feasible mitigation measures to meet established thresholds created to meet GHG reduction targets.

Significance After Mitigation

Because there were no feasible mitigation measures, impacts would still be significant and unavoidable.

4.7.3 Cumulative Impacts

As discussed in Section 3, Environmental Setting, cumulative development in the City of Riverside and surrounding cities and County would include residential development, warehouses, commercial, office, and public facilities. Each of the proposed developments would generate GHG emissions from vehicle trips, electrical and water use, and other sources. The analysis of GHG emissions is cumulative in nature, as emissions affect the accumulation of GHGs in the earth's atmosphere. Projects that fall below provided thresholds are considered to have a less than significant impact, both individually and cumulatively.

The City of Riverside has a number of green power projects that would reduce overall GHG emissions in the City. The City is helping fund solar projects throughout the City that will reduce emissions from energy from current users and the cumulative projects in the City. The City also initiated a LED streetlight replacement program in 2016. The program will eventually replace all city-owned streetlights with more energy efficient LED lights by 2019. The Riverside Public Utilities (RPU) has a number of incentive programs for residences and businesses to reduce their electricity consumption and cumulatively reduce GHG emissions from energy use.

As indicated in Impact GHG-1 and Impact GHG-2, the project would have a significant and unavoidable impact on GHG emissions, primarily due to the mobile emissions from the project. The GHG emissions of the cumulative projects would be analyzed on a project by project basis. However, as this project would exceed thresholds and there are no feasible mitigation measures to reduce GHG emissions to a less than significant level, the project would still have a cumulatively significant and unavoidable impact.

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4.8 Hydrology and Water Quality

This section analyzes the effects of the proposed mixed-use project on water quality and hydrological resources. The analysis is based on data and information from the Hydrology Study (Appendix J) and Preliminary Water Quality Management Plan ([WQMP] Appendix K) prepared by Adkan Engineers in August 2018. Additionally, the discussion and analysis contained herein are informed by comments received during the NOP public review period.

This analysis relies on significance thresholds established in Appendix G of the State CEQA Guidelines. The Initial Study determined the proposed project would not expose people or structures to inundation by seiche, tsunami, or mudflow and, therefore, that threshold is discussed no further in this section; refer to Section 4.15, *Impacts Found to be Less than Significant*. The analysis addresses all remaining hydrology and water quality thresholds.

4.8.1 Setting

a. Existing Hydrologic and Water Quality Setting

The project site is in the Santa Ana River Hydrologic Unit (HU) in the South Coast Hydrologic Region (U.S. Geological Survey [USGS] 2018; California Department of Water Resources [DWR] 2016). Within the Santa Ana River HU, the project site is in the Middle Santa Ana River Hydrologic Area Split and the Riverside Hydrologic Subarea (Santa Ana Regional Water Quality Control Board [SARWQCB] 1986). The SARWQCB governs basin planning and water quality in the Santa Ana River HU.

The general region is characterized by an arid climate, exhibiting hot, dry summers and mild, wetter winters. The average monthly temperature ranges from approximately 58 to 78 degrees Fahrenheit (°F), with an annual average temperature of approximately 66°F in 2015. Records show that average annual rainfall is approximately nine inches, with monthly averages ranging from 0.1 to 2.2inches. Most rainfall typically occurs from November through April (Riverside Public Utilities [RPU] 2016).

Surface Water Resources

The project site consists of approximately 35.4 acres of mostly vacant land. While the site is generally undeveloped, remnants of previous residential development such as retaining walls, concrete posts, and railings, are located throughout the site. Two surface drainage features traverse the project site. The most prominent is a trapezoidal, concrete-lined stormwater drain constructed in 1980 and maintained by Riverside County Flood Control and Water Conservation District (RCFCWCD) as part of the University Wash Channel system (RCFCWCD 2018). The concrete-lined drainage (Drainage 1) originates near the southeastern portion of the project site and flows through the center of the site, before exiting through an underground culvert at Orange Street on the western edge of the property. The drainage has seasonably variable perennial flow and a width of approximately 30 feet at the top of the sloped concrete banks. The second drainage is a soft-bottom, man-made channel (Drainage 2) that enters the project site from a culvert under La Cadena Drive at the northeast corner, extends along the northern edge, and runs through the north-central portion of the site. A culvert from the south end of Sonic Court discharges runoff from the neighborhood to the north onto the project site.

Flow from the concrete-lined drainage ultimately discharges to Lake Evans, a manmade lake at Fairmount Park, approximately 3,000 feet west of the project site. Overflow from Lake Evans is directed to the Santa Ana River, immediately to the west of the lake. Flow from the soft-bottom drainage may discharge to the concrete-lined channel through an underground culvert near the confluence of the two channels, but this flow is discontinuous due to a constructed dirt access road and an incline in topography through the soft-bottom drainage. A field survey conducted by Rincon Consultants in July 2018 revealed that the western 460 feet of the drainage showed no signs of water flow (e.g., scouring, sediment transport), current or historically, and is filling in naturally. Figure 4.8-1 shows surface water resources near the project site, including on- and off-site drainages, and nearby surface water flowlines as delineated in the USGS's National Hydrography Dataset.

Groundwater Resources

The project site is underlain by the 92-square mile Upper Santa Ana Valley Groundwater Basin, Riverside-Arlington Sub-basin (Groundwater Basin Number 8-2.03) (DWR 2004). The Riverside-Arlington Sub-basin is in northwest Riverside County and southwest San Bernardino County, with groundwater stored primarily in clay, silt, and gravel alluvium deposited by the Santa Ana River and its tributaries. Figure 4.8-2 shows the boundaries of the Riverside-Arlington Sub-basin in relation to the project site.

While identified as a single sub-basin by DWR, a litigious history has resulted in unique management- based delineations in the Riverside-Arlington Sub-basin. The 1969 Western-San Bernardino Judgment (Western Municipal Water District [WMWD] of Riverside County et al. v. East San Bernardino County Water District et al., Case No. 78426) settled extraction rights throughout the Upper Santa Ana River watershed to meet flow obligations to lower reaches of the river (RPU 2016). The judgment resulted in adjudication of a portion of the sub-basin (the "Riverside Sub-basin"), with the remainder of the sub-basin (the "Arlington Sub-basin") remaining non-adjudicated (RPU 2016). The project site is in the adjudicated Riverside South basin in Riverside County. Two watermasters, one appointed by the San Bernardino Valley Municipal Water District and one appointed by WMWD, oversee groundwater extractions in the adjudicated portions of the basin and ensure compliance with the terms of the judgment.

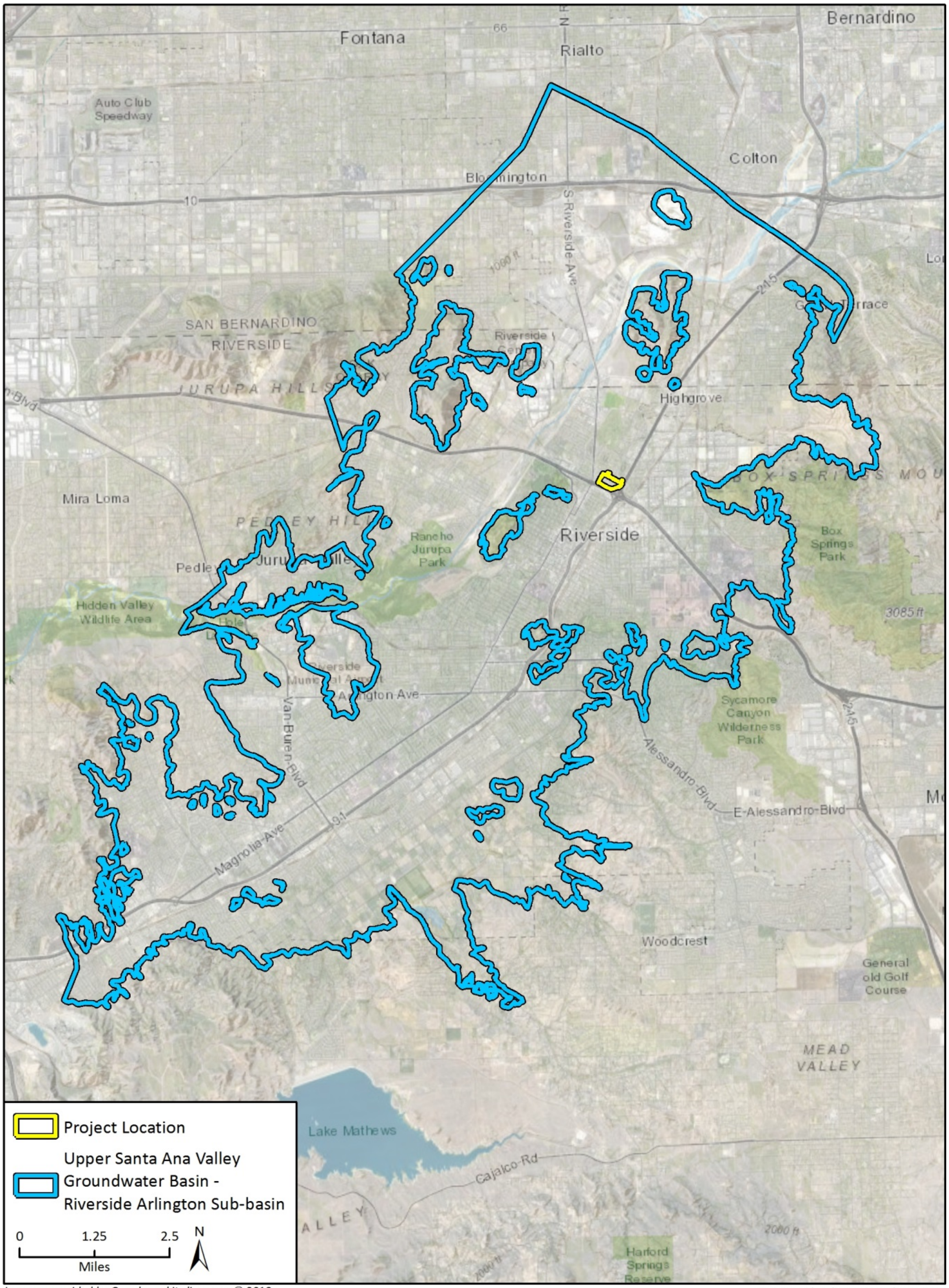
Under the Western-San Bernardino Judgment, safe yield from the Riverside South basin is set at 29,633 acre-feet per year. Sources of inflow to the Riverside South basin include deep percolation from precipitation and irrigation on agricultural and native lands, underflow from adjacent basins, and recharge from the Santa Ana River. Sources of outflow from the basin include loss to the Santa Ana River, underflow to adjacent basins, and groundwater production (RPU and WMWD 2011). The City maintains an extraction right of 16,880 acre-feet per year from the Riverside South basin, and meets over 98 percent of its water demand through groundwater pumping in the Riverside, Bunker Hill, and San Bernardino Basins (WMWD 2008).

Water quality sampling throughout the Riverside-Arlington Sub-basin shows levels of nitrate exceeding the maximum contaminant level for drinking water in 21 of 51 sampled public supply wells, and pesticides exceeding the maximum contaminant level in 19 of 50 wells (DWR 2004). Total dissolved solids content in the sub-basin ranges from 210 to 889 milligrams per liter. Groundwater extracted by RPU is blended and chlorinated prior to distribution, reducing vulnerability to contamination at individual wells (RPU 2016). Free groundwater was encountered on the project site in one soil boring during preparation of the geotechnical study. Depth to groundwater is recorded at a number of wells near the project site.

Figure 4.8-1 Surface Waters

Imagery provided by Microsoft Bing and its licensors © 2018.
Additional data provided by U.S. Geological Survey, 2007-2014, National Hydrography Dataset 2018.

Figure 4.8-2 Riverside-Arlington Groundwater Sub-Basin



Imagery provided by Google and its licensors © 2018.

Table 4.8-1 presents recorded depths to groundwater on and near the site area. Groundwater levels have historically remained fairly constant within the sub-basin in and around the City of Riverside (DWR 2004).

Table 4.8-1 Depth to Groundwater

Site	Local Well ID	Distance from Project Site	Depth to Groundwater (bgs)[1]	Date of Measurement[2]
Project Site				
Boring 23[3]	N/A	On-site	48.7	February 22, 2018
Nearby Wells				
Well Site Code: 339840N1173750W001	Fox Metro	1.1 mile (southwest)	73.5	March 8, 2016
Well Site Code: 339690N1173590W001	Clearwater	1.8 mile (south)	141.6	April 17, 2017
Well Site Code: 340180N1173300W001	Highgrove 3	2.2 miles (northeast)	180.7	March 26, 2018

[1]bgs = below ground surface (in feet)

[2]The most recent available groundwater level measurement available was used. Where measurement was recorded as "questionable data", the most recently available non-questionable data point was used.

[3]This data point reflects the only soil boring to encounter free groundwater on the project site during preparation of the geotechnical study.

Sources: Appendix 3 of the WQMP (Appendix K); DWR 2018

Water Quality

The primary sources of surface and groundwater pollution enter the water system via stormwater runoff from paved areas. This urban runoff can contain hydrocarbons, sediments, pesticides, herbicides, toxic metals, and coliform bacteria. Leaking septic tanks can cause similar types of contamination. Illegal waste dumping can introduce contaminants such as gasoline, pesticides, herbicides, and other harmful chemicals.

There are two major classes of pollutants: point source and non-point source. Point-source pollutants can be traced to their original source and are discharged directly from pipes or spills. Raw sewage discharging directly into a stream is an example of a point-source water pollutant. Non-point-source pollutants cannot be traced to a specific original source. Non-point-source pollution is caused by precipitation runoff collecting natural and human-made pollutants before depositing them into various watersheds, including lakes, rivers, wetlands, coastal waters, and groundwater. Non-point-source pollutants include, but are not limited to:

- Excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas
- Oil, grease, and toxic chemicals from urban runoff
- Sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks
- Salt from irrigation practices
- Bacteria and nutrients from livestock, pet wastes, and faulty septic systems. (United States Environmental Protection Agency [USEPA] 2017)

The project site is in the East Etiwanda Creek-Santa Ana River watershed (Hydrologic Unit Code 180702030804), which drains to Reach 4 of the Santa Ana River. SARWQCB develops water quality standards for the Santa Ana River to fulfill designated beneficial uses of the river. Water bodies that fail to meet these standards are listed as impaired, and a total maximum daily load (TMDL) limit may be required to allocate the maximum pollutant load the water body may receive and still meet its water quality standards. Reach 4 of the Santa Ana River is listed on the 2014/2016 California 303(d) list as impaired with an Integrated Report category of 5, indicating water quality standards are not met and a TMDL is required but not yet completed for at least one of the pollutants listed for the segment (State Water Resources Control Board [SWRCB] 2018). Designated beneficial uses and impairments for Reach 4 of the Santa Ana River and downstream reaches are summarized in Table 4.8-2. Figure 4.8-3 shows all reaches of the Santa Ana River.

Table 4.8-2 Surface Water Pollutants of Concern in Vicinity of Project Site

Water Body	Designated Beneficial Uses	Impairments	Integrated Report Category
Santa Ana River – Reach 4	Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened or Endangered Species, Spawning, Reproduction and Development	Indicator Bacteria (TMDL Required)	Category 5[1]
Santa Ana River – Reach 3	Agricultural Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened or Endangered Species, Spawning, Reproduction and Development	Copper (TMDL Required) Lead (TMDL Required) Indicator Bacteria (TMDL Approved)	Category 5
Santa Ana River – Reach 2	Agricultural Supply, Groundwater Recharge, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, Wildlife Habitat, Rare, Threatened or Endangered Species	Not Impaired	Category 1[2]
Santa Ana River – Reach 1	Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat (intermittent), Wildlife Habitat (intermittent)	Not Impaired	Category 1

[1]Category 1 Criteria : A water that fully supports at least one of its California beneficial uses, has other uses that are not assessed or lack sufficient information to be assessed, and for which no assessed uses are not supported.

[2]Category 5 Criteria: A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.

Note: Pursuant to the Clean Water Act section 303(d), each state is required to submit to the USEPA a list identifying water bodies not meeting water quality standards. The water bodies listed in this table are on California's 2014/2016 303(d) list for the pollutants indicated.

Source: SWRCB 2018

Figure 4.8-3 Santa Ana River Reaches

Imagery provided by Google and its licensors © 2018.

HydroFig 3 Santa Ana River Reaches

Flooding and Other Potential Hazards

Primary flood risk areas in Riverside are along the Santa Ana River and in the vicinity of dams. The project site is not located in a potential inundation area for seismic or geologic dam failure (City of Riverside 2007). The majority of the project site is located in Zone X, an area of minimal flood hazard designated by the Federal Emergency Management Agency (FEMA) (FEMA 2008; City of Riverside 2007). However, FEMA designates as Zone AE an approximately 2.2-acre portion of the project site along Drainage 1 near Orange Street on the western portion of the property, indicating the area is subject to inundation by the 1-percent-annual-chance flood event (FEMA 2008).

As discussed in the Initial Study (Appendix A), the project site is over 40 miles from the Pacific Ocean. No substantial bodies of water pose seiche or tsunami risks to the project site. Mudflows are commonly associated with landslide risks, and the project site is relatively flat with no identified landslide risks that could trigger mudflows.

b. Regulatory Setting

Federal

Clean Water Act

Congress enacted the Clean Water Act (CWA), formally the Federal Water Pollution Control Act of 1972, with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the U.S. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB) administer NPDES permitting authority. The project site is under the jurisdiction of the RWQCB Region 8 (Santa Ana Region).

Section 401 of the CWA requires that the RWQCB certify any activity that may result in discharges into a state waterbody. This certification ensures the proposed activity does not violate federal and/or state water quality standards. The limits of non-tidal waters extend to the Ordinary High Water Mark, defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics, such as natural line impressed on the bank, changes in the character of the soil, and presence of debris. The United States Army Corps of Engineers may issue either individual, site-specific permits or general, nationwide permits for discharge into waters of the U.S.

Section 303(d) of the CWA (CWA, 33 USC 1250, et seq., at 1313(d)) requires states to identify “impaired” waterbodies as those which do not meet water quality standards. States are required to compile this information in a list and submit the list to the USEPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing process, states must prioritize waters and watersheds for future development of TMDLs. The SWRCB and RWQCBs enact ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements.

National Pollutant Discharge Elimination System

The primary regulatory control relevant to the protection of water quality is the NPDES permit administered by the SWRCB. The SWRCB establishes requirements prescribing the quality of point sources of discharge and water quality objectives. These objectives are established based on the designated beneficial uses (e.g., water supply, recreation, and habitat) for a particular surface waterbody. The NPDES permits are issued to point source dischargers of pollutants to surface waters pursuant to Water Code Chapter 5.5, which implements the federal CWA. Examples include, but are not limited to, public wastewater treatment facilities, industries, power plants, and groundwater cleanup programs discharging to surface waters (SWRCB, Title 23, Chapter 9, Section 2200). The RWQCB establishes and regulates discharge limits under the NPDES permits.

State

Porter-Cologne Water Quality Control Act

The SWRCB regulates water quality through the Porter-Cologne Water Quality Control Act of 1969, which contains a complete framework for the regulation of waste discharges to both surface waters and groundwater of the State. RWQCBs regulate stormwater quality under authorities of the federal CWA and the state Porter-Cologne Water Quality Control Act.

NPDES Statewide Construction General Permit

Construction projects that disturb one or more acres of soil or are part of a larger common plan of development that disturbs one or more acres of soil must obtain coverage under the statewide NPDES General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). To obtain coverage under the Construction General Permit, a project-specific Stormwater Pollution Prevention Plan (SWPPP) must be prepared. The SWPPP outlines best management practices (BMP) to reduce stormwater and non-stormwater pollutant discharges including erosion control, minimize contact between construction materials and precipitation, and implement strategies to prevent equipment leakage or spills.

Local

Water Quality Control Plan for the Santa Ana River Basin (Basin Plan)

The City of Riverside is under the jurisdiction of RWQCB Region 8, the SARWQCB, which provides permits for projects that may affect surface waters and groundwater locally, and is responsible to prepare the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan designates beneficial uses of water in the region and establishes narrative and numerical water quality objectives. Water quality objectives, as defined by the CWA Section 13050(h), are the “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses or the prevention of nuisance within a specific area.” The state has developed TMDLs, which are a calculation of the maximum amount of a pollutant that a waterbody can have and still meet water quality objectives established by the region. The Basin Plan serves as the basis for the SARWQCB’s regulatory programs and incorporates an implementation plan to ensure water quality objectives are met. Basin Plans undergo a triennial review process, with the SARWQCB’s Basin Plan most recently updated in February 2016 (SARWQCB 2018).

Municipal Regional Stormwater NPDES Permit

On January 29, 2010, the RWQCB adopted Order R8-2010-0033, as amended by Order R8-2013-0024 (NPDES Permit and Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the Incorporated Cities of Riverside County within the Santa Ana Region) otherwise known as the municipal separate storm sewer system (MS4) permit. The City of Riverside is a co-permittee under the Riverside County MS4 permit. One component of the MS4 permit requires the development of site-specific WQMPs for new development and significant redevelopment projects. WQMPs include site design, source control, and treatment elements to reduce stormwater pollution from urban runoff.

On April 7, 2015, the SARWQCB adopted statewide Trash Provisions to address impacts of trash on surface waters in the region. The Trash Provisions outline additional requirements for co-permittees under the MS4 permit, including either installation of Full Capture Systems for all storm drains capturing runoff from priority land uses, or a combination of full capture systems, multi-benefit projects, treatment controls, and/or institutional controls to reduce trash accumulation in surface waters (SARWQCB 2017).

Riverside County Drainage Area Management Plan

The Riverside County Drainage Area Management Plan (DAMP), developed by the RCFCWCD and other co-permittees to the MS4 Permit, outlines programs and policies to manage urban runoff (Riverside County 2014). The DAMP includes development review procedures for co-permittees, required construction BMPs and inspection frequency, annual reporting and evaluation framework, and TMDL implementation strategies. The DAMP is the primary document outlining compliance procedures for co-permittees to adhere to the requirements of the MS4 Permit in Riverside County.

Riverside County Watershed Action Plan

The Riverside County Watershed Action Plan is intended enable co-permittees under the Riverside County MS4 Permit to address watershed-level water quality impacts associated with urbanization (County of Riverside 2017). The Watershed Action Plan describes the Santa Ana Watershed, applicable MS4 programs (e.g., the DAMP, WQMPs), and the development review process for new development and redevelopment projects.

Design Handbook for Low Impact Development Best Management Practices

Developed in 2011 by the RCFCWCD, the Design Handbook for Low Impact Development Best Management Practices describes low-impact development (LID) guidelines for projects to reduce downstream erosion by more closely mimicking pre-project hydrology and minimizing pollutant runoff. The Handbook details strategies for selecting appropriate LID BMPs, design capture volume requirements for BMPs, and sizing calculation methodology for BMP implementation in specific watersheds in the County.

City of Riverside Municipal Code

The City of Riverside Municipal Code (RMC) contains a number of ordinances relevant to hydrology and water resources.

Title 14, Chapter 14.12 regulates the discharge of wastes to the public sewer and pollutants into the storm drain systems. Section 14.12.315 prohibits the discharge of pollutants to the storm drainage system or any waterway, whether carrying water or not. Section 14.12.316 requires the preparation of a WQMP and installation of BMPs for new development and redevelopment projects in the City, and Section 14.12.319 outlines inspection and enforcement for post-construction requirements detailed in the project’s WQMP.

Title 16, Chapter 18 contains regulations pertaining to flood hazard areas in the City and implements the National Flood Insurance Program. Specifically, the ordinance outlines the process for development permit review by the Floodplain Administrator or designee as well as floodplain construction materials and standards.

Finally, Title 17 describes regulations pertaining to grading, including those intended to minimize erosion and runoff. Section 17.16.010 outlines grading permit application requirements, including noticing requirements to the SWRCB for coverage under the Statewide Construction General Permit and preparation of a SWPPP.

City of Riverside General Plan 2025

The City of Riverside adopted the General Plan 2025 in November 2007 to outline a 20-year vision for the City. The Public Safety, Open Space and Conservation, and Public Facilities and Infrastructure elements each contain policies relevant to hydrology and water quality, including the following.

PUBLIC SAFETY ELEMENT

Policy PS-2.1: Reduce flood risks for residents and businesses within urbanized areas, as feasible.

Policy PS-2.2: Encourage flood control infrastructure that does not reduce the natural character or limit the use of the site.

Policy PS-2.3: Minimize additional flood risk exposure in developing areas.

Policy PS-2.4: Identify existing facilities located in the 1% annual chance of flood zone, particularly bridges and potential emergency access routes.

Policy PS-2.6: Create and maintain evacuation routes for areas that could be affected by flooding or dam failure, with special emphasis on critical and emergency facilities.

OPEN SPACE AND CONSERVATION ELEMENT

Policy OS-7.6: Partner with other jurisdictions, including the Regional Water Quality Control Board and the U.S. Army Corps of Engineers, to minimize the impact of new development on the Santa Ana River and bring about some of the enhancements envisioned by the Santa Ana River Task Force.

Policy OS-10.2: Coordinate plans, regulations and programs with those of other public and private entities which affect the consumption and quality of water resources within Riverside.

Policy OS-10.6: Continue to enforce RWQCB regulations regarding urban runoff.

Policy OS-10.7: Work with the RWQCB in the establishment and enforcement of urban runoff water quality standards.

Policy OS-10.8: Cooperate with Riverside and San Bernardino Counties and adjacent jurisdictions in the review and approval of new developments which affect the quality and quantity of basin-wide groundwater and surface water resources.

Policy OS-10.9: Evaluate development projects for compliance with NPDES requirements, and require new development to landscape a percentage of the site to filter pollutant loads in stormwater runoff and provide groundwater percolation zones.

Policy OS-10.10: Protect aquifer recharge features and areas of important aquifers from degradation of water quality and reduction of recharge.

Policy OS-10.11: Monitor the quality and quantity of groundwater and surface water resources and consider revisions to the General Plan's policies if monitoring identifies significant reductions in water quality.

PUBLIC FACILITIES AND INFRASTRUCTURE ELEMENT

Policy PF-1.7: Protect local groundwater resources from localized and regional contamination sources such as septic tanks, underground storage tanks, industrial businesses and urban runoff.

Policy PF-3.4: Continue to investigate and carry out cost-effective methods for reducing stormwater flows into the wastewater system and the Santa Ana River.

Policy PF-4.2: Continue to cooperate in regional programs to implement the National Pollutant Discharge Elimination System program.

Policy PF-4.3: Continue to routinely monitor and evaluate the effectiveness of the storm drain system and make adjustments as needed.

4.8.2 Impact Analysis

a. Methodology and Significance Thresholds

The analysis of hydrologic and water quality impacts is based on information and data contained in the Hydrology Study (Appendix J) and Preliminary Water Quality Management Plan (Appendix K), including site runoff estimates, soil properties, impervious surface area, and water quality BMPs. The Hydrology Study used the RCFCWCD's Hydrology Manual to obtain soil and rainfall information and estimated storm flows using the RCFCWCD's Rational Method Hydrology Computer Program. The Preliminary Water Quality Management Plan was prepared in accordance with requirements of the Riverside County MS4 Permit using the City's WQMP template.

In addition to the studies referenced above, aerial imagery, grading plans, and drainage plans for the site were reviewed to analyze pre- and post-construction hydrology. Documents published by the SWRCB and SARWQCB, including plans and permits, were reviewed to provide information on existing water quality as well as required water quality improvement measures. Finally, the federal Flood Insurance Rate Map and policies contained in the RMC were assessed to determine flood potential on the project site and applicable floodplain development and construction standards.

In accordance with Appendix G of the *State CEQA Guidelines*, a hydrology and water quality impact is considered significant if the proposed project would:

1. Violate any water quality standards or waste discharge requirements
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site

5. 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
6. Otherwise substantially degrade water quality
7. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam
10. Expose people or structures to inundation by seiche, tsunami, or mudflow

The Initial Study determined that the proposed project would not expose people or structures to inundation by seiche, tsunami, or mudflow (threshold 10) and therefore, that threshold is discussed no further in this section; refer to Section 4.15, *Impacts Found to be Less than Significant*. The proposed project could result in potentially significant impacts related to thresholds 1 through 9. As such, these issues are analyzed below.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project violate any water quality standards or waste discharge requirements?
Threshold 6:	Would the project otherwise substantially degrade water quality?

Impact HWQ-1 CONSTRUCTION AND OPERATION OF THE PROJECT COULD INCREASE EROSION AND STORMWATER RUNOFF DUE TO SITE DISTURBANCE AND INCREASED IMPERVIOUS SURFACE AREA. COMPLIANCE WITH APPLICABLE REGULATIONS AND POLICIES, INCLUDING ON-SITE CAPTURE AND TREATMENT OF STORMWATER RUNOFF THROUGH AN INFILTRATION BMP, WOULD PREVENT THE VIOLATION OF WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Grading and other construction activities associated with the proposed project would have the potential to generate soil erosion and to increase sediment loads in stormwater runoff. Spills, leakage, or improper handling and storage of substances such as oils, fuels, chemicals, metals, and other substances from vehicles, equipment, and materials used during all construction phases could also cause pollutants to be present in stormwater runoff and impact water quality. Further, operation of the proposed project would increase impervious surface area on the project site, which can result in increased runoff and degraded water quality.

The proposed project would be subject to federal, state, and local standards and regulations protecting water quality and hydrological resources discussed above, including the CWA, Riverside County MS4 Permit, the RMC, and applicable policies of the City’s General Plan. Potential construction and operational water quality impacts, as well as applicable regulatory requirements addressing these impacts follow.

Construction

Grading, excavation, and other construction activities associated with the proposed project could adversely affect water quality due to erosion resulting from exposed soils and the generation of water pollutants, including trash, construction materials, and equipment fluids.

According to the geotechnical study prepared for the project (Appendix 3 of Appendix K), grading for the project would involve maximum cuts and fills of 20 feet, based on the site's existing topography. Soil disturbance associated with site preparation and grading activities would result in looser, exposed soils, which are more susceptible to erosion. Erosion factors (K factors) for soils on the project site range from 0.20 to 0.24, indicating moderate potential for sheet and rill erosion by water (Natural Resources Conservation Service 2018).

Because the project would result in disturbance of more than 1.0 acre, on-site construction activities would be subject to the NPDES Statewide General Construction Activity Stormwater permit. Compliance with the NPDES construction permit is further reiterated and required under the City's Grading Ordinance. For all covered projects, the NPDES construction permit requires visual monitoring of stormwater and non-stormwater discharges, sampling, analysis, and monitoring of non-visible pollutants, and compliance with all applicable water quality standards established for receiving waters potentially affected by construction discharges. Additionally, construction site operators would be responsible for preparing and implementing a SWPPP that outlines project-specific BMPs to control erosion, sediment release, and otherwise reduce the potential for discharge of pollutants in stormwater. Typical BMPs include:

- Utilizing temporary de-silting basins to ensure that surface water flows do not carry significant amounts of on-site soils and contaminants downstream
- Conducting construction vehicle maintenance in staging areas where appropriate controls have been established to ensure that fuels, motor oil, coolant, and other hazardous materials are not deposited into areas where they may enter surface water and groundwater
- Restricting the use of chemicals that may be transferred to surface waters by stormwater flows or leach to groundwater basins through water percolation into the soil
- Requiring that permanent slopes and embankments be vegetated following final grading
- Installation of silt fences, erosion control blankets
- Proper handling and disposal of wastes
- Installation of anti-tracking pads at site exits to prevent off-site transport of soil materials

Implementation of construction BMPs would minimize surficial erosion and transport of pollutants, and would ensure compliance with applicable NPDES requirements, thereby protecting water quality both on- and off-site.

Operation

According to the Preliminary WQMP, the existing project site contains less than 10 percent impervious area. With implementation of the proposed project, the impervious area would increase substantially due to the construction of buildings, parking lots, and roadways on the project site. Table 4.8-3 summarizes impervious surface cover under existing and proposed project conditions.

Table 4.8-3 Impervious Surface Areas

Site Conditions	Impervious Surfaces	Impervious Area (sf)	Percent of Project Site (%)[1]
Existing	Concrete-lined drainage (Drainage 1), remnants of concrete roads/driveways	149,750	9.7
Proposed Project	Roads, parking lots, sidewalks, roofs, concrete-lined drainage (Drainage 1)	1,167,262	75.7

sf = square feet
[1]Percentage calculated based on a 35.4-acre project site.
Source: Appendix K

Increased impervious area on the project site could result in increased runoff that can carry pollutants to downstream water bodies and adversely affect water quality. Common pollutants associated with urban, mixed-use development that could be discharged during operation of the project include automotive chemicals and metals that accumulate on roadways and parking lots; fertilizers, pesticides, and herbicides applied to ornamental landscaping; petroleum hydrocarbons spilled at fueling stations; trash and debris; and nutrients or bacteria associated with pet wastes.

Under the MS4 permit issued by the SARWQCB, permittees, including the City, must require BMPs, where feasible, to capture and treat stormwater prior to discharge to their MS4 facilities. Such BMPs include, where appropriate, LID techniques to be implemented at new development and significant redevelopment project sites. Because the project would create 10,000 square feet or more of impervious surface on the project site, it constitutes “New Development” under the MS4 and is required to implement BMPs.

On-site runoff would be captured and treated by the proposed infiltration BMP, a Contech brand corrugated metal pipe (CMP) detention chamber. Prior to entering the perforated chamber, runoff would undergo hydrodynamic separation pre-treatment by continuous deflective separators that capture and retain trash and debris, sediment, and oil. Pre-treatment would reduce adverse water quality impacts to groundwater and downstream water bodies associated with these contaminants, as well as other sediment-bound pollutants. In addition to the infiltration BMP, the project would implement permanent structural and operational source control BMPs to reduce water quality impacts associated with project operation. These measures are described in Table 4.8-4.

Table 4.8-4 Permanent Structural and Operational Water Quality BMPs

Potential Sources of Polluted Runoff	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words “Only Rain Down the Storm Drain” or similar	Maintain regularly; provide educational materials to new site owners, lessees, and operators
Interior floor drains	Plumb interior floor drains to sanitary sewer	Inspect and maintain drains to prevent blockages and overflow
Landscape/outdoor pesticide use	Include design for minimal irrigation, fertilizers, and pesticides in landscaping plans	Educate maintenance staff and prohibit unauthorized irrigation, fertilizer, and pesticide application
Pools and other water features	Make pool plumbing connections according to local requirements	Provide educational materials and pool/spa maintenance guidelines to new site owners, lessees, and operators
Food service	Describe the location and features of the designated cleaning area, the items to be cleaned in this facility, and how it has been sized to ensure the largest items can be accommodated	Provide the “Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries” from the RCFCWCD to new site owners, lessees, and operators
Refuse areas	Post signs on or near dumpsters with the words “Do Not Dump Hazardous Materials Here” or similar	Provide adequate number of receptacles; inspect receptacles regularly; repair or replace leaky receptacles; keep receptacles covered; pick up litter daily; and clean up spills immediately with spill control materials
Vehicle cleaning	Design commercial carwash facilities such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility will be discharged according to local requirements	Inspect automated car wash facilities regularly to ensure wastewater from washing operations is not discharged to the storm drain system
Fuel dispensing areas	Construct fueling areas with impermeable floors graded at the minimum slope necessary to prevent ponding and separated from the rest of the site by a grade break that prevents run-on of stormwater	Property owner shall dry sweep the fueling area regularly
Roofing, gutters and trim	Include roofing, roofing gutters and trim not made from copper or other unprotected metals that may leach into runoff in building roofing plans	N/A
Plazas, sidewalks, and parking lots	N/A	Sweep plazas, sidewalks, and parking lots regularly to prevent litter and debris from accumulating (no cleaning agents or degreasers discharging to storm drain system)

Source: Table G.1, WQMP (Appendix K)

Maintenance of source control and structural BMPs would be the responsibility of a Property Owners Association established once the project is implemented, as detailed in the Preliminary WQMP. Refuse area clean-up and street sweeping would occur weekly, while stenciling on drainage inlets would be inspected and maintained semi-annually. The detention and infiltration chamber would be inspected and maintained quarterly and at the beginning and end of the wet season.

Water quality impacts associated with construction of the project would be reduced given adherence to the requirements of the NPDES Construction General Permit, specifically preparation and implementation of a SWPPP. During operation, the infiltration BMP would capture and treat on-site runoff. Additional permanent structural and operational BMPs would further reduce pollution of stormwater runoff associated with proposed land uses on the project site. Compliance with federal, state, and local regulations would ensure that stormwater runoff is captured and treated on-site, thereby protecting water quality both on- and off-site. Therefore, implementation of the proposed project would not violate any water quality standards or waste discharge requirements, nor would it otherwise substantially degrade water quality. This impact would be less than significant.

Mitigation Measures

Mitigation beyond compliance with federal, state, and local requirements would not be required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

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

Impact HWQ-2 IMPERVIOUS SURFACE COVER WOULD INCREASE ON THE PROJECT SITE UNDER THE PROPOSED PROJECT, REDUCING THE POTENTIAL FOR RECHARGE OF THE UNDERLYING AQUIFER. HOWEVER, ALL ON-SITE RUNOFF WOULD BE ROUTED THROUGH A PERFORATED DETENTION CHAMBER, WHERE GROUNDWATER RECHARGE WOULD OCCUR. FLOWS CARRIED OFF THE SITE VIA THE EXISTING UNIVERSITY DRAIN SYSTEM WOULD CONTINUE TO DISCHARGE TO LAKE EVANS AND THE SANTA ANA RIVER, WHERE ADDITIONAL POTENTIAL FOR INFILTRATION AND RECHARGE EXISTS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

In its current vacant condition, the project site contains approximately 149,750 sf of impervious surface associated with the existing concrete-lined drainage channel and previously demolished development on the site (Table 4.8-3). The project would result in a substantial increase in impervious surfaces, totaling 1,167,261.6 sf. This increase in impervious surface cover could reduce on-site infiltration and, consequently, could result in a localized reduction in groundwater elevations.

Despite being largely devoid of impervious surfaces, the existing site condition provides low groundwater recharge potential. Between February 23 and May 24, 2018, John R. Byerly Incorporated conducted percolation testing of soils underlying proposed stormwater detention chamber systems on the project site (Appendix K). At four of the five testing sites, percolation rates ranged from 0.0 to 0.59 inches per hour, indicating slow percolation attributed to high silt and clay content and the dense nature of the soil layer at the depths tested. Under existing conditions, site drainage is routed through an impermeable concrete-lined channel, which further reduces potential for runoff to provide groundwater recharge benefits on-site.

The project would not involve on-site groundwater extraction that would result in substantial drawdown of an underlying aquifer. Site drainage under the project would be routed through a constructed underground storm drain system. All on-site runoff would flow through proposed treatment systems and the Contech CMP perforated detention and infiltration chamber. The chamber would be sited in the western portion of the project site, where soil testing indicated a percolation rate of 6.81 inches per hour, higher than all other tested locations on the project site. As a result, detention of stormwater in the Contech CMP chamber would provide groundwater recharge on the project site.

As with current drainage patterns, stormwater that discharges from the detention chamber would flow off-site through the University Wash system and ultimately discharge to Lake Evans and Reach 4 of the Santa Ana River, where additional infiltration opportunity exists for recharge of the underlying Riverside-Arlington Sub-Basin. Therefore, impacts with respect to depletion of groundwater supplies would be less than significant.

Mitigation Measures

Mitigation beyond compliance with federal, state, and local requirements would not be required.

Significance After Mitigation

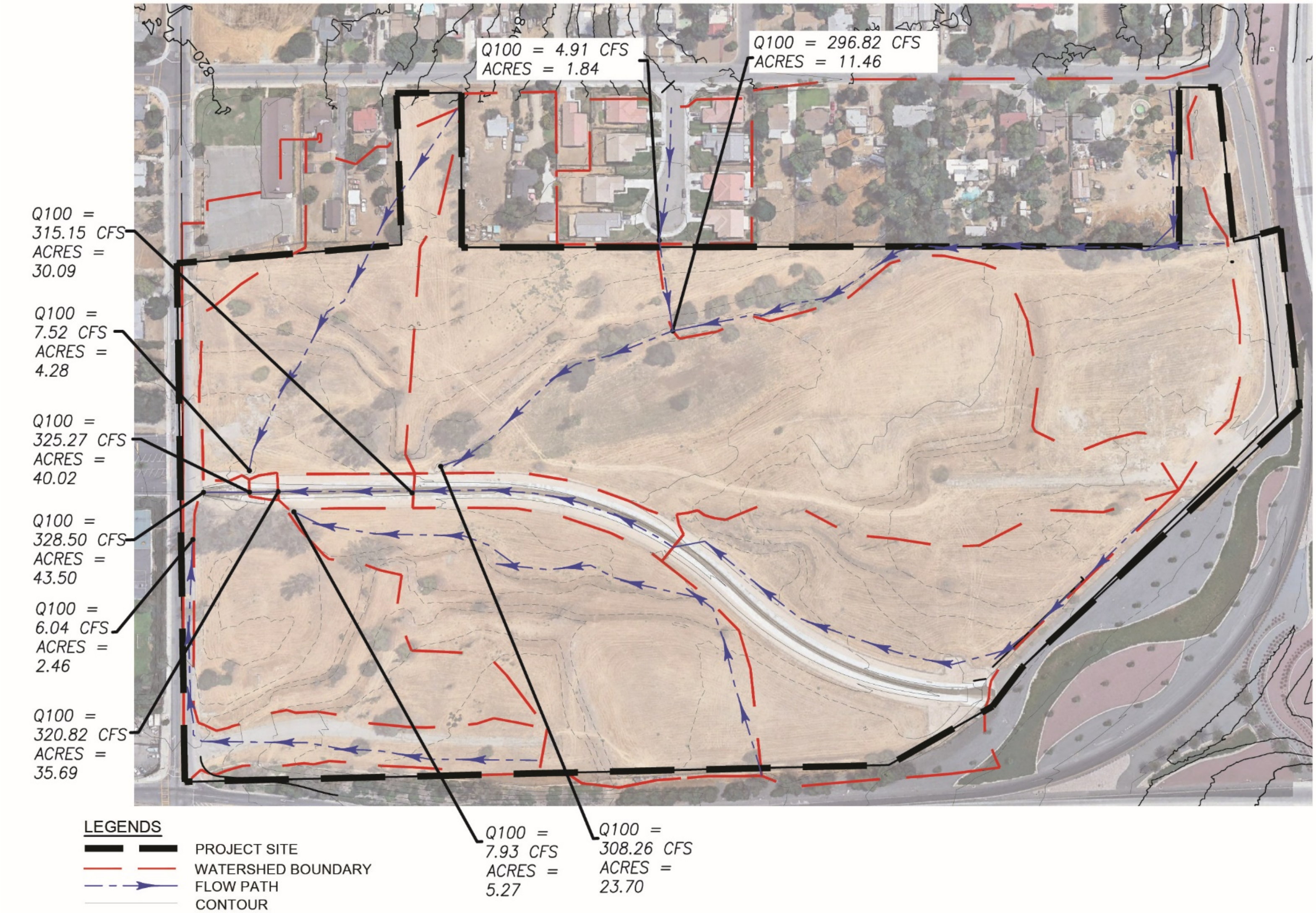
Impacts would be less than significant without mitigation.

Threshold 3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
Threshold 4:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
Threshold 5:	Would the project 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?

Impact HWQ-3 UNDER THE PROPOSED PROJECT, ALL ON-SITE STORMWATER RUNOFF WOULD BE CAPTURED AND TREATED VIA A DETENTION AND INFILTRATION CHAMBER, DESIGNED TO ACCOMMODATE THE 85TH PERCENTILE, 24-HOUR PRECIPITATION DEPTH. THE PROJECT WOULD NOT RESULT IN SUBSTANTIAL OFF-SITE HYDROMODIFICATION IMPACTS. HOWEVER, COVERING AND FILLING OF EXISTING DRAINAGES WOULD RESULT IN SUBSTANTIAL, PERMANENT SILTATION OF WATERWAYS ON THE PROJECT SITE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

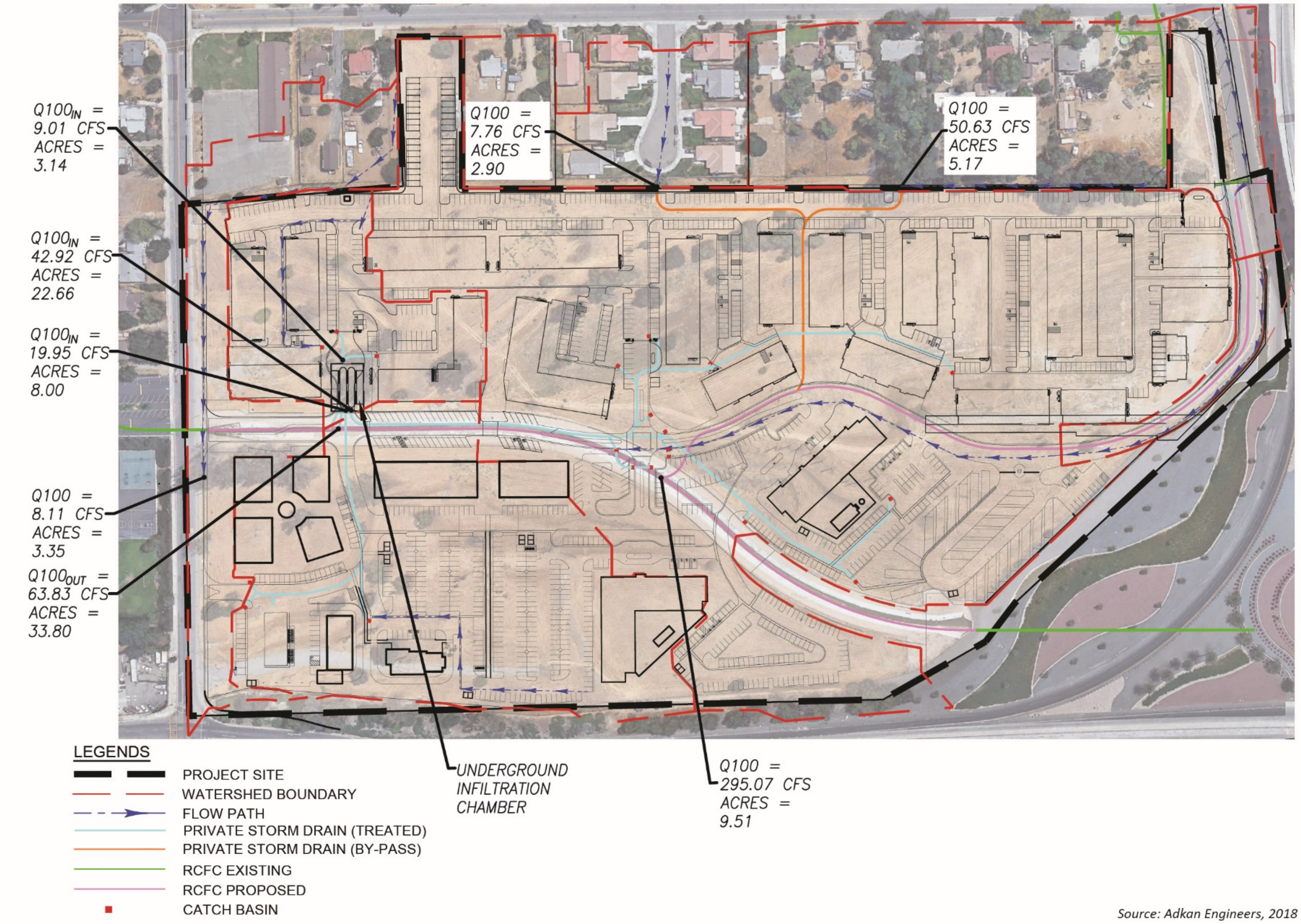
The project would maintain existing drainage patterns to the extent feasible. On-site drainage would continue generally from higher elevations on the southwestern portion of the site (near the existing freeway interchange) to lower elevations on the northeastern portion of the site (near Orange Street). However, alterations to existing drainage on-site facilities would occur to accommodate proposed development. Figure 4.8-4 shows the existing hydrology of the project site. Figure 4.8-5 shows the proposed hydrology of the project site under the project.

Figure 4.8-4 Existing Hydrology Conditions



Source: Adkan Engineers, 2018

Figure 4.8-5 Proposed Hydrology Conditions



Source: Adkan Engineers, 2018

Under the project, the majority of the trapezoidal concrete-lined drainage channel would be covered and replaced with a minimum 98-inch reinforced concrete pipe (RCP). The soft-bottom drainage that flows along the northern portion of the project site would be filled entirely. A network of underground storm drains originating from catch basins throughout the project site would convey water to the RCP. The RCP would receive all on-site drainage, as well as off-site runoff from the north and northeast of the project site that currently drains to the channel under existing conditions. Catch basins installed along Orange Street would function as a bubbler to maintain the hydraulic grade line of the RCP.

Prior to discharge to the RCP, the storm drain network would convey all on-site runoff to the proposed infiltration BMP, a Contech CMP detention and infiltration chamber sited approximately 230 feet southeast of the project's proposed entrance off Orange Street. As discussed under Impact HWQ-1, the BMP would pre-treat and capture stormwater flows, allowing runoff to infiltrate through the subsurface.

Pursuant to the requirements of the MS4 permit, the detention and infiltration chamber would be designed to capture and treat runoff from the 85th percentile, 24-hour rainfall depth of 0.61 inches, based on the isohyetal map RCFCWCD provided (Appendix K). Design capture volume and flow rates for the site were calculated using worksheets provided in the RCFCWCD's Design Handbook for LID BMPs.

In order to determine design capture volumes and flow rates, the project site was divided into drainage management areas. For each drainage management area, a post-project surface type (i.e., roofs, concrete, landscaping) was selected and an associated runoff factor applied. Based on the calculations contained in the Preliminary WQMP, the proposed BMP would need to accommodate a design capture volume of 54,566.1 cubic feet and a total design flow rate of 5 cubic feet per second. The planned volume of the Contech BMP chamber would be 54,639 cubic feet, and the chamber would accommodate a total flow of 5 cubic feet per section. Therefore, the proposed stormwater BMP would meet or exceed design requirements for stormwater capture. Because the proposed BMP would capture all on-site runoff, the project would not exceed the capacity of existing stormwater drainage systems and would not substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding.

Preparation of a WQMP under the Riverside County MS4 permit requires projects to assess whether drainage alterations would create a Hydrologic Condition of Concern (HCOC) due to hydromodification, such as changes in watershed hydrologic processes and runoff that result in increased streamflow and sediment transport. The project site is not identified in a hydromodification sensitivity map prepared by the City and was determined not to result in HCOC according to the WQMP (Appendix K). Given that the project would not result in a HCOC and would capture and treat all on-site stormwater runoff, alteration of drainage patterns on the project site would not result in substantial erosion or siltation off-site.

Though the project would not contribute to excessive off-site sedimentation or siltation, waters on-site would be impacted by proposed development. As discussed in Section 4.3, *Biological Resources*, covering and replacement of the concrete-lined channel would result in permanent impacts to approximately 0.30 acre of waters of the U.S. and up to 1.05 acre of potential CDFW streambed habitat. Fill of the soft-bottom drainage would result in permanent impacts to approximately 0.06 acre of waters of the state and up to 0.10 acre of potential CDFW streambed habitat. These impacts could result in hydrological impacts, such as degraded water quality or diminished groundwater recharge potential. These impacts would be potentially significant.

Mitigation Measures

Mitigation measures BIO-3 and BIO-4, as described in Section 4.3, Biological Resources*,* would require compliance with applicable state and federal permitting requirements pertaining to streambed alteration and discharge of fill material to waters. Such permits would require adherence to avoidance and minimization measures and compensatory mitigation, as necessary.

Significance After Mitigation

Incorporation of Mitigation Measures BIO-3 and BIO-4, as described in Section 4.3, Biological Resources*,* would reduce on-site erosion and sedimentation impacts to a less than significant level.

Threshold 7:	Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
Threshold 8:	Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?
Threshold 9:	Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Impact HWQ-4 A PORTION OF THE PROJECT SITE IS LOCATED IN THE 1-PERCENT-ANNUAL-CHANCE FLOOD EVENT ZONE, AS DESIGNATED BY FEMA. THIS ZONE WOULD BE UNLIKELY TO CONTINUE TO EXPERIENCE FLOODING UNDER POST-DEVELOPMENT DRAINAGE CONDITIONS. THE PROJECT WOULD BE REQUIRED TO COMPLY WITH APPLICABLE REGULATIONS PERTAINING TO FLOOD HAZARDS, INCLUDING DEVELOPMENT PERMIT REVIEW BY THE CITY'S FLOODPLAIN ADMINISTRATOR. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

As discussed in *Existing Hydrologic and Water Quality Setting*, the project site is not in a potential inundation area for seismic or geologic dam failure (City of Riverside 2007). The majority of the project site is located within FEMA-designated Zone X, an area of minimal flood hazard (FEMA 2008; City of Riverside 2007). However, an approximately 2.2-acre area of the project site along the existing concrete-lined channel on the western portion of the property is designated as Zone AE by FEMA, indicating the area is subject to inundation by the 1-percent-annual-chance flood event (FEMA 2008). The flood zone is located near where the existing open channel flows into the underground culvert under Orange Street. Proposed project components that would occur in the designated Zone AE include the primary project entrance road, live entertainment area, multi-tenant commercial retail buildings (Buildings P1 through P4), and multi-family residential buildings 1, 2, 3 and 5.

Chapter 16.18 of the RMC contains the City's regulations pertaining to construction of structures in flood hazard areas. In compliance with this chapter, the City's Floodplain Administrator would review all development permits associated with the project to determine that permit requirements have been satisfied, the site is reasonably safe from flooding, and the proposed development would not adversely affect the carrying capacity of areas where base flood elevations have been determined. Pursuant to Section 16.18.100, any development in the floodplain would be required to adhere to specific construction standards, including, but not limited to, the following:

- New construction and substantial structural improvements shall be adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads.
- All new construction and substantial structural improvements shall be constructed with flood-resistant materials and utility equipment resistant to flood damage.
- Electrical, heating, ventilation, plumbing, air conditioning, and other service facility equipment shall be designed and/or located to prevent water from entering or accumulating during flooding.
- Elevation of the lowest floor of residential buildings, including the basement, shall be elevated to or above the base flood elevation, as certified by a registered civil engineer upon completion of the structure pad.
- All non-residential construction shall be elevated above the base flood elevation or flood-proofed so that the structure is watertight.

Under the project, the majority of the existing concrete-lined channel would be covered and replaced by a reinforced concrete structure approximately 1,380 feet upstream of the existing culvert under Orange Street. The open channel drainage would be converted to an enclosed pipe system upstream of and through the designated floodplain zone, minimizing the chance for flooding at the site. During most precipitation events, all on-site runoff would be collected through the proposed storm drain system and conveyed to the infiltration BMP for capture and treatment. The BMP would be designed to bypass the 1-percent-annual-chance flood event.

Drainage alterations on the project site would reduce the potential for flooding to occur. Nevertheless, because the project site contains a flood hazard area and structures, including residences, are proposed in this area, this impact would be potentially significant.

Mitigation Measures

HWQ-1 Letter of Map Revision

Prior to the issuance of building permits, the applicant shall obtain a revision to the Flood Insurance Rate Map reflecting post-development drainage conditions. This process will first entail a conditional letter of map revision prior to issuance of a grading permit. Then, prior to issuance of a building permit, a letter of map revision showing the actual "as built" plans shall be submitted. The applicant shall adhere to all FEMA-required processes and shall demonstrate, with supporting technical data, that the lowest point of all structures remain at or above the 1-percent-annual-chance flood event base flood elevation.

Significance After Mitigation

Mitigation Measure HWQ-1 would involve revisions to the Flood Insurance Rate Map based on supporting technical data showing that the lowest point of all structures remains at or above the 1-percent-annual-chance flood event. Therefore, adherence to mitigation measure HWQ-1 would ensure structures, including housing, are not placed within the 100-year flood hazard area. Pursuant to existing City regulations, the City's Floodplain Administrator would review all development permits associated with the project to determine that the site is reasonably safe from flooding and the proposed development would not adversely affect the carrying capacity of areas where base flood elevations have been determined. Implementation of mitigation measure HWQ-1, as well as compliance with applicable flood hazard regulations and construction requirements contained in the RMC, would reduce flood hazard impacts to a less than significant level.

4.8.3 Cumulative Impacts

The planned and pending projects in the vicinity of the project site, listed in Table 3-1 of this EIR, include projects consisting of residential, warehousing, commercial, office, light industrial, hotel, park, and school-related land uses. Cumulative development and redevelopment projects in the vicinity of the project site would increase impervious surface area in the Santa Ana watershed, thereby potentially increasing surface water runoff and associated pollutant loading to waterbodies.

All projects exceeding 1.0 acre of disturbance area would be subject to requirements of the NPDES Statewide Construction General Permit, including preparation and implementation of a SWPPP to minimize construction-related erosion, sedimentation, and non-point source pollution. All cumulative development projects would also be subject to the requirements of the applicable MS4permit, which would require BMPs to capture and treat on-site stormwater runoff for new development and significant redevelopment projects. As a result, stormwater detention infrastructure would expand incrementally with the pace of development in the watershed, which would reduce peak flows and minimize the potential for downstream flooding or other hydrologic impacts. Planned and pending projects may be required to implement project-specific flood or HCOC mitigation measures, depending on the significance of these impacts.

Cumulative development could increase the discharge of urban pollutants to surface waters and groundwater. However, all new development would be subject to the water quality requirements of the SARWQCB, the County MS4, and other applicable federal, state, and local regulations. Adherence to such regulations would address any adverse cumulative impacts resulting from individual new developments and reduce cumulative impacts with respect to hydrology and water quality to a less than significant level.

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4.9 Land Use and Planning

This section analyzes the effects of the proposed project on land use and planning. The analysis consists of a description of the regulatory framework specific to land use and planning, existing land use conditions on-site and in the surrounding area, and a discussion of potential impacts the project would have and any mitigation measures required to reduce the impacts. Additionally, the discussion and analysis contained herein is informed by comments received during the NOP public review period.

4.9.1 Setting

a. Existing Land Use Setting

This section describes the existing land use conditions and regulations on the project site and surrounding area in order to determine potential impacts.

Surrounding Land Uses

The project would be located in the Northside Neighborhood. The Northside Neighborhood is in close proximity to the urban centers of Downtown Riverside (1.3 miles southwest) and Hunter Industrial Park (0.5 miles east), yet has a unique neighborhood character feel of semi-rural, single-family residential. The broader neighborhood area includes a large number of park and recreation areas, as well as scattered commercial, office and industrial development. The proposed project site is bounded by Strong Street to the north, Orange Street to the west, La Cadena Drive and I-215 to the east, and SR 60 to the south. Land uses adjacent to the project side are described in Table 4.9-1 below.

Table 4.9-1 Surrounding Land Uses

Location	General Plan Land Use Designation	Zoning Designation	Land Uses
North	MDR – Medium Density Residential O – Office	R-1-7000 – Single-family Residential CG – Commercial General	Semi-rural, Single-family Residences Calvary Baptist Church
South	C – Commercial B/OP – Business/Office Park	R-1-7000 -–Single-family Residential BMP – Business and Manufacturing Park	SR 60; South of SR 60 – commercial, business, and office park area
East	MDR – Medium Density Residential	R-1-7000 – Single-family Residential	La Cadena Avenue and I-215 East of I-215 – Single-family Residences
West	MDR – Medium Density Residential PF – Public Facilities/ Institutional C – Commercial	R-1-7000 – Single-family Residential WC – Water Course Overlay PF – Public Facilities CG – Commercial General	Semi-rural, Single-family Residences Fremont Elementary School Tire Repair/Mechanic Shop

Project Site General Plan Land Use Regulations

The 35.4-acre project site has two General Plan land use designations: O - Office and MDR– Medium Density Residential. The majority of the site is designated O – Office, but a small area in the northwest corner of the site is designated MDR - Medium Density Residential. Table 4.9-2 details the existing density regulations and intended land uses. Land use O provides a variety of office uses, including general business, medical, and those that support retail and commercial uses. MDR land use provides development of single-family homes, town houses, and row houses.

Table 4.9-2 Existing General Plan Land Use Requirements

Land Use	Maximum du/acre or FAR/acre	Typical du/acre or FAR/acre	Maximum Population Density	Intent of Land Use Designation
O – Office	1.0 FAR	0.65 FAR	N/A	Office Uses
MDR – Medium Density Residential	6.2 du/acre; or 8 du/acre with planned residential development	5.5 du/acre	18.6 persons/acre; or 24 persons/acre with planned residential development	Single-family residential

FAR: Floor Area Ratio
du: Dwelling Unit
Source: City of Riverside 2007

Project Site Zoning Regulations

The project site has three zoning designations: R-1-7000 – Single-Family Residential, R-3-1500 – Multiple-Family Residential, and R-1-7000-WC – Single-Family Residential and Water Course Overlay. The majority of the site is zoned R-1-7000, but the concrete-lined channel (University Wash) is zoned R-1-7000-WC. The northeast corner of the project site, adjacent to La Cadena Drive, is zoned R-3-1500.

R-1-7000 provides for a variety of lot sizes and single-family residence housing development options. The Water Course Overlay identifies clearly regions designated as floodways, stream channels, and areas subject to flooding and associated hazards that should be kept free from structures or development that increase risk. R-3-1500 allows multiple-family residences, which can include apartments, town homes, and condominiums. Table 4.9-3 details the standard development regulations for the underlying zones. In the R-1-7000-WC zone, the Water Course Overlay designation regulates permitted land uses, and the R-1-7000 designation defines allowable land uses and property development standards.

Table 4.9-3 Existing Zoning Development Standards

Development Standard		R-1-7000	R-3-1500
Density (du per gross acre)		6.2	29
Lot Area Minimum		7,000 sf	N/A
Lot Area per Parent Parcel Minimum		N/A	30,000 sf
Lot Area per Dwelling Unit Minimum		N/A	1,500 sf
Lot Width Minimum		60 feet	80 feet
Lot Depth Minimum		100 feet	100 feet
Building Height Maximum		35 feet	30 feet[2]
Maximum Number of Stories		2	2[2]
Lot Coverage Maximum		40 percent	N/A
Setbacks Minimum	Front	20 feet	15 feet
	Side	7.5/10 feet1	N/A
	Interior Side	N/A	7.5 feet
	Adjoining Side	N/A	10 feet
	Rear	25 feet	15 feet

[1] The larger setback is required when a side yard is adjacent to a street

[2] For a development of three acres or greater, up to 60 percent of the units may be in buildings up to three stories, 40-feet maximum height subject to Community and Economic Development Director review and approval.

sf = square feet

Source: Title 19 Riverside Municipal Code (RMC)

Parking of the project is determined based on the type of uses and regulated in RMC Chapter 19.580. The proposed project would require 1,538 parking spaces, and it would provide 1,587 parking spaces, as detailed in Section 2, Project Description. The residential component of the project would comply with the City's requirements for enclosed, covered, and visitor parking.

b. Regulatory Setting

The City of Riverside has various tools to regulate land use and plan for future development in the City. Specific to the project site, the City of Riverside General Plan 2025 and the City's Zoning Ordinance (RMC, Title 19) serve as the primary land use tools for the development of the proposed project site.

Local

City of Riverside General Plan 2025

The Riverside General Plan 2025 serves as a guide for land use decision making and the implementation of the community's vision for the City. Each of the 12 elements in the General Plan contains objectives and policies to help guide development and decisions in the City. Of these, the Housing and Lands Use and Urban Design elements apply to the analysis in this section.

HOUSING ELEMENT

The Housing Element seeks to maintain and build healthy, strong neighborhoods with an adequate supply for quality and affordable housing. The Housing Element is required by state law to detail objectives, policies, and programs that facilitate development, improvement, and preservation of housing in the City. Objectives and policies that relate to the project include:

Objective H-2: To provide adequate diversity in housing types and affordability levels to accommodate housing needs of Riverside residents, encourage economic development and sustainability, and promote an inclusive community.

> **Policy H-2.2:** *Smart Growth*. Encourage the production and concentration of quality mixed-use and high density housing along major corridors and infill sites throughout the City in accordance with smart growth principles articulated in the General Plan.
>
> **Policy H-2.3**: *Housing Design*. Require excellence in the design of housing through the use of materials and colors, building treatments, landscaping, open space, parking, sustainable concepts, and environmentally sensitive building and design practices.
>
> **Policy H-2.4**: *Housing Diversity*. Provide development standards and incentives to facilitate live-work housing, mixed-use projects, accessory dwellings, student housing, and other housing types.

LAND USE AND URBAN DESIGN ELEMENT

This General Plan Land Use and Urban Design Element identifies the location of present and planned land uses and their relationship to the vision of the City and guides development and growth in the City and overall planning area through its objectives and policies. The element also relates how the land uses integrate with other areas addressed in the General Plan, such as Public Safety and Parks and Recreation. City-wide and neighborhood specific objectives and policies that relate to land use are included in the Land Use Element. The project is located in the Northside Neighborhood and subject to the associated objectives and policies including:

Objective LU-8: Emphasize smart growth principles through all steps of the land development process.

> **Policy LU-8.1:** Ensure well-planning infill development. Citywide, allow for increased density in selected areas along established transportation corridors.
>
> **Policy LU-8.3:** Allow for mixed-use development at varying intensities at selected areas as a means of revitalizing underutilized urban parcels.

Objective LU-9: Provide for continuing growth within the General Plan Area, with land uses and intensities appropriately designated to meet the needs of anticipated growth and to achieve the community's objectives.

> **Policy LU-9.2:** Evaluate proposed amendments to the Land Use Policy Map (Figure LU-10) to consider the effect such amendments will have on the City's ability to achieve its objectives.
>
> **Policy LU-9.4:** Encourage the design of new commercial developments as "integrated centers," rather than as small individual strip development. Integrate pedestrian access, parking, access, building design and landscape themes across all parcels in the commercial center to unity the development.
>
> **Policy LU-9.7:** Protect residentially designated areas from encroachment by incompatible uses and from the effects of incompatible uses is adjacent areas. Uses adjacent to planning residential areas should be compatible with the planned residential uses and should employ appropriate site design, landscaping, and building design in order to buffer the non-residential uses.

Objective LU-72: Provide for steady change and improvement to an upgraded model community with a distinct identity.

Policy LU-72.5: Encourage appropriate retail opportunities to better serve the Northside Neighborhood.

Policy LU-72.7: Continue to move all Northside neighborhood utilities underground; seek funding to complete undergrounding from all available sources, including the City of Riverside, Riverside County, assessment districts and Caltrans.

Objective LU-74: Preserve and promote the lower density charm of the Northside Community.

Policy LU 74.3: Use natural appearing drainage channels of innovative design in the Northside area. Development projects should be required to develop their drainage in natural or semi-natural appearing channels.

Policy LU-74.4: Preserve large groupings of existing trees that add visual interest to the area. Such tree groupings should be preserved as part of development projects or road widenings whenever possible.

Policy LU-74.5: Land use interfaces between residential and commercial or industrial properties should receive special design consideration to protect the scenic integrity of the residential neighborhood.

City of Riverside Municipal Code and Zoning Ordinance

The Riverside Municipal Code (RMC) contains regulations the City designed to implement the General Plan. RMC Title 19, Zoning, has regulations to:

> Encourage, classify, designate, regulate, restrict and segregate the highest and best location and use of buildings, structures and land for agriculture, residence, commerce, trade, industry, water conservation or other purposes in appropriate places; to regulate and limit the height, number of stories and size of buildings and other structures hereafter erected or altered; to regulate and determine the size of yards and other open spaces; and, to regulate and limit the density of population and for such purpose to divide the City into zones of such number, shape and area as may be deemed best suited to carry out these regulations and provide for their enforcement.

Other titles of the RMC also regulate land development in the City pertaining to construction, grading, utility installation, landscaping, safety, and construction.

Northside Specific Plan

Beginning in 2017, the City's Community & Economic Development Department collaborated with the City of Colton to prepare the Northside Neighborhood Inter-Jurisdictional Specific Plan (Northside Specific Plan), a document that will guide future land use, open space, and community design in the Northside Neighborhood of Riverside, and the Pellissier Ranch area in Colton. The Specific Plan area includes the proposed project site. Three series of community workshops were held to gather feedback from the public regarding the Specific Plan. The proposed project is designed to be consistent with feedback and input from the Specific Plan process as it stands today, and the Community & Economic Development Department expects to fold The Exchange project into the Specific Plan effort as the Specific Plan effort moves forward. The release of a Notice of Preparation for the Northside Specific Plan's Draft Program EIR is expected in Spring 2019.

4.9.2 Impact Analysis

a. Methodology and Significant Thresholds

According to Appendix G of the State CEQA Guidelines, the effects of the proposed project on land use are considered to be significant if the proposed project would:

1. Physically divide an established community
2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, clean air plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect
3. Conflict with any applicable habitat conservation plan or natural community

The Initial Study concluded development of the project would not divide an established community (threshold 1). That threshold is discussed no further in this section; refer to Section 4.15, *Impacts Found to be Less Than Significant*. This section addresses Impacts related to conflicts with an applicable land use plan, policy, or regulation (threshold 2) and conflicts with applicable habitat conservation plans (threshold 3).

b. Project Impacts and Mitigation Measures

Threshold 2:	Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, clean air plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

IMPACT LU-1 THE CURRENT LAND USE AND ZONING DESIGNATIONS WOULD NOT ALLOW THE PROPOSED PROJECT LAND USES AND DEVELOPMENT DESIGN. THE PROPOSED PROJECT APPLICATION, THEREFORE, INCLUDES REQUESTS FOR A GENERAL PLAN LAND USE AMENDMENT AND A ZONING CODE AMENDMENT. UPON APPROVAL OF THE PROJECT, THE PROPOSED DEVELOPMENT WOULD COMPLY WITH ALL NEW APPLICABLE LAND USE AND ZONING REGULATIONS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The proposed mixed-use development would include multi-family residential units, commercial and hotel buildings, a vehicle fueling station, and visitor-serving uses, as described in Section 2, Project Description. The current land use and zoning on the site would not allow these proposed uses and development design. The proposed project application, therefore, includes requests for a General Plan Land Use Amendment and Zoning Code Amendment.

The RMC allows for modification to various development standards in conjunction with certain permit issuance when sufficient reasoning is provided for the change. The project includes modifications to the provision that drive-thru restaurants and fueling stations be allowed on arterial roadways only, and to the requirement that a 6-foot tall block wall be constructed between a fueling station and a mixed-use development. The project also requests a grading exception to allow for certain retaining walls to be up to 12 feet in height.

Consistency with Land Use Regulations

General Plan Land Use Amendment

The General Plan Land Use Amendment request would change the land use designation from MDR – Medium Density Residential and O – Office to MU-U – Mixed Use Urban (approximately 34.5 acres of the site) and C – Commercial (approximately 1.0 acre of the site). Table 4.9-4 details proposed General Plan Land Use density regulations and intended land uses. Figure 4.9-1 shows the proposed land use change.

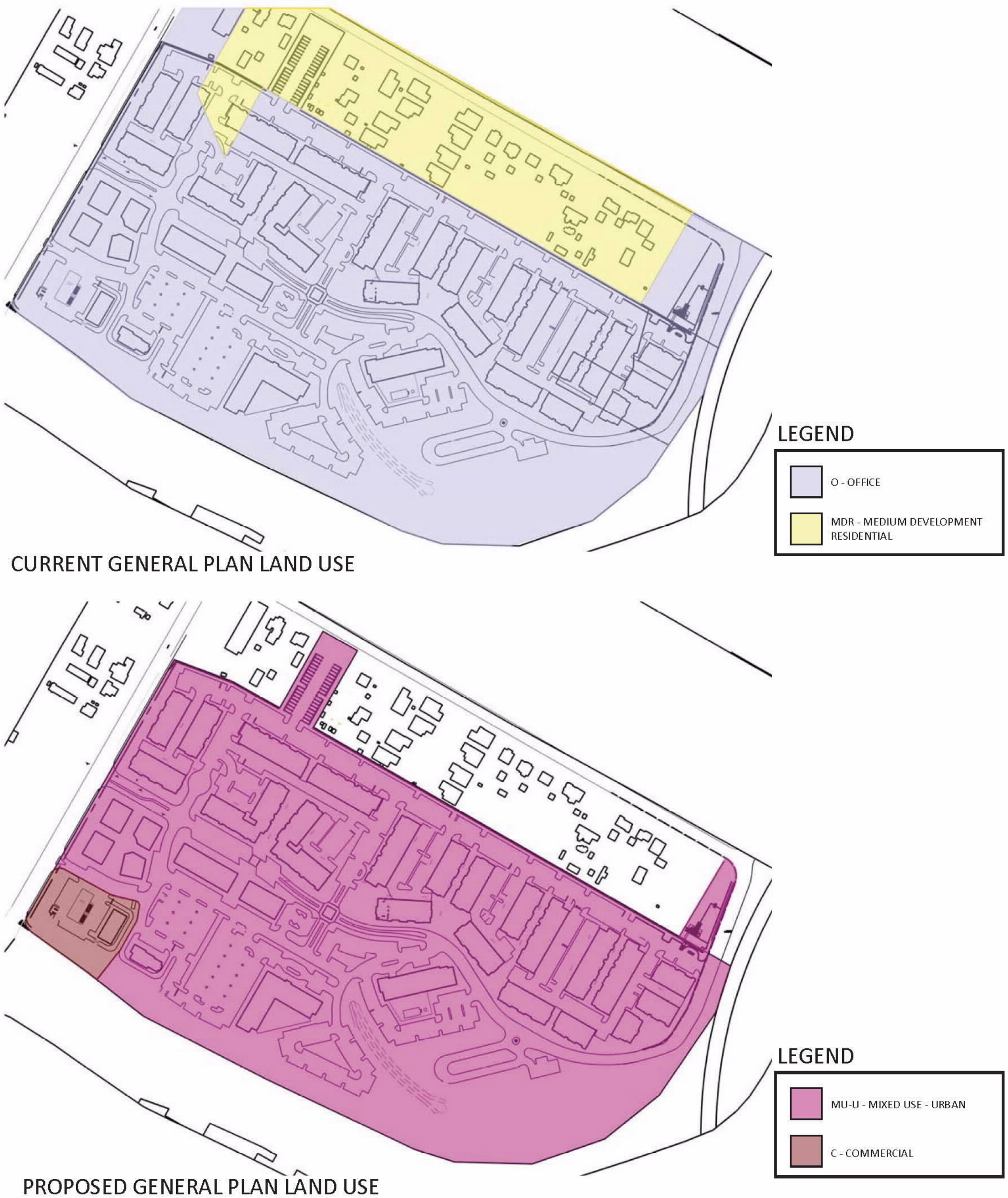
According to Table LU-3 of the Land Use and Urban Design Element of the City's General Plan 2025, the MU-U land use applies to an activity center with retail, office, and residential uses in the same building or same parcel, with an emphasis on entertainment, employment, and student-oriented uses (Riverside 2007). The project would conform to this land use by developing a mix of residential, retail, and visitor-serving uses on the same project site. The project site would function as an activity center in the Northside Neighborhood and provide a variety of outdoor gathering places with live entertainment and farmers markets in the commercial courtyard and elsewhere on the site. Redesignation of the Commercial land use is proposed to allow gas station and convenience store uses on the site. The General Plan indicates Commercial land use is for retail shops, services, and other similar commercial development. The proposed gas station, convenience store, and drive-thru car wash would be consistent with the Commercial land use designation.

Table 4.9-4 Proposed General Plan Land Use Designations – Density Regulations and Intended Land Uses

	Proposed Land Use Designation	
Regulation	**MU-U – Mixed Use Urban**	**C - Commercial**
Maximum Dwelling Unit per Acre	40 du/acre	n/a
Typical Dwelling Unit per Acre	30 du/acre	n/a
Maximum Population Density	120 persons per acre	n/a
Floor Area Ratio per Acre	4.0 FAR	0.5 FAR
Typical Floor Area Ratio per Acre	2.0 FAR	0.25 FAR
Intent of Land Use Designation	Retail, office and residential uses in same building or on the same parcel, emphasis on entertainment, employment, and student-oriented uses	Retail shops, services, and other similar commercial development

Source: City of Riverside 2007

Figure 4.9-1 Current and Proposed Land Use Designation



Source: AFG DEVELOPMENT, 2018

Zoning Code Amendment

The Zoning Code Amendment request would change the on-site zoning designations from R-1-7000, R-1-7000-WC, and R-1-1500 to MU-U – Mixed Use Urban (approximately 34.5 acres of the site) and CR – Commercial Retail (approximately 1.0 acre of the site). The Water Course Overlay zone would be removed from the site. Table 4.9-5 and Table 4.9-6 detail the standard development regulations for the proposed zoning designations, and show how the proposed project would meet those standards. Figure 4.9-2 shows the proposed zoning change.

Table 4.9-5 Proposed Zoning Designations – Standard Development Regulations: MU-U

Development Standard	MU-U – Mixed Use Urban Required	MU-U Development Proposed
Residential Density	40 du/acre	26.2 du/acre
Lot Area Minimum	20,000 sf	21,457 sf (Parcel 2)
Lot Width Minimum	80 ft	132 ft (Parcel 2)
Lot Depth Minimum	100 ft	114 ft (Parcel 1)
Building Height Maximum	60 ft	64 ft (Hotels)[1]
FAR Maximum	4.0	0.6[2]
Setbacks (Minimum)		
Front (east, along I-215)	0 ft	52 ft. 8 in.
Front (south, along SR 60)	0 ft	37 ft. 9 in.
Front (west, along Orange Street)	0 ft	49 ft. 7 in.
Interior Side (north)	0 ft	87 ft. 3 in.
Common Open Space	50 sf/du	148 sf/du
Private Open Space	50 sf/du for at least 50% of units	55 to 133 sf/du (102 sf/du average)

[1] RMC 19.560.030 Exceptions to Height Limits, allows parapets to exceed the underlying height limit by up to 10 ft.

[2] 479,773 sf of residential/793,222 sf of lot = 0.6 , ft./sf = feet/square feet, in. = inches, du = dwelling unit
Source: RMC Title 19

Table 4.9-6 Proposed Zoning Designations – Standard Development Regulations: Fueling Station

Development Standard	CR – Commercial Retail: Fueling Station Development Required	Fueling Station Development Proposed
Lot Area Minimum	43,560 sf	46,194 sf
Lot Width Minimum	60 ft	271 ft
Lot Depth Minimum	100 ft	161 ft
Building Height Maximum	35 ft	32 ft
FAR Maximum	0.5	0.1[1]
Setbacks (Minimum)		
Front (south, along SR 60)	20 ft	40 ft. 11 in.
Front (west, along Orange Street)	20 ft	101 ft. 2 in.
Interior Side (north)	20 ft	23 ft.
Interior Side (east)	20 ft	143 ft.

[1] 4,500 sf of fueling station/46,194 sf of lot = 0.1, ft./sf = feet/square feet, in. = inches

Source: RMC Title 19 Section 19.410.040 Fueling Stations

Figure 4.9-2 Current and Proposed Zoning Designation

The project is adjacent to single-family residences and a church to the north, and single-family residences and an elementary school to the west. The proposed site plan places the residential uses on the northern portion of the project site, adjacent to compatible uses, and puts the commercial uses and hotels further away from existing residential and institutional uses. The proposed project has been designed to meet the regulations of the requested zoning designations. Each project parcel would comply with the minimum lot standards for area, width, and depth. The proposed buildings would comply with height, floor-area ratio, and setback regulations. Under the MU-U residential density (40 units per acre), up to 736 residences would be permitted; the project proposes 482 residential units (26.2 units per acre). Private and common open space would exceed requirements, with 148 square feet of common open space per dwelling unit and between 55 and 133 square feet of private open space per dwelling unit.

The new 42-foot residential structures would be setback approximately 80 feet from the properties along Strong Street. This would reduce the potential for privacy or noise impacts from the residential structures. This project would also provide convenient amenities such as restaurants, shopping, farmers markets, and live entertainment for the surrounding neighborhood, in keeping with General Plan objectives and policies for housing and land use.

Consistency with General Plan Policies

The mixed-use design of the project would comply with the applicable General Plan Housing Element objectives and policies by increasing the types and availability of housing in the City. The project would comply with smart growth principles by providing high-density housing near the SR 60 and I-215 Interchange, a major regional transportation corridor. The addition of live-work units and one-, two-, and three-bedroom apartments would increase diversity of the City's housing types. The units would be offered at market-rate value, as no affordable units are proposed.

The project would comply with and promote applicable Land Use and Urban Design objectives and policies as it would increase density near transportation corridors, provide a mix of uses, and ensure a well-planned infill development. General Plan Objective LU 9 and Policy LU-9.2 encourage strategic land uses and updates to the General Plan that meet growing development needs in the City. The project supports this objective by proposing a land use change that would accommodate a mixed-use center strategically adjacent to regional freeways that would contribute to needed residential and commercial development in the Northside Community.

Objective LU-74 seeks to preserve the lower density charm of the Northside Community. While the project is proposing high density, mixed-use development, the project locates the commercial uses away from existing residential areas and provides adequate setbacks and integrated architectural and landscape design (see Section 4.1, Aesthetics) to protect the scenic integrity of the residential neighborhoods as discussed in Policy LU-9.7 and LU-74.5.

Mitigation Measures

Implementation of the project would include approval of the necessary General Plan Land Use Amendment and Zoning Code Amendment. No mitigation measures would be required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 3:	Conflict with any applicable habitat conservation plan or natural community conservation plan.

IMPACT LU-2 THE PROJECT IS PROPOSING DEVELOPMENT THAT WOULD POTENTIALLY IMPACT BIOLOGICAL RESOURCES IN THE WESTERN RIVERSIDE MULTIPLE SPECIES HABITAT CONSERVATION PLAN FEE AREA. IMPLEMENTATION OF MITIGATION MEASURES BIO-1 THROUGH BIO-4 WOULD REDUCE IMPACTS TO LESS THAN SIGNIFICANT.

The project is subject to compliance with the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) because the City is a permittee to the MSHCP. Specifically the project is in the MSHCP fee area and will be subject to the MSHCP Mitigation Fee pursuant to Chapter 16.72 of the Riverside Municipal Code. Moreover, the project will be subject to the requirements of Section 6.0 of the MSHCP, but it does not occur in areas requiring surveys for amphibians, mammals, Narrow Endemic Plant Species or Criteria Area Species. The project is located in the MSHCP survey area for western burrowing owl, as detailed in Section 4.3 Biological Resources; it will be subject to mitigation measures BIO-1a and BIO-1b for preconstruction surveys and avoidance measures to reduce potential impacts to burrowing owls. The site also has suitable habitat for nesting birds and will be required to implement Mitigation Measure BIO-2 to implement nesting bird avoidance measures.

The project site supports two drainage features: a concrete channel under the jurisdiction of the U.S. Army Corps of Engineers, the California Department of Fish and Wildlife, the Regional Water Quality Control Board, and the MSHCP. The soft-bottom drainage is under the jurisdiction of the California Department of Fish and Wildlife, the Regional Water Quality Control Board, and the MSHCP. Implementation of the project would impact these features, as described in Section 4.3, Biological Resources, and be required to implement mitigation measures BIO-3 and BIO-4 to reduce impacts to water and riparian resources.

Mitigation Measures

Implementation of mitigation measures BIO-1a, BIO-1b, BIO-2, BIO-3, and BIO-4, detailed in Section 4.3, Biological Resources*,* would reduce impacts to less than significant through conducting necessary burrowing owl and nesting bird surveys, avoiding jurisdictional features to the extent feasible, and mitigating impacted riparian habitat at a 1:1 ratio.

Significance After Mitigation

Implementation of mitigation measures BIO-1a, BIO-1b, BIO-2, BIO-3, and BIO-4 would reduce impacts to less than significant.

4.9.3 Cumulative Impacts

Cumulative development in the City and the surrounding area would modify existing land use patterns through the development of vacant lots or through redevelopment. The planned and pending projects in the area of the project, listed in Table 3-1 of this EIR, include about 50 projects consisting of residential, retail, warehouse, office, institutional, and industrial related land uses. Those in the immediate vicinity of the proposed project include two residential subdivisions totaling 19 dwelling units (3719 Strong Street and APN 276-060-003), a gas station and convenience store (2234 Main Street), a warehouse (4253 Fairgrounds Street), and a senior housing development

(2450 Market Street). Cumulatively the project does not physically divide an established community or area in the City when considered alongside nearby cumulative projects.

Similar to the proposed project, land use regulations and policy consistency impacts associated with other cumulative projects would be addressed on a case-by-case basis in order to determine their consistency with applicable plans and policies. The proposed project would be consistent with the underlying land use regulations and policies upon approval of the necessary land use entitlements. Therefore, the project would have no impact to cumulative land use impacts.

References

Riverside, City of. 2007. General Plan 2025. Riverside, CA. November 2012.

4.10 Noise

This section analyzes both the temporary noise impacts related to construction activity and long-term impacts associated with project operations. The analysis is based on data from the noise impact analysis, included as Appendix D to this EIR. Additionally, the discussion and analysis contained herein are informed by comments received during the Notice of Preparation of an EIR public review period.

4.10.1 Setting

Noise is defined as unwanted sound that disturbs human activity. Noise level, or volume, is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to make the measurement consistent with that of human hearing response, most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1 to 2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while arterial streets are in the 50 to 60+ dBA range. Normal conversational levels are in the 60 to 65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically drop off at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. According to the Federal Transit Administration (FTA), standard new residential construction typically provides a reduction of exterior-to-interior noise levels of 25 dBA or more with windows closed (FTA 2018).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time (essentially, the average noise level). Typically, Leq is summed over a one-hour period.

The time at which noise occurs is also important since noise that occurs at night tends to be more disturbing than noise that occurs during the day. Two commonly used community noise metrics – the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) - recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dB to actual nighttime (10:00 PM to 7:00 AM) noise levels to account for the greater sensitivity to noise during that period. The CNEL is identical to the Ldn, except it also adds a 5 dB penalty for noise occurring during the evening (7:00 PM to 10:00 PM). Noise levels described by Ldn and CNEL typically do not differ by more than 1 dBA. Therefore, in practice, CNEL and Ldn are often used interchangeably.

Vibration

Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors.

The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the United States. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA 2018). Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible.

a. Existing Noise Setting

Major sources of noise in Riverside include traffic on freeways and major roadways, train movement on railroads, and flight activity associated with local airports. The dominant noise source in Riverside is from motor vehicles. Motor vehicle noise is of concern because it is characterized by a high number of individual events that often create a sustained noise level.

The general noise environment of the project site and the vicinity is characterized by freeway and roadway traffic noise with relatively low ambient noise levels during the evening and nighttime hours. The proposed project site is located adjacent to Interstate 215 (I-215) and State Route (SR) 91 interchange and is directly north of SR 60. Traffic noise on these freeways contributes largely to the ambient noise levels at the project site. Other roadways in the project vicinity that contribute to traffic noise include Orange Street, and Strong Street.

The closest airport to the project site is the privately operated Flabob Airport, approximately 2.5 miles southwest of the project site. The closest public airport to the project site is the Riverside Municipal Airport, about 6 miles southwest of the project site. According to the Riverside County Airport Land Use Compatibility Plan, the project site is not within 55, 60, or 65 dBA CNEL noise contours of either airport (Riverside County Airport Land Use Commission 2004). Therefore, aircrafts do not substantially contribute to the existing ambient noise conditions on the project site and vicinity.

Sensitive Receptors

Noise exposure standards for different types of land uses reflect the varying noise sensitivities associated with each of these uses. The City of Riverside General Plan considers land uses that are particularly sensitive to noise levels commonly found in an urban environment to be sensitive receptors. These include residential uses, schools, hospitals, churches, outdoor spectator sports facilities, performing arts facilities, and hotels and motels (City of Riverside 2007). Figure 4.10-1 shows the sensitive receptors near the project site.

Figure 4.10-1 Sensitive Receptor Locations

Source: Urban Crossroads, Inc. 2018.

As shown in Figure 4.10-1, sensitive receptors near the project site include Fremont Elementary School (R1), existing single-family residences (R2, R3, R4, R5, R6, and R7), and a church (west of R3). The closest receptors are approximately 16 feet north (R3) and 18 feet west (R4) of the project site boundary. Receptor R5 is approximately 29 feet north of the project site; R2 is approximately 95 feet west; Fremont Elementary School (R1) is approximately 100 feet west; R6 is approximately 440 feet east; and R7 is approximately 590 feet south.

Existing Project Area Noise Levels

To determine existing noise conditions in the project vicinity, seven 24-hour noise measurements were taken on October 18, 2017, using Piccolo Type 2 integrating sound level meters and data loggers in accordance with standard protocols (Appendix D). The noise meters were positioned as close to the nearest sensitive receptor locations as possible to get the most accurate measurement of ambient noise levels at that site. Hourly noise levels were measured during typical weekday conditions, over 24 hours to determine the average daytime and nighttime hourly noise levels, or Leq, and the 24-hour CNEL. Figure 4.10-2 shows the sound-level measurement locations, while Table 4.10-1 details the measured sound level at each location.

b. Regulatory Setting

Federal

No federal noise requirements or regulations apply directly to the implementation of the project, but federal agencies have established guidelines and thresholds pertaining to noise and groundborne vibration as they relate to land use compatibility, human response, and structural integrity. These thresholds, as applicable, are discussed below in Section 4.10.2, *Impact Analysis*.

State

The state of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires each county and city to adopt a General Plan that includes a Noise Element prepared per guidelines adopted by the Governor's Office of Planning and Research. The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. The California Environmental Quality Act requires all known environmental effects of a project be analyzed, including environmental noise impacts.

California Building Code

The California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code codify the state noise insulation standards. These noise standards apply to new construction in California to control interior noise levels as they are affected by exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such sources create an exterior noise level of 60 dBA CNEL or higher.

The 2016 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-

Figure 4.10-2 Noise Measurement Locations

Source: Urban Crossroads, Inc. 2018.

Table 4.10-1 24-Hour Ambient Noise Level Measurements

Measurement Location	Distance from Measurement Location to Existing Primary Noise Source (Feet)	Description of Measurement Location	Average Hourly Noise Level (dBA L_{eq})[1]		Average Median Noise Level (dBA L_{eq})[1]		CNEL (dBA)
			Daytime	Nighttime	Daytime	Nighttime	
L1	190	Located at the Fremont Elementary School across Orange Street, approximately 220 feet from the project site	58.6	57.2	56.1	55.6	64.2
L2	30	Located on Orange Street at the western project site boundary near existing residential homes	66.0	61.5	58.3	54.2	69.4
L3	160	Located on Strong Street, approximately 320 feet north of project site by near existing residential homes and a church	65.7	57.3	54.9	53.3	66.7
L4	35	Located on Strong Street, approximately 270 feet north of project site by near existing residential homes	64.2	58.3	52.5	51.7	66.7
L5	120	Located at the northeastern project site boundary on La Cadena Drive near existing residential homes and I-215	68.2	67.2	67.2	65.1	74.1
L6	190	Located, approximately 390 feet east of the project site across I-215 on Thorton Street near existing residential homes	66.3	64.2	64.9	62.1	71.3
L7	90	Located, approximately 860 feet south of the project site on Russell Street near existing residential homes and commercial uses	78.1	75.0	74.4	71.8	82.2

Source: Field visit by Urban Crossroads on October 18, 2017, using Piccolo Type 2 integrating sound level meter and data loggers. See Appendix D for sound level measurement data sheets.

[1] Daytime is 7:00 AM to 10:00 PM, and nighttime is 10:00 PM to 7:00 AM

residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within the noise contour of an airport, freeway, or railroad. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable levels. Table 4.10-2 specifies the levels for new residential buildings, schools, and hospitals to satisfy the acceptable interior noise limit for new construction of 45 dBA CNEL.

If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available, and the noise level exceeds 65 dBA Leq for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1). Alternatively, if the interior noise levels of non-residential buildings satisfy the performance criteria of 50 dBA Leq (1 hour), then the performance method defined by the California's Green Building Standards can be used.

Table 4.10-2 California Building Code Interior Noise Standards

Land Use Category	Exterior Noise Level where Noise Study is Required (dBA CNEL)	Interior Noise Level Limit (dBA CNEL)
Residential, schools, and hospitals	60	45
Non-residential	65	50

Source: California Building Standards Commission 2017

California General Plan Guidelines

The California General Plan Guidelines, published by the Governor's Office of Planning and Research, indicate acceptable, specific land use types in areas with specific noise exposure. The guidelines also offer adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. These guidelines are advisory, and local jurisdictions, including the City of Riverside, have the responsibility to set specific noise standards based on local conditions. Please refer to the discussion below, under City of Riverside Noise Element, for the compatibility guidelines adopted by the City of Riverside.

Local

City of Riverside General Plan 2025

The City of Riverside has adopted a General Plan Noise Element to control and abate environmental noise, and to protect the citizens of the City from excessive exposure to noise. The Noise Element specifies the maximum allowable unmitigated exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community (City of Riverside 2007).

Objective N-1: Minimize noise levels from point sources throughout the community and, whenever possible, mitigate the effects of noise to provide a safe and healthful environment

> **Policy N-1.1:** Continue to enforce noise abatement and control measures particularly within residential neighborhoods.
>
> **Policy N-1.2:** Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.
>
> **Policy N-1.3:** Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.
>
> **Policy N-1.4:** Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.
>
> **Policy N-1.5:** Avoid locating noise-sensitive land uses in existing and anticipated noise-impacted areas.
>
> **Policy N-1.8:** Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.
>
> **Policy N-4.1:** Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

The Noise Element establishes compatibility standards for land uses in the City. As shown in Table 4.10-3, under Policy N-1.2, the Noise Element sets normally acceptable, conditionally acceptable, and generally unacceptable ambient noise levels for proposed developments based on land use.

Table 4.10-3 Land Use Compatibility for Community Noise Exposure

Land Use Category	Community Noise Equivalent Level (CNEL) or Day-Night Level (Ldn), dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Conditionally Unacceptable
Single Family Residential	<60	60-65	65-70	>70
Infill Residential	<65	65-75	75-80	>80
Commercial (Motels, Hotels, Lodging)	<60	60-70	70-80	>80
Schools, Libraries, Churches, Hospitals, Nursing Homes	<60	60-70	70-80	>80
Amphitheaters, Concert Hall, Auditorium, Meeting Hall	N/A	<65	N/A	>65
Sports Arenas, Outdoor Spectator Sports	N/A	<70	N/A	>70
Playgrounds, Neighborhood Parks	<70	N/A	70-75	>75
Golf Courses, Riding Stables, Water Rec, Cemeteries	<70	N/A	70-80	>80
Office Buildings, Business, Commercial, Professional	<65	65-75	>75	N/A
Industrial, Manufacturing, Utilities, Agriculture	<70	70-80	>80	N/A
Freeway Adjacent Commercial, Office, and Industrial Uses	<65	65-80	>80	N/A

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Conditionally Unacceptable: New construction or development should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Source: City of Riverside 2007, Figure N-10

City of Riverside Municipal Code

The City of Riverside Municipal Code (RMC) sets forth the City's standards, guidelines, and procedures concerning the regulation of operational noise. Specifically, noise levels in the City are regulated by RMC Title 7, Noise Control. These regulations are intended to implement the goals, objectives, and policies of the General Plan, protect the public health, safety, and welfare of the City, and to control unnecessary, excessive, and/or annoying noise in the City.

INTERIOR NOISE

RMC Section 7.30.015 establishes interior sound level limits for various land use categories. Noise from interior operations at one land use cannot exceed the interior noise standards from the receiving land use, as measured at the property line. Table 4.10-4 provides interior noise standards for various land use categories. These standards apply to noise levels in structures in designated zones, with windows opened or closed as typical of the season.

Table 4.10-4 City of Riverside Interior Noise Standards

Land Use Category	Time	Acceptable Noise Level (dBA)
Residential	Day (7 AM to 10 PM) Night (10 PM to 7 AM)	45 35
School	7 AM to 10 PM (while school is in session)	45
Hospital	Anytime	45
Source: RMC Title 7		

RMC Section 7.30.015(A) states no person shall operate or cause to be operated any source of sound indoors that causes the noise level when measured inside another dwelling unit, school or hospital, to exceed:

1. Interior noise standard up to five decibels for a cumulative period of more than five minutes in any hour
2. Interior noise standard plus five decibels for a cumulative period of more than one minute in any hour
3. Interior noise standard plus 10 decibels, or the maximum measured ambient noise level, for any period of time

If the measured ambient noise level exceeds that permissible within the first two noise limit categories, the allowable noise exposure standard shall be increased in 5-dB increments in each category, as appropriate, to reflect the interior ambient noise level. If the interior ambient noise level exceeds the third limit category, the maximum allowable interior noise level under that category shall be increased to reflect the maximum interior ambient noise level.

EXTERIOR NOISE

RMC Section 7.25.010 establishes exterior noise standards for various land use categories, as shown below in Table 4.10-5. Noise from any land use cannot exceed the receiving land use exterior noise standards, as measured at the property line. The noise level limit between two different districts is the arithmetical mean of the two districts.

Table 4.10-5 City of Riverside Exterior Noise Standards

Land Use Category	Time	Acceptable Noise Level (dBA)
Residential	Day (7 AM to 10 PM) Night (10 PM to 7 AM)	55 45
Office/Commercial	Anytime	65
Industrial	Anytime	70
Community Support	Anytime	60
Public Recreation Facility	Anytime	65
Non-Urban	Anytime	70

Source: RMC Title 7

In addition, RMC Section 7.25.010(A) indicates that it is unlawful for any person to cause or allow the creation of any noise that exceeds the following levels.

1. Exterior noise standards plus 5 decibels for a cumulative period of more than 30 minutes in any hour
2. Exterior noise standards plus 5 decibels for a cumulative period of more than 15 minutes in any hour
3. Exterior noise standards plus 10 decibels for a cumulative period of more than 5 minutes in any hour
4. Exterior noise standards plus 15 decibels for a cumulative period of more than 1 minute in any hour
5. Exterior noise standards plus 20 decibels or the maximum measured ambient noise level, for any period

If the measured ambient noise level exceeds that permissible within any of the first four noise limits, the allowable noise exposure standard shall be increased in 5-dB increments in each category, as appropriate, to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under that category shall be increased to reflect the maximum ambient noise level.

Pursuant to RMC Section 7.35.020(G), noise sources associated with permitted construction, repair, remodeling, or grading of any real property are exempt from the interior and exterior noise standards presented above. Construction activity cannot occur between 7:00 PM and 7:00 AM on weekdays, between 5:00 PM and 8:00 AM on Saturdays, or at any time on Sunday or a federal holiday.

4.10.2 Impact Analysis

a. Significance Thresholds and Methodology

According to Appendix G of the State CEQA Guidelines, significant noise impacts would occur if the proposed project would result in any of the following conditions:

1) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
2) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels
3) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
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, expose people residing or working in the project area to excessive noise levels
6) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels

The project site is not located within 2.0 miles of a public airport, in an airport land use plan area, or in the vicinity of a private airstrip. It would not, therefore, expose residents or workers to excessive noise levels from airport or private airstrip operations. Further discussion of thresholds 5 and 6 can be found in the Initial Study in Appendix A and in Section 4.15, *Impacts Found to be Less than Significant*. The quantitative standards used for each threshold are as follows:

Construction

Pursuant to RMC Section 7.35.020(G), noise sources associated with permitted construction, repair, remodeling, or grading of any real property are exempt from the interior and exterior noise standards presented above. Construction activity cannot occur between 7:00 PM and 7:00 AM on weekdays, between 5:00 PM and 8:00 AM on Saturdays, or at any time on Sunday or a federal holiday.

Due to the exemption mentioned above, the noise study did not include an evaluation of construction noise impacts. However, in order to present a conservative environmental review, construction noise was considered in the impacts analysis below. For the purposes of this analysis, reference noise levels reported in the FTA's 2006 *Transit Noise and Vibration Impact Assessment* were used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dBA per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). This analysis assumed that construction activities would occur internal to the project boundary and also external, but adjacent to the project site, for required off-site improvements. Construction noise level estimates do not account for the presence of intervening structures or topography, which may further reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Construction vibration impacts were analyzed by modeling vibration levels caused by the highest-impact equipment anticipated to be used during project construction at the distance from the project site boundary to the nearest sensitive receptors' building structures Vibration levels were calculated using methodology provided in the FTA's 2006 Transit *Noise and Vibration Assessment* and determined using reference vibration levels for construction equipment at 25 feet (FTA 1995), assuming a 6 VdB attenuation per doubling of distance to the receptor.

Vibration

The City of Riverside has not adopted thresholds for construction or operational groundborne vibration impacts; therefore, vibration thresholds established by the FTA were applied to the project. The FTA published the *Transit Noise and Vibration Impact Assessment*, to inform noise and vibration analysis with quantitative data and thresholds for human health and safety (FTA 2018). The FTA provides the following thresholds for assessing groundborne vibration impacts for infrequent event types (fewer than 70 events per day):

1. 65 VdB where low ambient vibration is essential for interior operations, such as hospitals and recording studios
2. 80 VdB for residences and buildings where people normally sleep, including hotels
3. 83 VdB for institutional land uses with primary daytime use, such as churches and schools

Traffic

Roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model. The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL) (FHWA 2011). In California, the national REMELs are substituted with the California Vehicle Noise Emission Levels. Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major, or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic, travel speed, percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total average daily traffic flow each hour throughout a 24-hour period.

For this analysis, soft site conditions (assumed landscape plans) were used to analyze the traffic noise impacts. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. The California Department of Transportation (Caltrans) research has shown soft conditions are appropriate for the FHWA traffic noise prediction model used in this traffic noise analysis (Caltrans 1995).

The primary sources of traffic noise affecting the project site are from SR 60, I-215, SR 91, and Orange Street. Using the FHWA Model, the expected future exterior and interior noise levels of all proposed structures were calculated. Future traffic volumes on SR 60, I-215, and SR 91 were based on a 10 percent increase in existing volumes, an estimate obtained from the Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System (Caltrans 2016). Future traffic volumes on Orange Street were based on the project Traffic Impact Analysis (Appendix L).

To assess the off-site transportation noise level impacts associated with project-related traffic, noise contours were developed based on the output from the aforementioned modeling programs. Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

1. Existing Conditions Without / With Project: This scenario refers to the existing present-day noise conditions without and with the proposed project.
2. Opening Year 2022 Without / With Buildout of the Project: This scenario refers to Year 2022 noise conditions without and with buildout of the proposed project.
3. Horizon Year 2040 Without / With Project: This scenario refers to the background noise conditions at future Year 2040 without and with the proposed project.

The noise contours for these scenarios were based on traffic volumes, vehicle mix, and other traffic parameters listed in the Traffic Impact Analysis (Appendix L).

Impacts related to a noise level increase from traffic are considered significant if project-generated traffic would result in exposure of sensitive receptors to an unacceptable increase in noise levels. Additionally, operational and traffic-generated noise levels would have a significant impact on the identified noise-sensitive receptors if the existing ambient noise levels:

1. Are less than 60 dBA and the project results in an increase of 5 dBA or greater
2. Range from 60 to 65 dBA and the project results in an increase of 3 dBA or greater
3. Exceed 65 dBA and the project results in an increase of 1.5 dBA or greater (Federal Interagency Committee on Noise [FICON] 1992).

Operation

Project-related operational noise levels at receiving land uses would have a significant impact if they conflict with and exceed the exterior noise standards established in the City's Noise Control Ordinance Section 7.25.010, detailed in Table 4.10-4 and Table 4.10-5. To estimate the project operational noise impacts, excluding operational traffic, reference noise level measurements were collected by Urban Crossroads, from similar types of activities to represent the noise levels expected from operational uses of the proposed project. A complete description of the methods and location of each reference measurement is provided in Section 10 of the project noise impact analysis (Appendix D). Table 4.10-6 presents these reference measurements. Reference noise levels were added to determine a combined operational noise level at a reference distance of 50 feet.

Table 4.10-6 Reference Noise Level Measurements

Noise Source	Reference Distance (feet)	Noise Level at Reference Distance (dBA L_{50})	Noise Level at 50 Feet (dBA L_{50})
Roof-Top Air Conditioning Unit	5	74.4	54.4
Residential Entry Gate Activity	40	52.6	50.7
Drive-Through Speakerphone	15	60.9	50.4
Car Wash Tunnel Air Blowers	10	81.6	67.6
Residential Parking Lot Vehicle Movements	10	44.0	33.5
Commercial Parking Lot Vehicle Movements	5	56.7	41.7
Dog Park Activity	5	58.5	38.5
Outdoor Pool/Spa Activity	5	68.7	48.7
RV Parking Lot Activity	10	76.5	66.0
Gas Station Activity	5	65.6	45.6
Outdoor Event Activity	5	73.1	53.1
Combined Operational Noise Level	**50**	–	**70.3**

Source: Noise Report, Appendix D

Development of New Homes and Hotels

The primary source of exterior noise on the project site comes from traffic on nearby freeways. As shown in Table 4.10-1, ambient noise levels on the project site (L2 and L5) currently exceed exterior noise standards. Development of the proposed project would require compliance with City interior noise standards. Table 4.10-7 shows exterior noise levels for new on-site structures would range from normally acceptable to normally unacceptable, using the City of Riverside’s land use compatibility standards (Table 4.10-3). The project would need to ensure implementation of compatibility requirements, detailed in Figure N-10 in the City’s Noise Element, which include building design criteria such as noise insulation features.

Table 4.10-7 Exterior Noise Levels and Compatibility

Receiver Location	Land Use	Exterior Noise Level (dBA CNEL)	Land Use Compatibility[1]
East Apartment Buildings	Residential	61.7	Conditionally Acceptable
East Hotel Building	Commercial (Hotel)	71.5	Normally Unacceptable
South Hotel Building	Commercial (Hotel)	78.2	Normally Unacceptable
Fast Food Restaurant	Commercial	65.4	Conditionally Acceptable
West Commercial Building	Commercial	62.8	Normally Acceptable
West Apartment Building	Residential	62.9	Conditionally Acceptable

[1] Determined through Noise Element Land Use Compatibility standards

Source: Noise Study (Appendix D)

The use of standard building construction materials would reduce interior noise levels by approximately 25 dBA, as shown in Table 4.10-8 below. While this would reduce interior noise levels for the proposed residential and hotel uses substantially, interior noise levels would still exceed the CBC interior noise standard for the easterly apartment buildings and both hotel buildings.

Table 4.10-8 Anticipated Interior Noise Levels for New Development

Proposed Project Structure	Structure Floor	Exterior Noise Level at Façade (dBA CNEL)	Estimated Interior Noise Level (dBA CNEL)[1,2]	Exceeds Threshold?[4]
East Apartment Buildings	1st Floor	61.7	36.7	No
	2nd Floor	76.8	**51.8**	**Yes**
	3rd Floor	77.2	**52.2**	**Yes**
	4th Floor[3]	n/a	n/a	n/a
East Hotel Building	1st Floor	71.5	**46.5**	**Yes**
	2nd Floor	71.5	**46.5**	**Yes**
	3rd Floor	72.9	**47.9**	**Yes**
	4th Floor	72.9	**47.9**	**Yes**
South Hotel Building	1st Floor	78.2	**53.2**	**Yes**
	2nd Floor	78.4	**53.4**	**Yes**
	3rd Floor	78.4	**53.4**	**Yes**
	4th Floor	78.3	**53.3**	**Yes**
Fast Food Building	1st Floor	65.4	40.4	No
	2nd Floor[3]	n/a	n/a	n/a
	3rd Floor[3]	n/a	n/a	n/a
	4th Floor[3]	n/a	n/a	n/a
West Commercial Building	1st Floor	62.8	37.8	No
	2nd Floor[3]	n/a	n/a	n/a
	3rd Floor[3]	n/a	n/a	n/a
	4th Floor[3]	n/a	n/a	n/a
West Apartment Building	1st Floor	62.9	37.9	No
	2nd Floor	62.8	37.8	No
	3rd Floor	62.6	37.6	No
	4th Floor[3]	n/a	n/a	n/a

[1] A 25 dBA noise reduction of exterior noise levels is assumed with standard building construction.

[2] Bold text indicates that interior noise standards would be exceeded.

[3] N/A indicates that the proposed structure would not have the given floor, and therefore, no noise analysis was conducted.

[4] See significance thresholds above in Table 4.10-2.

Source: Noise Report, Appendix D

To ensure compliance with CBC interior noise level standards, enhanced building materials would need to be incorporated into the project design. Examples of appropriate noise-reducing, enhanced building materials could include, but would not be limited to, the following:

WINDOWS

- Upgraded windows on all floors (windows and sliding glass doors) of residential buildings 12 to 20 and hotel buildings 1 and 2, as indicated on Exhibit ES-A of the noise impact analysis (Appendix D), shall have minimum STC rating of 36.
- Standard windows and sliding glass doors for all other buildings shall have a minimum STC rating of 27.

EXTERIOR DOORS (NON-GLASS)

- Exterior doors on all floors of residential buildings 12 to 20 and hotel buildings 1 and 2 adjacent to SR 91, I-215, and SR 60 shall be weather stripped and well-sealed, with a minimum STC rating of 36.
- Exterior doors for all other buildings shall be weather stripped and well sealed, with a minimum STC rating of 27.

WALLS

- The space between the wall and pipes, ducts, or conduits at any penetration point of exterior walls, shall be caulked or filled with mortar to form an airtight seal.

RESIDENTIAL ROOFS

- Roof sheathing of wood construction shall be constructed per manufacturer's specification or of caulked plywood of at least .05-inch thickness, to ensure sound-proofing.
- Ceilings shall be constructed per manufacturer's specification or of well sealed gypsum board of at least .05-inch thickness, to ensure sound-proofing.
- Insulation with a rating of at least R-19 shall be used in the attic space.

VENTILATION

- Forced air circulation systems (e.g., air conditioning) or active ventilation systems (e.g., fresh air supply) shall be provided in all residential units and hotel rooms in a manner that satisfies the requirements of the Uniform Building Code. Arrangements for any habitable room shall be such that any all exterior doors or windows can be closed when the room is in use and still receive circulated air.
- Residential exterior vents shall be oriented away from SR 60, I-215, SR 91. If such an orientation cannot be avoided, then an acoustical baffle shall be placed in the attic space behind the vents.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the proposed project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
Threshold 3:	Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

IMPACT N-1 OPERATION OF THE PROJECT WOULD GENERATE NEW VEHICLE TRIPS ON AREA ROADWAYS AND RESULT IN A NOMINAL INCREASE IN TRAFFIC-RELATED NOISE LEVELS AT LAND USES ADJACENT TO THESE ROADWAYS. THE CHANGE IN NOISE LEVELS WOULD NOT RESULT IN A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE AREA AND WOULD NOT EXCEED APPLICABLE THRESHOLDS. THEREFORE, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Operation of project would generate new vehicle trips on area roadways and result in an increase in traffic-related noise levels at sensitive land uses in the project vicinity. Table 4.10-9 presents a summary of the exterior traffic noise levels with and without project-related traffic for the 23 study area roadway segments included in the noise study analysis under the Existing Condition Scenario. As shown in Table 4.10-9, project-related traffic would increase ambient noise levels at land uses adjacent to roadways by up to 2.7 dBA CNEL. Increased noise levels would not exceed applicable thresholds.

Table 4.10-9 Existing Condition Off-Site Project-Related Traffic Noise Impacts

Roadway	Segment	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1]			Threshold Exceeded?[2]
			No Project	With Project	Project Addition	
Main Street	s/o Placentia Lane	Business Park	69.7	70	0.3	No
Main Street	n/o Columbia Avenue	Residential	70.1	70.3	0.3	No
Main Street	s/o Columbia Avenue	Residential	69.3	69.7	0.4	No
Main Street	n/o Strong Street	Residential	68.4	68.7	0.4	No
Main Street	s/o Strong Street	Residential/School	62.1	62.3	0.2	No
Main Street	n/o Russell Street	Commercial	65.2	65.8	0.6	No
Main Street	s/o Russell Street	Residential	64.3	64.6	0.3	No
Orange Street	n/o Columbia Avenue	Residential	62.2	62.4	0.2	No
Orange Street	s/o Columbia Avenue	Residential	62.9	63.5	0.7	No
Orange Street	n/o Strong Street	Residential	63.6	64.4	0.8	No
Orange Street	s/o Strong Street	Residential	64.3	65.8	1.5	No
Orange Street	n/o Russell Street	Residential	64.2	65.6	1.5	No
Orange Street	s/o Russell Street	Residential	62.2	62.8	0.6	No
Primer Street	n/o Columbia Avenue	Commercial	65.9	66.3	0.4	No
La Cadena Street	n/o I-215 Ramps	Business Park	65.0	65.2	0.2	No
La Cadena Street	s/o I-215 Ramps	Commercial	61.0	63.6	2.7	No
La Cadena Street	n/o Strong Street	Residential	61.0	63.6	2.7	No
Placentia Lane	e/o Main Street	Industrial	56.8	57.0	0.3	No
Columbia Avenue	e/o Orange Street	Residential	67.6	67.9	0.3	No
Columbia Avenue	e/o Primer Street	Commercial	70.1	70.4	0.3	No
Strong Street	w/o Main Street	Residential	57.4	58.4	1	No
Strong Street	e/o Main Street	Residential	57.1	59.1	2	No
Russel Street	e/o Main Street	Residential	60.1	62.1	2	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
[2] See significance thresholds above in Section 4.10.2(a).
Source: Noise Report 2018 (Appendix D)

Table 4.10-10 summarizes exterior noise levels with and without project-related traffic for the 23 study area roadway segments included in the noise study analysis under the Opening Year 2022 Scenario. Project-related traffic would increase ambient noise levels at land uses adjacent to roadways by up to 2.9 dBA CNEL. Increased noise levels would not exceed applicable thresholds.

Table 4.10-10 Opening Year 2022 Off-Site Project Related Traffic Noise Impacts

			CNEL at Adjacent Land Use (dBA)[1]			
Roadway	Segment	Adjacent Land Use	No Project	With Project	Project Addition	Threshold Exceeded?[2]
Main Street	s/o Placentia Lane	Business Park	74.3	74.4	0.1	No
Main Street	n/o Columbia Avenue	Residential	74.3	74.4	0.1	No
Main Street	s/o Columbia Avenue	Residential	74.1	74.3	0.1	No
Main Street	n/o Strong Street	Residential	73.0	73.1	0.1	No
Main Street	s/o Strong Street	Residential/School	66.8	66.9	0.1	No
Main Street	n/o Russell Street	Commercial	67.5	67.9	0.3	No
Main Street	s/o Russell Street	Residential	67.4	67.5	0.1	No
Orange Street	n/o Columbia Avenue	Residential	63.2	63.4	0.2	No
Orange Street	s/o Columbia Avenue	Residential	65.5	65.8	0.4	No
Orange Street	n/o Strong Street	Residential	65.4	65.9	0.5	No
Orange Street	s/o Strong Street	Residential	65.7	66.8	1.1	No
Orange Street	n/o Russell Street	Residential	65.0	66.3	1.3	No
Orange Street	s/o Russell Street	Residential	62.8	63.3	0.5	No
Primer Street	n/o Columbia Avenue	Commercial	70.4	70.5	0.1	No
La Cadena Street	n/o I-215 Ramps	Business Park	65.4	65.6	0.2	No
La Cadena Street	s/o I-215 Ramps	Commercial	61.4	63.9	2.5	No
La Cadena Street	n/o Strong Street	Residential	61.0	63.9	2.9	No
Placentia Lane	e/o Main Street	Industrial	61.3	61.4	0.1	No
Columbia Avenue	e/o Orange Street	Residential	72.5	72.5	0.1	No
Columbia Avenue	e/o Primer Street	Commercial	72.8	73.0	0.2	No
Strong Street	w/o Main Street	Residential	58.1	59.0	0.9	No
Strong Street	e/o Main Street	Residential	57.8	59.6	1.8	No
Russel Street	e/o Main Street	Residential	61.1	62.7	1.6	No

1 The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

2 See significance thresholds above in Section 4.10.2(a).

Source: Noise Report 2018 (Appendix D)

As summarized in Table 4.10-9 and Table 4.10-10, vehicle trips generated by the proposed project would increase traffic-related ambient noise levels at land uses adjacent to area roadways. However, the increased noise levels would not exceed acceptability thresholds described above in Section 4.10.2(a). Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 1:	Would the proposed project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
Threshold 3:	Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

IMPACT N-2 OPERATION OF THE PROJECT WOULD GENERATE NEW SOURCES OF NOISE IN THE PROJECT VICINITY AND RESULT IN A NOMINAL INCREASE IN AMBIENT NOISE LEVELS AT ADJACENT LAND USES. THE CHANGE IN NOISE LEVELS WOULD NOT RESULT IN A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE AREA AND WOULD NOT EXCEED APPLICABLE THRESHOLDS. THEREFORE, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Existing ambient noise levels currently exceed City exterior noise level standards. The proposed project would introduce noise-producing features, including roof-top air conditioning units, entry gates, a drive-through speakerphone, car wash air blowers, and residential and commercial parking lot vehicle movements. Noise would come from use of the dog park, outdoor pool/spa, RV parking, gas station, and other outdoor event activities. Table 4.10-11 and Table 4.10-12 show the existing ambient noise levels at the nearest sensitive receptors, combined ambient and project-related noise levels, and the project-specific contribution to the noise levels, for daytime and nighttime.

Table 4.10-11 Daytime Operational Noise Level Contributions

Sensitive Noise Receptor	Existing Ambient Noise Level (dBA L_{50})[1]	Combined Project and Ambient Noise Level (dBA L_{50})	Project Contribution (dBA L_{50})	FICON Threshold[2] (dBA)	Threshold Exceeded?
R1	56.1	57.0	0.9	5	No
R2	58.3	58.4	0.1	5	No
R3	54.9	55.0	0.1	5	No
R4	52.5	53.1	0.6	5	No
R5	67.2	67.3	0.1	1.5	No
R6	64.9	64.9	0.0	3	No
R7	74.4	74.4	0.0	1.5	No

[1] Based on ambient noise levels presented in Table 4.10-1.
[2] See significance thresholds above in Section 4.10.2(a) Traffic.
Source: Noise Report (Appendix D)

Table 4.10-12 Nighttime Operational Noise Level Contributions

Sensitive Noise Receptor	Existing Ambient Noise Level (dBA L_{50})[1]	Combined Project and Ambient Noise Level (dBA L_{50})	Project Contribution (dBA L_{50})	FICON Threshold[2] (dBA)	Threshold Exceeded?
R1	55.6	56.6	1.0	5	No
R2	54.2	54.4	0.2	5	No
R3	53.3	53.5	0.2	5	No
R4	51.7	52.4	0.7	5	No
R5	65.1	65.2	0.1	1.5	No
R6	62.1	62.1	0.0	3	No
R7	71.8	71.8	0.0	1.5	No

[1] Based on ambient noise levels presented in Table 4.10-1.
[2] See significance thresholds above in Section 4.10.2(a) Traffic.
Source: Noise Report (Appendix D)

As shown in Table 4.10-11 and Table 4.10-12, project operational noise would contribute to and increase existing daytime and nighttime ambient noise levels at sensitive noise receptor locations R1, R2, R3, R4, and R5. In general, a 3 dBA change in community noise levels is noticeable, but 1 to 2 dBA changes are not perceived. The project's contribution to existing noise levels would not create a perceivable difference in existing noise levels. The increases would not exceed FICON thresholds. Impacts to ambient noise levels would be less than significant.

Mitigation Measures

No mitigation required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 1:	Would the proposed project expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

IMPACT N-3 AMBIENT NOISE LEVELS IN THE PROJECT VICINITY CURRENTLY EXCEED EXTERIOR NOISE STANDARDS FOR RESIDENTIAL USES. PROJECT-SPECIFIC OPERATIONAL NOISE LEVELS WOULD CONTRIBUTE MINIMALLY TO THE EXTERIOR NOISE LEVELS AT THE NEAREST SENSITIVE RESOURCES. TO ENSURE PROJECT-SPECIFIC NOISE SOURCE IMPACTS DO NOT INDEPENDENTLY EXCEED STANDARDS, MITIGATION WOULD BE REQUIRED. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

To determine if the project would impact the surrounding neighborhood with noise levels that would exceed standards, seven representative receptor locations were used for the sensitive receptors, detailed in Section 4.10.1 and shown in Figure 4.10-1. To estimate project-specific operational noise impacts at the receptor locations, the reference noise levels detailed in Table 4.10-6 were used.

Table 4.10-13 presents exterior noise levels from combined on-site activities at the nearby sensitive receptors. Noise levels are presented for a 30-minute, 15-minute, 5-minute, and 1-minute period over any given hour, as specified in Section 7.25.010(A) of the RMC. The project's operational noise levels were evaluated against the City's exterior noise level thresholds detailed in Table 4.10-7. Operational noise levels account for the attenuation of noise due to the distance between the on-site noise sources and the nearby sensitive receptors and assume hard site conditions.

Table 4.10-13 Exterior Noise Levels at Sensitive Receptors from Project Operation

Sensitive Noise Receptor	Land Use	City Standards	Combined Noise Level at Receiver Location (dBA)				Significant?
			30 Minutes (L_{50})	15 Minutes (L_{25})	5 Minutes (L_8)	1 Minute (L_2)	
Daytime	Exterior Residential Standards	55	55-60	60	65	70	–
Nighttime		45	45-50	50	55	60	–
Daytime	Exterior School Standard	60	60	65	70	75	–
R1	School		49.9	60.7	62.3	63.6	No
R2	Residential		39.9	48.1	50.2	52.1	No
R3	Residential		39.3	48.3	51.5	54.7	No
R4	Residential		44.1	44.9	46.9	50.1	No
R5	Residential		48.7	**51.1**	**55.7**	**61.8**	**Yes**
R6	Residential		40.4	41.0	42.0	44.1	No
R7	Residential		36.8	47.6	48.7	49.7	No

Note: Bold text indicates interior noise standards would be exceeded.

Source: Noise Report (Appendix D)

As shown in Table 4.10-13, the project-specific noise sources would not exceed the City's exterior noise level standards at the sensitive receptors, except at receptor R5. Sensitive receptor R5 is representative of single-family residences along Strong Street, and at this site, exterior levels from project-specific noise sources would exceed nighttime noise levels for 15 minutes, 5 minutes, and 1 minute in any hour. Mitigation measure N-1 will need to be implemented to reduce exterior noise levels below thresholds.

Project-specific noise sources would also potentially impact interior noise levels at the surrounding sensitive receptors. According to the FTA, residential construction typically provides a reduction of exterior-to-interior noise levels of approximately 25 dBA with windows closed (FTA 2018). To determine impacts of interior noise levels on surrounding sensitive uses, a 25 dBA reduction in noise levels from standard construction materials was applied to the exterior noise levels of the project's combined on-site activities as shown in Table 4.10-14 below.

Table 4.10-14 Interior Noise Levels at Sensitive Receptors from Project Operation

Sensitive Noise Receptor	Land Use	CBC Standards	Combined Noise Level at Receiver Location (dBA)				Significant?
			30 Minutes (L_{50})	15 Minutes (L_{25})	5 Minutes (L_{8})	1 Minute (L_{2})	
Anytime	Interior Residential Standards	45	45	45	45-50	50	–
In Session	Interior School Standard	45	45	45	45-50	50	–
R1	School		35.7	35.7	37.3	38.6	No
R2	Residential		14.9	23.1	25.2	27.1	No
R3	Residential		14.3	23.3	26.5	29.7	No
R4	Residential		19.1	19.9	21.9	25.1	No
R5	Residential		23.7	26.1	30.7	36.8	No
R6	Residential		15.4	16	17	19.1	No
R7	Residential		11.8	22.6	23.7	24.7	No

Note: Bold text indicates interior noise standards would be exceeded.

Standard building materials would reduce noise levels on interior spaces by approximately 25 dBA

Source: Noise Report (Appendix D)

Project-specific noise sources would not cause interior noise levels at the surrounding sensitive receptors to exceed CBC standards. Impacts to interior noise levels would be less than significant.

Mitigation Measures

N-1 Operational Noise Barrier

The project applicant shall incorporate a permanent noise barrier along the entire northern boundary of the project site. The design for this barrier shall be completed prior to issuance of building permits, and construction of the barrier shall be completed prior to the issuance of a certificate of occupancy.

The noise barrier shall be 6 feet high and shall consist of a solid face from top to bottom. Unnecessary openings or decorative cutouts in the barrier shall not be made. All gaps, except for weep holes, shall be filled with grout or caulking. The noise barrier shall provide a weight of at least four pounds per square foot of face area or it shall provide a minimum transmission loss of 20 dBA. The noise barrier shall be constructed using the following materials capable of providing a minimum transmission loss of 20 dBA:

- Decorative masonry block
- Precision masonry block with stucco

Significance After Mitigation

Implementation of Mitigation Measure N-2 would reduce the combined operational noise levels at receptor location R5, as detailed in Table 4.10-15. Construction of the required noise barrier would reduce impacts to exterior 15 minutes, 5 minutes, and 1 minute in any hour nighttime standards to less than significant.

Table 4.10-15 Post-Mitigation Operational Noise Level Compliance

Sensitive Noise Receptor	Noise	Noise Level at Receiver Location (dBA)[1]				Significant?
		30 Minutes (L_{50})	15 Minutes (L_{25})	5 Minutes (L_{8})	1 Minute (L_{2})	
Daytime	Exterior Residential Standards	55-60	60	65	70	–
Nighttime		45-50	50	55	60	–
R5	Exterior Residential	43.4	45.5	49.7	55.4	No

Standard building materials would reduce noise levels on interior spaces by approximately 25 dBA

Source: Noise Report 2018 (Appendix D)

Threshold 2: Would the project result in an exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

IMPACT N-4 PROJECT CONSTRUCTION WOULD INTERMITTENTLY GENERATE GROUNDBORNE VIBRATION ON AND ADJACENT TO THE SITE. THIS MAY AFFECT SENSITIVE RECEPTORS NEAR THE PROJECT SITE, BUT WOULD NOT CREATE EXCESSIVE LEVELS OF VIBRATION THAT COULD CAUSE STRUCTURAL DAMAGE, DISTURB SLEEP AT NEARBY SENSITIVE RESIDENTIAL RECEPTORS, OR INTERFERE WITH OPERATION OF THE SENSITIVE SCHOOL RECEPTOR. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction of the project could increase groundborne vibration on the project site, but construction effects would occur intermittently over a period of approximately two years. Project construction would not involve pile-driving, blasting, or similar types of construction techniques that create high levels of vibration.

Heavy equipment would be the primary vibration source during construction, such as large bulldozers and loaded trucks. Project construction activities would occur within 45 to 610 feet of the sensitive receptors. Table 4.10-16 identifies various vibration velocity levels for the types of construction equipment that would operate at the project site during construction at a reference distance of 25 feet (FTA 2018).

Table 4.10-16 Vibration Levels for Construction Equipment

Equipment	Vibration Decibels (VdB) at 25 feet
Large Bulldozer	87
Loaded Trucks	86
Jackhammer	79
Small Bulldozer	58

Source: FTA 2018

Table 4.10-17 shows the estimated vibration velocity levels at the building structure of the nearest sensitive receptors, based on their distance from project construction footprint and the vibration attenuation calculations (FTA 2018). Table 4.10-17 also shows whether these vibration levels would exceed the FTA recommended 80 VdB threshold for sensitive residential receivers or the 83 VdB threshold for the school receptor (R1).

Table 4.10-17 Construction Equipment Vibration Levels at Nearby Sensitive Receptors

		Receptor Vibration Levels (VdB)[1]					
Receptor Location	Distance to Construction Activity[2] (ft.)	Small Bulldozer	Jackhammer	Loaded Trucks	Large Bulldozer	Highest Vibration Level	Threshold Exceeded[3]
R1	115	38.1	59.1	66.1	67.1	67.1	No
R2	125	37.0	58.1	65.0	66.0	66.0	No
R3	46	50.1	71.1	78.1	79.1	79.1	No
R4	45	50.3	71.3	78.3	79.3	79.3	No
R5	49	49.2	70.2	77.2	78.2	78.2	No
R6	451	20.3	41.3	48.3	49.3	49.3	No
R7	609	16.4	37.4	44.4	45.5	45.4	No

[1]Based on the Vibration Source Levels of Construction equipment included in Table 4.10-16

[2] Estimated distance of construction activity to sensitive receivers analyzed in the Noise Study

[3] Does the vibration level exceed the FTA vibration standard of 72VdB for residential uses or 75 VdB for school uses

Source: Noise Report 2018 (Appendix D), FTA 2018

As shown in Table 4.10-17, vibration levels from project construction at Fremont Elementary School (receptor R1) would not exceed the FTA-recommended 83 VdB threshold for infrequent events near institutional uses. Vibration levels from construction at residential receptors R2 through R7 would be below the FTA recommended 80 VdB thresholds for residences and buildings where people normally sleep. Moreover, vibration levels at these and other receptors would not be sustained throughout the construction period. Rather, they would only occur at times that heavy machinery and construction equipment operates adjacent to the project site perimeter. Construction at the project site would be restricted to daytime hours of 7:00 AM to 7:00 PM on weekdays, and 8:00 AM to 5:00 PM on Saturdays, consistent with City requirements. Therefore, the vibration impacts due to project construction would be less than significant.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 4:	Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

IMPACT N-5 CONSTRUCTION ACTIVITIES WOULD BE CONDUCTED IN ACCORDANCE WITH THE CITY'S NOISE CONTROL ORDINANCE AND ARE EXEMPT FROM THE NOISE LEVEL STANDARDS. HOWEVER, CONSTRUCTION OF THE PROJECT WOULD RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS AT ADJACENT SENSITIVE RECEPTORS AND THEREFORE, MITIGATION MEASURES ARE RECOMMENDED TO REDUCE CONSTRUCTION NOISE IMPACTS TO THE EXTENT FEASIBLE.

The primary sources of noise during project construction would be heavy machinery used in grading and clearing of the project site, along with equipment used during building construction and paving. Table 4.10-18 lists typical noise levels associated with construction equipment likely to be used during project construction at a distance of 50 feet, as described by the FTA (2018). The table also shows the attenuated noise levels at the nearest sensitive receptors. As shown above in Table 4.10-17, receptors R3, R4, and R5 would be within 46 to 49 feet of construction activities. Therefore, noise levels at 50 feet are representative of the noise conditions at these three receptors.

Table 4.10-18 Typical Construction Equipment Noise Levels

Project Equipment	Typical Maximum Noise Level (dBA)				
	R3, R4, R5 (50 Feet from the Source)	R1 (115 Feet from the Source)	R2 (125 Feet from the Source)	R6 (450 Feet from the Source)	R7 (600 Feet from the Source)
Ambient Noise Levels	R3: 54.9 R4: 52.5 R5: 67.2	R1: 56.1	R2: 58.3	R6: 64.9	R7: 74.4
Air Compressor	81	74	74	63	60
Backhoe	80	73	73	62	59
Paver	89	82	82	71	68
Concrete Mixer	85	78	78	67	64
Dozer	85	78	78	67	64
Roller	74	67	67	56	53
Grader	85	78	78	67	64
Scraper	89	82	82	71	68
Truck	88	81	81	70	67
Exceeds Ambient Noise Levels	**Yes**	**Yes**	**Yes**	**Yes**	**No**

Noise levels based on actual maximum measured noise levels at 50 feet (Lmax).
Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.
Source: FTA 2018

As shown in Table 4.10-18, maximum construction noise would not exceed the existing ambient noise levels at R7, but would exceed the existing ambient noise levels at all other sensitive receptors. However, project construction would comply with City standards and only occur between 7:00 AM and 7:00 PM on weekdays and between the hours of 8:00 AM and 5:00 PM on Saturdays. Construction would not occur on Sundays or on federal holidays. Also, pursuant to RMC Section 7.35.020(G), noise sources associated with construction of the proposed project are exempt from the interior and exterior noise standards of the City's Noise Control Ordinance. Therefore, impacts of the construction of the project would be less than significant.

While noise levels from project construction would be exempt from the provisions of the Noise Control Ordinance and therefore be considered less than significant, implementation of the following standard noise reducing measures could ensure that construction noise is reduced at nearby sensitive receptors to the extent feasible.

1. **Construction Equipment.** Construction equipment shall be properly maintained and in good condition. All internal combustion engine driven machinery will use intake and exhaust mufflers and engine shrouds, as applicable. Equipment engine shrouds shall be closed during equipment operation. The developer shall require all contractors, as a condition of contract, to maintain and tune-up all construction equipment to minimize noise emissions.

2. **Vehicle and Equipment Idling.** Construction vehicles and equipment shall not be left idling for longer than five minutes when not in use.
3. **Stockpiling and Staging Areas.** Stockpiling and vehicle staging areas shall be located as far away from occupied residences and school uses as possible.
4. **Stationary Equipment.** Stationary construction equipment, such as air compressor and generators, shall be operated as far away from occupied residences adjacent to or the near the project site boundaries as possible, as well as school uses. If this is not possible, the equipment shall be shielded with temporary sound barriers, sound aprons, or sound skins to the satisfaction of the Director of Community and Economic Development.
5. **Disturbance Coordinator.** A noise disturbance coordinator shall be designated by the contractor. The noise disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The noise disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures warranted to correct the problem be implemented. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

Threshold 4:	Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

IMPACT N-6 OUTDOOR EVENTS FACILITATED BY THE PROPOSED PROJECT WOULD RESULT IN A TEMPORARY AND PERIODIC INCREASE IN NOISE LEVELS IN THE PROJECT VICINITY. HOWEVER, THE ADDITIONAL NOISE GENERATED BY THESE EVENTS WOULD NOT CREATE A PERCEPTIBLE NOISE LEVEL INCREASE AT NEARBY SENSITIVE NOISE RECEPTORS. THEREFORE, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The proposed project includes provisions for live entertainment and events to serve the proposed residences and surrounding community. The live entertainment would cause a temporary and periodic increase in ambient noise levels within the project vicinity and may affect nearby sensitive receptors. These events would occur occasionally, on Fridays, Saturdays, and/or Sundays, and would be consistent with requirements for live entertainment in the City of Riverside's Noise Ordinance.

Section 7.35.020 Exemptions subsection (B) of the RMC states the provisions of the noise ordinance "shall not apply to those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events and occasional public and private outdoor or indoor gatherings, public dances, shows, bands, sporting and entertainment events conducted between the hours of 7:00 AM and 10:00 PM." Therefore, the live entertainment proposed as a part of project operations would be exempt from RMC standards, assuming the proper approvals from the City are obtained.

The noise study collected reference noise levels for similar project uses, detailed in Table 4.10-6. At a distance of five feet from an outdoor entertainment event, the noise level was at 73.1 dBA and at a distance of 50 feet the noise level was at 53.1 dBA. The nearest sensitive receptor which would be impacted by live entertainment in the project is R7, which is approximately 768 feet south. Therefore, the noise level from temporary live entertainment and events would be below the City's exterior noise standard of 55 dBA and would be less than significant.

Mitigation Measures

No mitigation is required.

Significance After Mitigation

Impacts would be less than significant without mitigation.

4.10.3 Cumulative Impacts

As discussed in Section 3, Environmental Setting, cumulative development in the City of Riverside and in surrounding cities and the county would include residential development, warehouses, commercial, office, and public facilities. Each of the proposed developments would generate temporary noise during construction. Construction activities at the related projects and developments in the area would generate similar noise levels as the proposed project. It would be speculative to determine noise levels from construction from nearby projects because construction schedules are not known for all projects. However, construction noise and vibration are localized and rapidly attenuates within an urban environment. Therefore, the project would not contribute considerably to temporary cumulative construction noise and vibration impacts.

Cumulative development would result in stationary (non-traffic) operational noise increases in the project vicinity. Based on long-term stationary noise analysis analyzed under Impact N-3, impacts from the project's operation noise would be less than significant with mitigation measures incorporated into project design plans. Because noise dissipates as it travels away from its sources, noise impacts associated with onsite activities and other stationary sources would be limited to the project site and vicinity. Therefore, on-site operation activities at the project site, in combination with other planned and pending development, would not contribute considerable to long-term, cumulative noise impacts.

Cumulative development in the project are in 2040 would increase noise levels along roadways as a result of additional vehicle trips. The traffic noise levels presented in Table 4.10-10 for the Opening Year 2022 scenario, and shown in Table 4.10-19 for the Horizon Year 2040 scenario, reflect traffic volumes from cumulative development.

Table 4.10-19 presents a summary of the exterior traffic noise levels with and without project-related traffic, without barrier attenuation, for the 23 study area roadway segments included in the noise study analysis under the Horizon Year 2040 Scenario. As shown in Table 4.10-19, project-related traffic would increase ambient noise levels at land uses adjacent to roadways by up to 2.5 dBA CNEL. As the table also shows, increased noise levels would not exceed applicable thresholds.

Table 4.10-19 Horizon Year 2040 Off-Site Project Related Traffic Noise Impacts

Roadway	Segment	Adjacent Land Use	CNEL at Adjacent Land Use (dBA)[1] No Project	With Project	Project Addition	Threshold Exceeded?[2]
Main Street	s/o Placentia Lane	Business Park	74.5	74.6	0.1	No
Main Street	n/o Columbia Avenue	Residential	74.5	74.6	0.1	No
Main Street	s/o Columbia Avenue	Residential	74.4	74.5	0.1	No
Main Street	n/o Strong Street	Residential	73.2	73.3	0.1	No
Main Street	s/o Strong Street	Residential/School	67	67.1	0.1	No
Main Street	n/o Russell Street	Commercial	67.8	68.2	0.3	No
Main Street	s/o Russell Street	Residential	67.8	68	0.1	No
Orange Street	n/o Columbia Avenue	Residential	63.4	63.5	0.2	No
Orange Street	s/o Columbia Avenue	Residential	66.8	67.1	0.3	No
Orange Street	n/o Strong Street	Residential	65.9	66.4	0.5	No
Orange Street	s/o Strong Street	Residential	66	67.1	1.1	No
Orange Street	n/o Russell Street	Residential	66.1	67.1	1	No
Orange Street	s/o Russell Street	Residential	64.2	64.5	0.4	No
Primer Street	n/o Columbia Avenue	Commercial	70.8	70.9	0.1	No
La Cadena Street	n/o I-215 Ramps	Business Park	66.8	66.9	0.2	No
La Cadena Street	s/o I-215 Ramps	Commercial	62.1	64.3	2.2	No
La Cadena Street	n/o Strong Street	Residential	61.8	64.3	2.5	No
Placentia Lane	e/o Main Street	Industrial	63.4	63.4	0.1	No
Columbia Avenue	e/o Orange Street	Residential	72.8	72.9	0.1	No
Columbia Avenue	e/o Primer Street	Commercial	73.3	73.4	0.2	No
Strong Street	w/o Main Street	Residential	60.1	60.6	0.6	No
Strong Street	e/o Main Street	Residential	59.9	61	1.1	No
Russel Street	e/o Main Street	Residential	62.2	63.5	1.2	No

1 The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.
2 See significance thresholds above in Section 4.10.2(a) Traffic.
Source: Noise Report (Appendix D)

Vehicle trips generated by the proposed project would increase traffic-related ambient noise levels at land uses adjacent to area roadways when combined with existing traffic and future traffic from cumulative development. However, the increased noise levels would not exceed acceptability thresholds described above in Section 4.10.2(a). Therefore, cumulative impacts would be less than significant.

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4.11 Recreation

This section analyzes the effects of the proposed mixed-use project on recreation facilities and whether an expansion or establishment of new recreational facilities would be necessary as a result of project implementation. Additionally, the discussion and analysis contained herein is informed by comments received during the Notice of Preparation of an Environmental Impact Report public review period.

4.11.1 Setting

a. Existing Recreational Facilities

Parks can provide value to a community through green spaces, visual enhancement, physical and mental health, and providing juvenile and senior amenities. The City's Parks, Recreation, and Community Services Department maintains 55 parks and recreational facilities. The City has approximately 714 acres of developed local parks and approximately 1,863 acres of open space reserve land available for members of the community to use. And finally, City residents also have access to several neighboring regional parks, national forests, and joint-use agreement recreation facilities totaling an additional approximate 12,854 acres (City of Riverside 2018).

The City has many different types of parks, including population-based parks (neighborhood and community), resource-based parks that include natural or man-made resources intended to serve the citywide population, and open space parks that allow public access to undeveloped natural spaces. Table 4.11-1 lists the types of parks and their associated acreages throughout the City and the region.

Table 4.11-1 Existing Park and Recreation Facilities

Park Type	Total Acres
Neighborhood Parks Typically small-scale, neighborhood parks are within convenient walking distance from the communities they serve (within a 0.5-mile radius). They are considered a part of the neighborhood landscape and are not so much a destination, but an amenity used by the community. They provide passive and active recreational opportunities for smaller service areas.	160.9
Community Parks Community parks are intended to meet the recreational needs of a much broader area in the City (within a 2.0-mile radius). These parks are typically 20 to 30 acres, and include the same amenities as neighborhood parks with additional facilities for swimming pools, community centers, parking and picnic areas, and athletic complexes. Community parks can function as a neighborhood park for the neighborhood around the park, and they serve the larger community.	421.9
Special Use Parks Special use parks are designed for specific recreational use or activity and serve the entire City. Sports complexes, such as baseball or soccer fields, golf courses, and other activities are common types of special use parks.	130.8
Reserve and Open Space Parks Reserve and open space parks provide less structure for their use as the parks listed above; they offer a more natural setting for recreational activities such as hiking, biking, picnics, and running. These parks are an important source of habitat for wildlife and natural resources in the City as well as providing recreational opportunities for residents.	1,863.1
Non-City Owned Regional Parks There are a number of larger recreational areas and parks that are not owned or managed by the City of Riverside, but available for use by City residents. They offer similar amenities as regional and reserve/open space parks such as natural open spaces, community centers, trails, and educational and historic programs.	12,853.74
Total City Owned Parks and Recreational Facilities Acreage	**2,567.7**
Total Non-City Owned Parks and Recreational Facilities Acreage	**12,853.7**

Source: City of Riverside 2018

Fairmount Park (0.5 miles southwest at 2601 Fairmount Boulevard), Hunter Park (0.8 miles northeast at 1401 Iowa Avenue), and Reid Park (0.9 miles north at 701 North Orange Street) are the parks closest to the project site. Hunter Park is a 32-acre community park in partnership with Riverside Live Steamers, a train hobbyist group; it features a 4,300-foot fixed-loop railroad for model steam trains. Hunter Park also has two baseball fields, a soccer field, two basketball courts, children’s playground, and greenspace for recreation. Reid Park is a 42-acre community park that includes the Ruth Lewis Community Center with a gym, lighted sports fields, basketball and tennis courts, pool, playground, and picnic tables with barbeques. Fairmount Park is a 275-acre reserve and open space park that features sailing and fishing on Lake Evans, pedal boat rentals, a golf course, two tennis courts, public barbecues and picnic areas, the Santa Ana River Trail, and a lawn bowling court.

b. Regulatory Setting

State

Quimby Act

California Government Code, Section 66477 (Quimby Act) was enacted in 1975 to promote the availability of park and open space areas, in response to the need for such facilities generated by residential development and the incumbent demand placed by new residents to the state. The Quimby Act authorizes cities and counties to enact ordinances requiring the dedication of land and/or the payment of fees for park and/or recreational facilities for projects involving residential subdivisions. The Quimby Act seeks to mitigate impacts of development that bring new park users to recreation facilities.

Revenue generated under the Quimby Act can only be used to purchase new parkland and may not be used for the operation or maintenance of existing parkland. The Quimby Act states that:

> the dedication of land or the payment of fees, or both, shall not exceed the proportionate amount necessary to provide three acres of park area per 1,000 persons residing within a subdivision subject to this section, unless the amount of existing neighborhood and community park area, as calculated pursuant to this subdivision, exceeds that limit, in which case the legislative body may adopt the calculated amount as a higher standard not to exceed five acres per 1,000 persons residing in a subdivision subject to this section.

In addition to Quimby Act fees, facilities can be provided by grants, donations, user fees, community fund raising events, joint ventures, and joint use agreements.

Local

City of Riverside General Plan 2025

The City of Riverside General Plan 2025 includes various objectives and policies that seek to enhance Riverside’s existing park and recreation facilities. The City strives to reduce parkland shortages, especially in underserved areas, and to preserve its natural resources and open spaces. Various elements of the General Plan 2025 contain objectives and policies relevant to park and recreation facilities, including:

PARK AND RECREATION ELEMENT

Objective PR-1: Provide a diverse range of park and recreational facilities that are responsive to the needs of Riverside residents.

> **Policy PR-1.3:** Encourage private development of recreation facilities that complement and supplement the public recreational system.

Objective PR-3: Engage Riverside residents and the business community in planning for recreation and service needs.

> **Policy PR-3.2:** Consider the needs of all age groups, abilities, disabilities and special interest groups in park and recreation planning and design.

LAND USE AND URBAN DESIGN ELEMENT

Objective LU-71: Establish the Northside Community as a balanced community in which it is pleasant to live, work and play.

Policy LU-71.3: Retain Reid Park and the golf course to serve neighborhood, community, and regional park needs.

OPEN SPACE AND CONSERVATION ELEMENT

Objective OS-1: Preserve and expand open space areas and linkages throughout the City and sphere of influence to protect the natural and visual character of the community and to provide for appropriate active and passive recreational uses.

Policy OS-1.5: Require the provision of open space linkages between development projects, consistent with the provisions of the Trails Master Plan, Open Space Plan and other environmental considerations, including the MSHCP.

Policy OS-1.6: Ensure that any new development that does occur is effectively integrated through convenient street and/or pedestrian connections, as well as through visual connections.

Policy OS-1.9: Promote open space and recreation resources as a key reason to live in Riverside.

Riverside Municipal Code Chapter 16

Riverside Municipal Code (RMC) Chapter 16 contains several sections specific to development fees for City parks. The City of Riverside adopted regulations of the Quimby Act under RMC Section 16.44, which established development fees for the acquisition and development of regional parks and reserve parks. Fees are established by City Council resolution and required of all development not exempt under Subsection 16.44.060.

RMC Section 16.60 designates the Local Park Development Fee that enables the acquisition, development, and/or improvement of neighborhood and community parks in order to provide for adequate passive and active recreational opportunities to City residents. The fee is not used solely for the acquisition and development of new parks, but also to improve existing parks. RMC Section 16.76 establishes the Trails Development Fee for the acquisition and development of trails. The trail fees are only to be used for the purpose for which they are collected.

City of Riverside 2003 Park and Recreation Master Plan

The City of Riverside 2003 Park and Recreation Master Plan (Master Plan) addresses the adequacy of the City's park and recreation facilities, and future needs and opportunities through 2020. The Master Plan contains standards to determine park needs for residents, determined to be 3.0 acres of parkland per 1,000 residents. It also sets standards for the specific park types (Table 4.11-1), designed to satisfy different recreational needs. The Master Plan includes a Neighborhood Park standard of 1.0 acre per 1,000 residents and a Community Park standard of 2.0 acres per 1,000 residents. Neighborhood Parks should be located within a 0.5-mile radius of every residence in the City, and Community Parks should be located within 2.0 miles.

Chapter 8 of the Master Plan contains a list of policies needed to achieve the outlined goals and to serve as a framework in directing development of parks. The following Master Plan policies relate to the proposed project:

Policy 8.1.8: Parks should be located adjacent to park compatible use areas, such as residential uses, greenbelts, bicycle corridors, schools and natural waterways to minimize the negative impacts of adjacent land uses on the recreational function of the parks.

Policy 8.1.9: Proposed parks shall be sited and configured to have minimal negative impact on surrounding residential areas due to park uses, lighting, noise, traffic, etc.

Policy 8.7.1: Park build-out should be completed in a timely manner consistent with the overall build-out of adjoining land uses.

Policy 8.7.6: Where appropriate, the City should encourage private development of recreation facilities that complement and supplement the public recreational system.

Policy 8.7.7: Floodways and non-park infrastructure improvements, such as detention basins, railroad rights-of-way and utility easements, should be evaluated for potential open space areas and trail corridors.

4.11.2 Impact Analysis

a. Methodology and Significance Thresholds

The population of the City of Riverside was 325,860 in January 2018 (California Department of Finance 2018). Considering the standard for developed park acreage at 3.0 acres per 1,000 residents for neighborhood and community parks, and comparing the City's population to the acreage calculations of community and neighborhood parks from Table 4.11-1, the City has a park ratio of approximately 1.8 acres per 1,000 residents[1]. The City also has established distance standards for neighborhood and community parks of one-half mile from every residence and two miles from every residence, respectively. Therefore, while a park may not be classified as a neighborhood or community park (such as reserve and open space parks or non-City-owned regional parks), it could be utilized as such if it is accessible to nearby residences and has appropriate facilities.

When looking at specific neighborhoods, there is an unequal distribution of parks classified as neighborhood parks. Some neighborhoods have sufficient and readily accessible amenities, while others have shortages[2]. Distribution of classified community parks is more equitable and accessible due to the 2.0-mile distance standard. Residents in the areas with insufficient neighborhood parks use park facilities in other surrounding neighborhoods, and this causes recreation facilities and parks in those areas to be overused, and can result in increased improvement needs, such as new lighting and updated playground and sport field equipment.

According to Appendix G of the CEQA Guidelines, the effects of the proposed project on recreation are considered to be significant if the proposed project would:

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
2. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment

[1] Current 160.9 acres Neighborhood Parks + 421.9 acres Community Parks / (325,860 City of Riverside residents/1,000 residents) = 1.8 acres per 1,000 persons
[4] According to the General Plan, neighborhood park deficiencies exist in the Sycamore Highlands, Canyon Springs, Arlington Heights, La Sierra, and La Sierra South neighborhoods (City of Riverside 2007).

The Initial Study (Appendix A) concluded that implementation of the project could result in a potentially significant impacts to recreation facilities. Therefore, both impact thresholds related to recreation are addressed in this section.

b. Project Impacts and Mitigation Measures

Threshold 1:	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?

Impact REC-1 IMPLEMENTATION OF THE PROPOSED PROJECT WOULD INCREMENTALLY INCREASE USE OF EXISTING CITY PARKS AND RECREATIONAL FACILITIES. THE PROPOSED PROJECT WOULD PROVIDE ADEQUATE ON-SITE RECREATIONAL SPACE FOR RESIDENTS THAT WOULD COMPLEMENT AND SUPPLEMENT EXISTING CITY FACILITIES. THE PROJECT WOULD ALSO BE REQUIRED TO PAY CITY PARK IMPACT FEES. THEREFORE, THE PROJECT WOULD RESULT IN A LESS THAN SIGNIFICANT IMPACT.

The project entails a mixed-use development consisting of 482 residential units, commercial space, two hotels, and RV parking. As detailed in Section 4.2, *Air Quality*, a conservative estimated population growth from the residential portion of the project would be 1,532 persons (based on an average household size of 3.18). Assuming all residents of the Project were new to the City, this would increase the City's population to 327,392, a rise of approximately 0.5 percent. The nominal change in City population would not result in perceivable change to the City's current park acreage ratios. However, the project would be expected to reduce any impacts to the park standard of 3.0 acres per 1,000 residents.

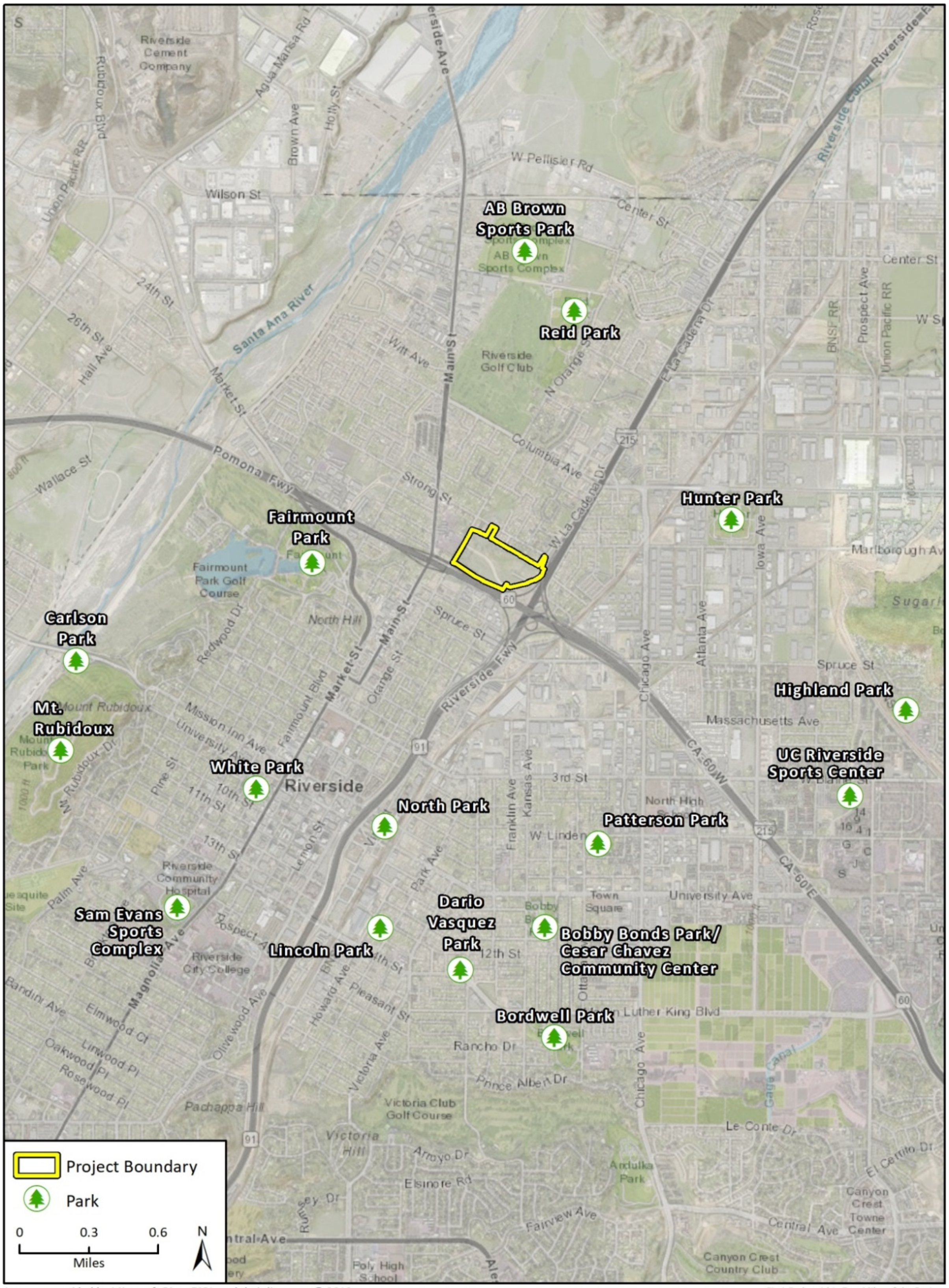
According to the Trust for Public Land's Park score index, the project site is in an area with a moderate level of park need (Trust for Public Land 2018). Areas immediately surrounding the project site have a high and very high level of park need. Based on the City's distance standards, there are currently no neighborhood parks within 0.5 mile of the project site. Portions of Fairmount Park are about 0.5-miles from the project site, but due to the freeways and organization of local roadways, the walking distance would be greater than 0.5 mile. There would be 16 community parks within 2.0 miles of project site. These parks would most likely be impacted by the proposed project due to their proximity, and increased use would necessitate more routine maintenance and infrastructure upgrades. Table 4.11-2 and Figure 4.11-1 list and illustrate the parks within 2.0 miles of the project site.

Table 4.11-2 Parks Most Likely to be Utilized by the Project Population

Park Name	Distance from Project (miles)	Park Size (acres)
Within 0.5-Mile Radius of Project Site		
None	n/a	n/a
Total Neighborhood Park Acreage		**0**
Within 2.0-Mile Radius of Project Site		
Fairmount Park (Regional Park/Open Space)	0.80	275
Reid Park (City-owned)	0.70	42
Hunter Park (City-owned)	0.75	32
AB Brown Sports Park	1.12	55.5
North Park	1.20	1.2
Patterson Park	1.20	4.3
White Park (City-owned)	1.25	5
UC Riverside Sports Center (UCR)	1.35	18
Bobby Bonds Park/Cesar Chavez Center	1.40	13.7
Mt. Rubidoux (Regional Park/Open Space)	1.50	230
Lincoln Park	1.60	3.3
Dario Vasquez Park (City-owned)	1.65	1.4
Highland Park	1.70	5.1
Carlson Park (City-owned)	1.70	1.8
Sam Evans Sports Complex (RCC)	1.85	12
Bordwell Park (City-owned)	1.90	23
Total Community Park Acreage		**723.3**
Total Park Acres in Project Area		**723.3**

Within 2.0 miles of the project, 723.3 acres of City-owned, special use, and regional open space parkland and recreation facilities would be to future project residents. The area around the project site has moderate to very high level of park need, meaning the park facilities in the area are over-utilized and would be further impacted by the proposed project. Additional residents using the parks listed in Table 4.11-2 would create an increase to the use of the existing nearby park facilities.

Figure 4.11-1 Parks within Two Miles of the Project



Imagery provided by Microsoft Bing, ESRI, and their licensors © 2018.

Fig 1 Parks within Two Miles of the Project

The proposed project would include on-site recreational facilities for use by future residents. These amenities would include two swimming pools with barbeque areas, seating, and decks; lawn and turf areas for outdoor activities and gathering spaces; and a 13,000-square foot residents-only dog park. The project also proposes two clubhouses to serve as community centers for the residents. The proposed 84,240 square feet, or 1.93 acres, of recreational amenities would complement and supplement existing City parks and recreational facilities by providing 1.26 acres[3] of recreational opportunities per 1,000 new residents directly on the site, effectively reducing residents' need to use the existing neighborhood and community parks near the project site.

The project would be required to pay impact fees, including the Trail Development Fee, Local Park Development Fee, Aquatic Facility Fee, and Regional Parks and Reserve Parks Development Fee. The fee amounts would be as follows:

- **Trail Development Fee:** $78 per gross acre of land to be privately developed
- **Local Park Development Fee:** $3,045 per unit for the multi-family residential units, plus 1 percent for the first $100,000 in construction valuation and 0.5 percent for construction valuation over $100,000
- **Aquatic Facilities Fee:** $295 per residential unit
- **Regional Parks and Reserve Parks Development Fee:** $5,489 per gross acre of land to be developed

As detailed in RMC Chapter 16.44 and 16.76, the trail and regional park fees would be used solely for the acquisition of new parkland or trails. Local park fees could be used to purchase new parkland and for maintaining and upgrading existing neighborhood and community park facilities (City of Riverside 1990 and RMC Chapter 16.60 et seq.). Payment of applicable park development impact fees would mitigate impacts to the park acreage the project would impose with its associated increased population.

Due to the payment of applicable park development fees, the number and size of available parks within 2.0 miles of the project site, and the 1.93 acres of proposed on-site recreational amenities, the project would have a less than significant impact on the use of parks in the City of Riverside.

Mitigation Measures

No mitigation measures are required beyond the payment of park development fees.

Significance After Mitigation

Impacts would be less than significant without mitigation.

[3] 1.93 acres/1.53 residents (1532/1000) = 1.26 acres per 1,000 residents

Threshold 2:	Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?

Impact REC-2 PROPOSED RECREATIONAL FACILITIES HAVE BEEN ASSUMED TO BE PART OF THE PROJECT. NO ADDITIONAL OR EXPANDED RECREATIONAL FACILITIES WOULD BE REQUIRED FOR THE CITY AS A DIRECT RESULT OF THIS PROJECT. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The project proposes 1.93 acres of common open space and recreational facilities as a part of the residential development. These would include a dog park, pool and BBQ areas, lawn and turf areas, and two clubhouses. These uses would be within the development envelope for the project. The project would not result directly in the need for new or expanded recreational facilities in the City. The project would incrementally increase the population to the City, which would nominally increase the demand for and use of the existing park system. As discussed in Impact REC-1, the development would be required to pay multiple park impact fees toward the purchase of new parkland, the development of trails, and the maintenance of existing facilities. These measures would reduce impacts of the population increase caused by implementation of the project and associated use of parks in the City. Therefore, the project would result in less than significant impacts.

Mitigation Measures

No mitigation measures are required.

Significant After Mitigation

Impacts would be less than significant without mitigation.

4.11.3 Cumulative Impacts

The City currently does not meet its goal of 3.0 acres of developed neighborhood and community parkland per 1,000 residents, and is currently providing 1.8 acres of neighborhood and community parks per 1,000 residents. Based on the cumulative projects listed in Section 3, *Environmental Setting*, there are 878 planned residential units in the City that would generate a population increase of approximately 2,792 residents[4] in the foreseeable future. This would be in addition to the estimated 1,532 residents generated by the proposed project. The total addition of 4,324 residents would increase demand on existing City recreation facilities and may require new parkland to be purchased or new recreation facilities to be built, as determined necessary by the City.

According to the Southern California Association of Governments 2016 RTP/SCS, the City is estimated to increase to 386,600 by 2040 (Southern California Association of Governments 2016). If the current neighborhood and community parkland acreage of 582.8 remained unchanged, this would equate to a neighborhood and community park ratio of 1.5 acres per 1,000 residents[5], which would still not meet the General Plan 2025 goal of three acres of neighborhood and community parkland per 1,000 residents.

However, individual development projects that meet necessary criteria would be required to implement applicable private and/or common open space requirements; the project itself is adding

[4] 878 residential units multiplied by an average household size of 3.18 for the City of Riverside
[5] 582.8/386.6 = 7.5 acres per 1,000 residents

another 1.26 acres of recreational space for residential use. In addition, applicable projects would be subject to park development fees, which would mitigate their impacts on recreation facilities in the City and be used to develop and maintain parkland and recreation facilities. Therefore, with the payment of park fees and development of private and/or common open space, cumulative impacts to recreational facilities would be less than significant.

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4.12 Transportation and Traffic

This section analyzes the proposed project's impacts to the local transportation and circulation system. The analysis in this section is based, in part, on a Traffic Impact Analysis (TIA) prepared for the proposed project by Urban Crossroads in September 2018. The full study is provided in Appendix L of this Environmental Impact Report (EIR). Emissions associated with traffic trips are analyzed in Section 4.2 *Air Quality*, and Section 4.7, Greenhouse Gas Emissions. Additionally, the discussion and analysis contained herein is informed by comments received during the Notice of Preparation of an EIR public review period.

4.12.1 Setting

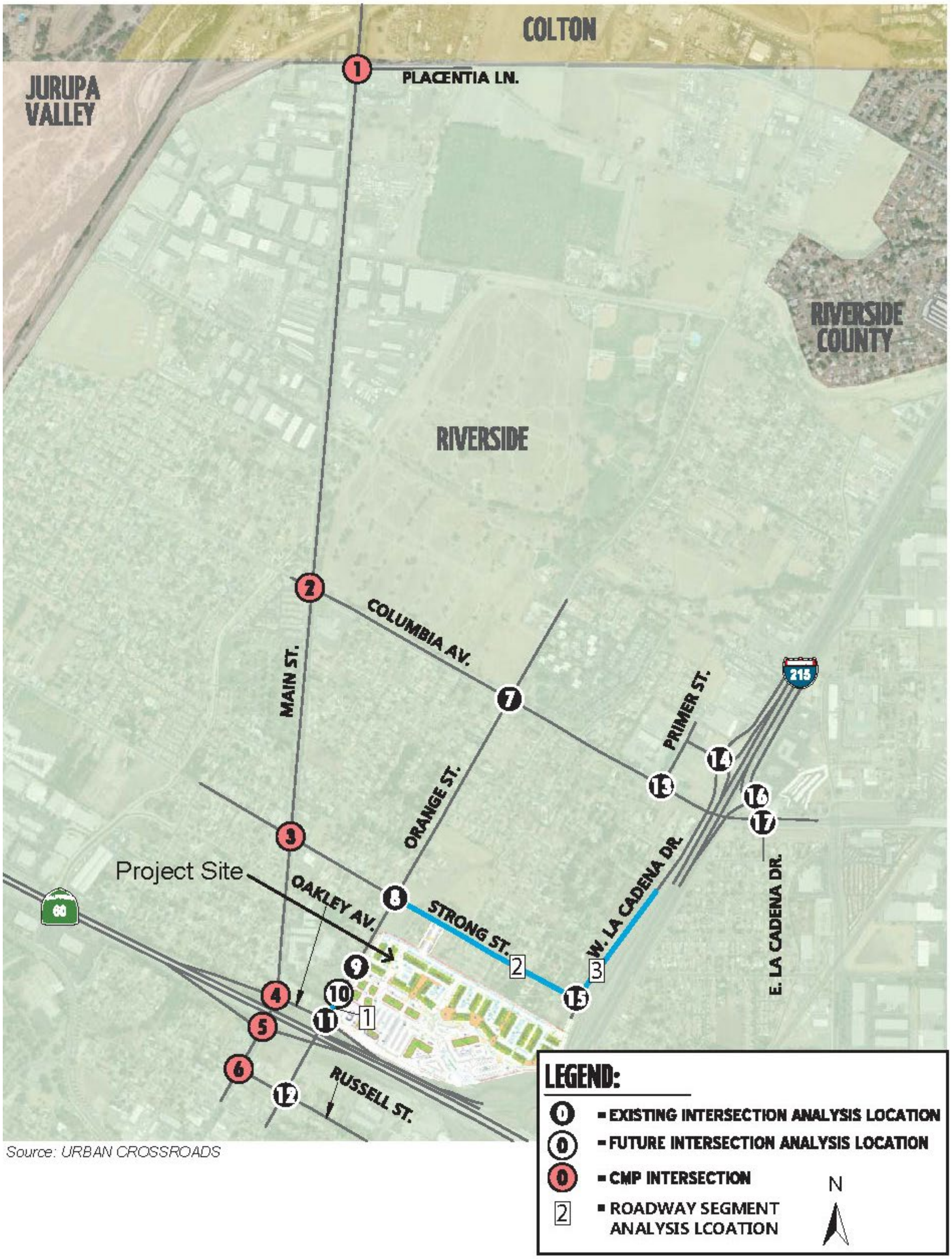
a. Existing Transportation Setting

Existing Street System

Consistent with the City's guidelines, the project roadway study area includes 17 existing and future intersections where the project is anticipated to contribute 50 or more peak hour trips. The 50-peak hour trip threshold is used by numerous agencies throughout the region. A project trip contribution of less than 50 peak hour trips is generally considered less than significant and is not evaluated. The Traffic Impact Assessment is provided as Appendix L and data for the analysis is included by reference. Study intersections are shown on Figure 4.12-1, and consist of the following 17 intersections:

1. Riverside Avenue/Main Street and Placentia Lane
2. Main Street and Columbia Avenue
3. Main Street and Strong Street
4. Main Street and State Route (SR) 60 westbound (WB) On-Ramp/Oakley Avenue
5. Main Street and SR 60 eastbound (EB) Ramp
6. Main Street and Russell Street
7. Orange Street and Columbia Avenue
8. Orange Street and Strong Street
9. Orange Street and project Driveway 1
10. Orange Street and project Driveway 2
11. Orange Street and Oakley Avenue/SR 60 WB Off-Ramp
12. Orange Street and Russell Street
13. Primer Street and Columbia Avenue
14. West La Cadena Drive and Interchange Street/I-215 SB Ramps
15. West La Cadena Drive and project Driveway 3 and Strong Street
16. East La Cadena Drive and Interstate 215 (I-215) northbound (NB) Ramp
17. East La Cadena Drive and Columbia Avenue

Figure 4.12-1 Roadway Network and Study Area Intersections



Source: URBAN CROSSROADS

The TIA describes the existing street system as composed of highway ramps (SR 60 and I 215), arterial streets, collector streets, and local streets. The TIA evaluated the following roadway segments, selected by the City:

1. Orange Street from Oakley Avenue to Driveway 2
2. Strong Street from Orange Street to WEST La Cadena Drive
3. West La Cadena Drive from Strong Street to approximately 300 feet south of Spring Garden Street

Highway System

SR 60 runs along the southern boundary of the project site. I-215 runs along a portion of the eastern boundary of the project site.

Arterial Streets

Arterial streets carry through traffic and connect to the state highway system with restricted access to abutting properties. They are designated to have the highest traffic carrying capacity in the roadway system with the highest speeds and limited interference with traffic flow by driveways. The City classifies streets as 100-foot or 88-foot arterials. 100-foot arterials include two lanes of travel in each direction and a curbed and/or landscaped median within 80-feet of pavement from curb-to-curb. The study area roadways classified as having a 100-foot right-of-way measurement (or 80-foot curb-to-curb measurements) include Columbia Avenue (east of the I-215 Freeway) and Main Street. 88-foot arterials include two lanes of travel in each direction with no median within 64-feet of pavement from curb-to-curb. The study area roadways classified as having an 88-foot right-of-way measurement (or 64-foot curb-to-curb measurements) include Placentia Lane and Columbia Avenue.

Collector Streets

Collector streets serve as intermediate routes to handle traffic between local streets and streets of higher classification. Collector Streets also provide access to abutting property and are two lanes in width. Collector streets may handle some localized through traffic from one local street to another; however, their primary purpose is to connect the local street system to the arterial network. The study area collector streets, with 66-foot right-of-way and 40-foot curb-to-curb measurements, with one lane of travel in each direction and no medians, include Orange Street, Strong Street, Russell Street, and West La Cadena Drive.

Local Streets

Local streets, such as Primer Street, provide vehicular, pedestrian, and bicycle access to property directly abutting the public right-of-way, and discourage movement of through traffic. Local streets are designated to be 36-footwide curb-to-curb in a 66-foot right-of-way; they have two through lanes, one in each direction.

Existing Public Transit

The Riverside Transit Authority (RTA) is the public transit agency that serves the project area. RTA offers 36 local, fixed bus routes throughout western Riverside County. Two existing bus routes would serve the proposed project: RTA routes 12 and 12 Commuter. They travel along Main Street, Columbia Avenue, Orange Street, and West La Cadena Drive. Bus stops are located along Main

Street, approximately 650 feet west of the project site, and on Russell Street, approximately 1,100 feet southwest of the project site. Transit service is periodically reviewed and updated by RTA to address ridership, budget, and community need as changes in land use can require adjustments to either enhance or reduce service where appropriate.

Existing Bicycle Facilities

Field observations conducted in September 2017 by Urban Crossroads found nominal pedestrian and bicycle activity within the study area, except in close proximity to Fremont Elementary School. The intersections located near Fremont Elementary School were observed to have higher levels of pedestrian and bicycle activity during the morning peak hour for the short period prior to the start of the school day. The City's General Plan 2025 Land Use and Urban Design Element shows primary and secondary pedestrian/equestrian trails near and around the project site, including planned Class II bike lanes along Main Street and Columbia Avenue.

No City or regional trails or bikeways are identified in Exhibit 3-9 and 3-10 of the TIA, which shows the City of Riverside Master Plan Trails and Bikeways and the County of Riverside Trial and Bikeway System, respectively, in the vicinity of the project site. There are no bicycle lanes on roadways adjacent to the project site. Class II bicycle lanes are present on both sides of Spruce Street, Main Street, and Columbia Avenue, approximately one block south, west, and north of the project site.

Existing Pedestrian Facilities

Exhibit 3-12 of the TIA shows existing pedestrian facilities within the project study area. Sidewalks are provided along some stretches of Orange Street and on the northern side of Oakley Avenue; however, no sidewalks are in place at the project frontage, as the project site is undeveloped.

Existing Intersection and Roadway Volumes

Traffic volumes were collected at the 17 study intersections during the weekday morning and afternoon peak hours when Fremont Elementary School was in session in September 2017, from 7:00 to 9:00 AM and 4:00 to 6:00 PM.[1] The weekday AM and PM peak hour count data is representative of typical weekday peak hour traffic conditions for the study area. There were no atypical traffic conditions on the count dates, such as construction activity or detour routes and schools were in session and operating on normal schedules. Appendix 3.1 of the TIA provides the raw manual peak hour turning movement traffic count data sheets (Appendix L).

Existing Intersection Levels of Service

Traffic at the study intersections was quantified by determining level of service (LOS), a qualitative measure describing operational conditions within a traffic stream. LOS has letter designations ranging from A to F, representing progressively worsening traffic operations. The City of Riverside has an overall LOS standard of LOS D for intersections under its jurisdiction. At key locations, such as City arterials used by regional freeway bypass traffic and at heavily traveled freeway interchanges, LOS E may be acceptable during peak hours on a case-by-case basis. LOS D is also the standard applied for intersections in the City of Colton and Riverside County, and to California Department of Transportation (Caltrans) facilities (freeway ramps). The LOS at each study intersection was

[1] AM and PM peak hours were chosen to ensure a conservative analysis. The AM peak hour captures traffic related to Fremont Elementary School. The PM peak hour was chosen considering the peak of traffic on adjacent roadways, as well as the peak of project-related traffic.

determined based on the Transportation Research Board's 2000 and 2010 Highway Capacity Manual (HCM) methodology.

The HCM LOS at signalized intersections is based on the weighted average control delay measured in seconds per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Table 4.12-1 provides the LOS definitions for signalized intersections based on HCM methodology.

Table 4.12-1 Level of Service Definitions for Signalized Intersections

Level of Service	Description	Average Control Delay (seconds)
A	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.	0 to 10.00F
B	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	10.01 to 20.00
C	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	20.01 to 35.00
D	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	35.01 to 55.00
E	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	55.01 to 80.00
F	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	80.01 and up

Source: Transportation Research Board 1980;Table 2-1 of the TIA, Appendix L

At unsignalized intersections, each approach to the intersection was evaluated separately and assigned an LOS, based on the delay at the worst approach for two-way stop controlled intersections. Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for the vehicles to travel from the last-in-queue position to the first-in-queue position. Table 4.12-2 provides the LOS definitions for signalized intersections based on HCM methodology.

Table 4.12-2 Unsignalized Intersection Level of Service Definitions (HCM)

Level of Service (V/C ≤ 1.0)	Average Control Delay Per Vehicle (sec.)
A	≤ 10.0
B	> 10.0 to 15.0
C	> 15.0 to 25.0
D	> 25.0 to 35.0
E	> 35.0 to 50.0
F	> 50.0

Source: Transportation Research Board 2010.

The existing LOS for the study area intersections is presented in Table 4.12-3. As shown in bold type, the following existing study area intersections are currently operating at an unacceptable LOS during the peak hours:

- Orange Street and Oakley Avenue/SR 60 Westbound Off-Ramp (#11) – LOS E PM peak hour only
- West La Cadena Drive and Interchange Street/I-215 Southbound Ramps (#14) – LOS E PM peak hour only
- East La Cadena Drive and I-215 Northbound Ramps (#16) – LOS F AM and PM peak hours

Table 4.12-3 Existing (2017) Intersection Level of Service

No.	Intersection	Traffic Control[2]	Delay[1] AM	Delay[1] PM	LOS AM	LOS PM
1	Riverside Avenue/Main Street and Placentia Lane	CSS	17.4	20.7	C	C
2	Main Street and Columbia Avenue	TS	19.2	21.2	B	C
3	Main Street and Strong Street	TS	31.8	12.3	C	B
4	Main Street and SR 60 WB On-Ramp/Oakley Avenue	TS	23.1	29.5	C	C
5	Main Street and SR 60 EB Ramps	TS	16.3	18.6	B	B
6	Main Street and Russell Street	CSS	14.2	17.4	B	C
7	Orange Street and Columbia Avenue	TS	13.3	14.8	B	B
8	Orange Street and Strong Street	AWS	10.8	17.0	B	C
9	Orange Street and Driveway 1	CSS	14.4	12.7	B	B
10	Orange Street and Driveway 2	Future Intersection				
11	Orange Street and Oakley Avenue/SR 60 WB Off-Ramp	AWS	19.2	**38.9**	C	E
12	Orange Street and Russell Street	AWS	14.3	14.4	B	B
13	Primer Street and Columbia Avenue	TS	12.3	13.7	B	B
14	West La Cadena Drive and Interchange Street/I-215 SB Ramps	AWS	25.9	**36.0**	D	E
15	West La Cadena Drive and Driveway 3 and Strong Street	UC	0.0	0.0	A	A
16	East La Cadena Drive and I-215 NB Ramps	CSS	**>200.0**	**78.1**	**F**	F
17	East La Cadena Drive and Columbia Avenue	TS	35.3	19.5	D	B

[1] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All Way Stop; CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled

Source: Table 3-1 of the TIA, Appendix L

Existing Roadway Levels of Service

The roadway segment capacities utilized for this analysis are approximate figures only; they are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Exhibit D of the City of Riverside's Traffic Impact Analysis Preparation Guide shows roadway capacities (City of Riverside 2017). Table 4.12-4 provides a summary of the Existing (2017) conditions roadway segment capacity analysis based on the applicable roadway segment capacities. As shown in Table 4.12-4, each study area roadway segment operates currently at an acceptable LOS, based on the applicable planning level daily roadway capacity thresholds.

Table 4.12-4 Existing (2017) Roadway Segment Level of Service

No.	Roadway	Segment Limits	LOS Capacity[1]	Existing (2017)	V/C[2]	LOS[3]	Acceptable LOS
1	Orange Street	North of Oakley Avenue	12,500	6,942	0.56	A	D
2	Strong Street	East of Orange Street	12,500	2,496	0.20	A	D
3	West La Cadena Drive	North of Strong Street	12,500	1,850	0.15	A	D

1 These maximum roadway capacities have been extracted from the following source: City of Riverside Traffic Impact Analysis Preparation Guide (Exhibit D) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

2 V/C = Volume-to-capacity

3 LOS = Level of Service

Source: Table 3-2 of the TIA, Appendix L

a. Regulatory Setting

This section includes a discussion of the applicable state, regional, and local laws, ordinances, regulations, and standards governing transportation and traffic, which must be adhered to before and during project implementation.

State

State Senate Bill 743

Senate Bill (SB) 743 was signed into law by Governor Brown in 2013 and tasked the State Office of Planning and Research (OPR) with establishing new criteria for determining the significance of transportation impacts under the California Environmental Quality Act (CEQA). SB 743 requires the new criteria to “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” It also states that alternative measures of transportation impacts may include “vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated.”

On September 27, 2013, California Governor Jerry Brown signed SB 743 into law and started a process that changes transportation impact analysis as part of CEQA compliance. SB 743 requires the Governor’s OPR to identify new metrics for identifying and mitigation transportation impacts within CEQA. In January 2018, OPR transmitted its proposed CEQA Guidelines implementing SB 743 to the California Natural Resources Agency for adoption. It is anticipated that – if adopted – the CEQA Guidelines promulgated under SB 743 will change the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact (Public Resource Code, § 21099, subd. (b)(2)). In addition to new exemptions for projects consistent with specific plans, the draft CEQA Guidelines proposed by the Office of Planning and Research replace congestion based metrics, such as auto delay and level of service, with Vehicle Miles Traveled as the basis for determining significant impacts, unless the Guidelines provide specific exceptions.

Because the draft CEQA Guidelines have not yet been adopted by the California Natural Resources Agency, the Statewide implementation of SB 743 with regards to CEQA compliance is not anticipated to be required until by at least mid-2019. (See Natural Resources Agency Notice of Public Availability of Modifications dated July 2, 2018 at Appendix A [Even if adopted, proposed

CEQA Guidelines Section 15064.3(c) states that "Beginning on July 1, 2020, the provisions of this section shall apply statewide"]. Therefore, the LOS analysis is the metric used for this EIR (see Existing Intersection and Roadway Volumes for an explanation of LOS).

Regional

Regional Transportation Plan/Sustainable Communities Strategy)

The Southern California Association of Governments (SCAG) is an association of local governments and agencies that serves as a Metropolitan Planning Organization (MPO), a Regional Transportation Planning Agency (RTPA) and a Council of Governments (COG). The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities. SCAG is responsible for developing long-range regional transportation plans, including the regional Sustainable Communities Strategy (SCS) and associated growth forecasts, regional transportation improvement programs, and regional housing needs allocations (SCAG 2018).

SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) is a long range regional transportation and land use network plan that looks ahead 20 plus years and provides a vision of the region's future mobility and housing needs with economic, environmental and public health goals. The RTP/SCS identifies major challenges as well as potential opportunities associated with growth, transportation finances, the future of airports in the region, and pending transportation system deficiencies that could result from regional growth. SCAG adopted its current RTP/SCS in April 2016 (SCAG 2016).

Riverside County Regional Transportation Plan

SCAG prepares the RTP and updates it every four years. The most recent RTP was prepared in 2016 and covers years 2016 through 2040. The document provides a vision for transportation strategies and investments throughout Riverside County.

Riverside County Integrated Project

In 2003, Riverside County completed a comprehensive planning program called the Riverside County Integrated Project (RCIP). The Riverside County Board of Supervisors initiated the RCIP to deal with environmental issues as part of regional land use and infrastructure planning. The RCIP comprises the Community Environmental Transportation Corridor Acceptability Process (described below), the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; see Section 4.3 *Biological Resources*), and the Riverside County General Plan Update. Riverside County's Strategic Vision, which is included in its General Plan, incorporates a set of 15 consensus planning principles intended to guide the work of the RCIP.

Community Environmental Transportation Corridor Acceptability Process

The Community Environmental Transportation Corridor Acceptability Process is a coordinated regional transportation planning effort included in the RCIP. It identified potential transportation corridors in western Riverside County that would benefit commuters and serve the County's growing economy.

Riverside County Congestion Management Program

The Riverside County Congestion Management Program was established in 1990 to directly link land use, transportation, and air quality planning and to prompt reasonable growth management programs that would more effectively utilize new and existing transportation funds, alleviate traffic congestion and related impacts, and improve air quality. The Congestion Management Program includes growth management programs to utilize transportation funds in order to alleviate traffic congestion and improve air quality. The Riverside County Transportation Commission adopted the current version of the Riverside County Congestion Management Program in December 2011.

Western Riverside County Transportation Uniform Mitigation Fee

In 2002, the cities of Riverside, Corona, and Moreno Valley, and Riverside County, agreed to participate in the Western Riverside County Transportation Uniform Mitigation Fee (TUMF) Program. TUMF is a multi-jurisdictional impact fee program that funds transportation improvements associated with new growth. All new development in each of the participating jurisdictions is subject to TUMF, based on the proposed intensity and type of development. The City of Riverside also has a Development Impact Fee (DIF) program that funds a variety of public transportation facilities, namely, traffic and railroad signals and transportation for dwelling and mobile homes.

Local

City of Riverside General Plan 2025

General Plan 2025 contains goals and policies for transportation within the Circulation and Community Mobility Element. The City's General Plan 2025 includes numerous goals and policies related to transportation and circulation. The following goals and policies apply to the project:

Objective CCM-2: Build and maintain a transportation system that combines a mix of transportation modes and transportation system management techniques, and that is designed to meet the needs of Riverside's residents and businesses, while minimizing the transportation system's impacts on air quality, the environment and adjacent development.

> **Policy CCM-2.3:** Maintain LOS D or better on Arterial Streets wherever possible. At key locations, such as City Arterials used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS E at peak hours as the acceptable standard on a case-by-case basis.
>
> **Policy CCM-2.4:** Minimize the occurrence of streets operating at LOS F by building out the planned street network and by integrating land use and transportation in accordance with the General Plan principles.
>
> **Policy CCM-2.7:** Limit driveway and local street access on Arterial Streets to maintain a desired quality of traffic flow. Wherever possible, consolidate driveways and implement access controls during redevelopment of adjacent parcels.
>
> **Policy CCM-2.8:** Design street improvements considering the effect of aesthetic character and livability of residential neighborhoods, along with traffic engineering criteria.
>
> **Policy CCM-2.9:** Design all street improvement projects in a comprehensive fashion to include consideration of street trees, pedestrian walkways, bicycle lanes, equestrian pathways, signing, lighting, noise and air quality wherever any of these factors are applicable.

Objective CCM-6: Cooperate in the implementation of regional and inter-jurisdictional transportation plans and improvements to the regional transportation system.

Policy CCM-6.1: Encourage the reduction of vehicle miles, reduce the total number of daily peak hour vehicular trips, increase the vehicle occupancy rate and provide better utilization of the circulation system through the development and implementation of TDM programs contained in the SCAQMD and County of Riverside TDM Guidelines.

Objective CCM-8: Protect neighborhoods and reduce the risk posed to young children and other residents by vehicular traffic on local roadways.

Policy CCM-8.3: Apply creative traffic management approaches to address congestion in areas with unique problems, particularly on roadways and intersections in the vicinity of schools in the morning and afternoon peak hours and near churches, parks and community centers.

Objective CCM-10: Provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system.

Policy CCM-10.2: Incorporate bicycle and pedestrian trails and bicycle racks in future development projects.

Policy CCM-10.3: Provide properly designed pedestrian facilities for the disabled and senior population to ensure their safety and enhanced mobility as users of streets, roads and highways emphasizing “complete streets” principles.

Policy CCM-10.6: Encourage pedestrian travel through the creation of sidewalks and street crossings.

Objective CCM-12: Facilitate goods movement as a means of economic expansion, while protecting residents and visitors from the negative effects typically associated with truck operations and rail service.

Policy-12.2: Ensure that new development projects provide adequate truck loading and unloading facilities.

Objective CCM-13: Ensure that adequate on- and off-street parking is provided throughout Riverside.

Policy CCM-13.1: Ensure that new development provides adequate parking.

Policy CCM-13.2: Accommodate joint use of parking facilities as part of an area plan or site plan, based on the peak parking demands of permitted uses in the planning area.

City of Riverside Bicycle Master Plan

The City’s Bicycle Master Plan provides a blueprint for bicycle transportation and recreation in the city of Riverside. A Bicycle Master Plan Update, adopted May 22, 2007, enhanced and expanded the existing bikeway network, connect gaps, address constrained areas and improve intersections, provide for greater local and regional connectivity, and encourage more residents to bicycle. In March 2012, the Riverside Bicycle Master Plan Update Addendum was published, and provided an updated inventory of all bicycle infrastructure and non-infrastructure improvements implemented over the past five years, presents current and future bicycle and walking impact analysis, and contains an updated list of recommended bicycle improvements.

4.12.2 Impact Analysis

a. Methodology and Significance Thresholds

The analysis of transportation system impacts employs a variety of methodologies, based on empirical research conducted by the Transportation Research Board (a division of the National Research Council of the United States) and other authorities. City of Riverside policy recognizes the implementation of fair share contributions as appropriate and sufficient mitigation for impacts to local roadways. The methodologies, analysis scenarios, and significance thresholds employed for the transportation and traffic impact analyses are described in the subsections below.

Significance Thresholds

Impacts related to transportation and circulation would be potentially significant if development facilitated by the proposed project would:

1. Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit.
2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?
5. Result in inadequate emergency access?
6. Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?

The Initial Study (Appendix A) determined that the proposed project could result in potentially significant impacts related to potential conflicts with an applicable plan, ordinance or policy (criterion 1) and potential conflicts with an applicable congestion management program (criterion 2). As such, an analysis of these issues is included in this section of the EIR. The Initial Study found no potentially significant impacts related to criteria 3 through 6; therefore, these issues are not studied further herein. For a discussion of these impacts, refer to Section 4.15, *Impacts Found to be Less Than Significant.*

Intersection and Roadway Standards for Determining Impact Significance

To determine whether the addition of project traffic at a study location would result in a direct project-specific traffic impact, the following criteria will be used:

- A significant impact would occur if the pre-project condition at an intersection is at or better than LOS D (i.e., acceptable LOS), and project- generated traffic, as measured by 50 or more peak hour trips, causes deterioration below LOS D (i.e., unacceptable LOS).

- A significant impact would occur if the addition of project traffic increases delay by 10 seconds or more at an intersection operating at LOS A or B, by eight seconds or more at an intersection operating at LOS C, by 5 seconds or more at an intersection operating at LOS D, by 2 seconds or more at an intersection operating at LOS E, or by one second or more at intersection operating at LOS F.
- A significant impact would occur if project-related traffic causes a roadway to operate at unacceptable LOS. The City considers LOS D to be the upper limit of satisfactory operations for arterial streets, and LOS C to be the upper limit for local and collector streets in residential areas. At some locations, such as portions of Arlington Avenue/Alessandro Boulevard, Van Buren Boulevard, La Sierra Avenue, and selected freeway interchanges, LOS E may be acceptable. Along key freeway-feeder segments during peak commute hours, LOS F may be expected.

Analysis Scenarios

EXISTING CONDITIONS

Baseline traffic data is included to characterize traffic conditions as they existed at the time of the preparation of this analysis.

CONSTRUCTION TRAFFIC

Construction of the proposed project is expected to occur over approximately two years, and would comply with the City of Riverside Municipal Code Section 7.35.020 and would not occur between the hours of 7:00 PM and 7:00 AM on weekdays, between the hours of 5:00 PM and 8:00 AM on Saturdays, or at any time on Sundays. Construction activity would consist of phased site preparation and grading, building construction, architectural coating, and paving. After clearing the site, site preparation and grading activity would include establishing building pads and preparing for building construction. Construction equipment for the project would include tractors, bulldozers, graders, and scrapers for the site preparation and grading, and cranes, forklifts, welders, rollers, and other paving equipment for building construction and paving. Large equipment would be brought to the site for the duration of the phase it is scheduled to be used for and then removed from the site. Heavy trucks and equipment would access the site from I-215 via West La Cadena Drive.

Traffic operations during the proposed construction phase of the project are not expected to result in traffic deficiencies related to trips from construction employees, export of materials, and import of construction materials, etc. Prior to construction, a City-approved Construction Traffic Management Plan addressing potential construction-related traffic detours and disruptions would be implemented, consistent with standard conditions of approval. The City's standard condition of approval language requires provisions for any traffic control, lane closures, signs and barricades required for the work in conformance with the most current editions of the Caltrans "Manual of Traffic Controls" and "Uniform Sign Charts" for Construction and Maintenance Work Zones and subject to the approval of the City Engineer. The Construction Management Plan would be required to meet these criteria and would ensure that construction impacts are less than significant.

PROJECT TRAFFIC

Development of project traffic generation estimates involves the use of a three-step process: trip generation, trip distribution, and traffic assignment. For the purposes of this report, the terms "traffic" and "trips" generally refer to vehicle trips.

PROJECT TRAFFIC GENERATION

Trip generation represents the amount of traffic that is both attracted to and produced by a development. Traffic generation for a specific project is derived by forecasting the amount of traffic associated with specific land uses being proposed for a given development.

The project consists of apartments, hotels, and commercial retail (including a shopping center, high-turnover restaurant, fast food with drive-through, and a gas station). Trip generation rates used to estimate project-generated traffic are based upon information from the Institute of Transportation Engineers Trip Generation Manual, 10^{th} Edition.

Total project trip numbers were reduced by accounting for internal trips (i.e., trips generated to and from the site by the same vehicle) and pass-by trips (i.e., trips generated by vehicles already passing by on nearby roads). These reductions are consistent with the City's traffic study guidelines.

Additionally, as described in Section 4.1 of the TIA, the trip generation rates are conservative compared to the currently proposed project. The currently proposed project includes the addition of RV parking and elimination of four vehicle-fueling stations, which results in a net decrease in trip generation compared to the project evaluated in the TIA. The analysis that follows is based on the TIA, which evaluated a project that would generate more trips than the proposed project, and therefore this traffic analysis is conservative.

PROJECT TRAFFIC DISTRIBUTION

The project trip distribution represents where traffic going to and from the project site would likely be allocated. Trip distribution patterns are influenced heavily by a project's geographical location, proposed land use, the location of surrounding uses, existing and proposed roadway connections, and proximity to the regional freeway system. Separate trip distributions were generated for the proposed residential, hotel, and commercial retail uses for Opening Year (2022) and 2040 conditions. The City's Travel Demand Model was used to develop the Project trip distribution and represents a localized version of the regional SCAG model. Exhibits 4-1 through 4-3 of the TIA illustrate the trip distribution pattern for the project

PROJECT TRAFFIC ASSIGNMENT

The assignment of traffic from the project site to the adjoining roadway system is based upon the project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time the project is operational. Exhibit 4-4 of the TIA shows the project-generated traffic.

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Estimated project traffic was added to the existing (Year 2017) traffic volumes to assess Existing plus Project traffic volumes. Existing plus Project traffic volumes were analyzed to determine the projected volume-to-capacity (V/C) ratios or delay and LOS for each of the analyzed intersections under this scenario.

OPENING YEAR (2022) WITHOUT PROJECT CONDITIONS

Opening Year (2022) conditions analysis determines the potential near-term circulation system deficiencies. At the request of City and Caltrans staff, Opening Year (2022) forecasts were derived from the SCAG regional traffic model for Year 2019 then interpolated to 2022 based on the model growth between 2019 and 2040. A list of cumulative, traffic-inducing projects was compiled from information provided by the City, City of Colton, City of Jurupa Valley, and County of Riverside, consistent with other recent studies in the study area. Opening Year (2022) peak hour forecasts were further refined using the model derived forecasts, base (validation) year model forecasts, and existing peak hour traffic count data collected in September 2017.

Opening Year (2022) traffic volumes were compared to Existing volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Existing and Opening Year (2022) traffic conditions not accounted for by the traffic generated by approved/pending development projects and ambient growth rates assumed between Existing and Opening Year conditions.

OPENING YEAR (2022) WITH PROJECT CONDITIONS

Project traffic was added to the Opening Year (2022) Without Project traffic forecasts to create Opening Year (2022) With Project traffic conditions.

b. Project Impacts and Mitigation Measures

Threshold:	1) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? 2) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact T-1 UNDER EXISTING CONDITIONS, FOUR PROJECT STUDY AREA INTERSECTIONS ARE OPERATING AT UNACCEPTABLE LOS. UNDER EXISTING PLUS PROJECT CONDITIONS, THE PROPOSED PROJECT WOULD RESULT IN ADDITIONAL IMPACTS TO THESE INTERSECTIONS AS WELL AS RESULT IN UNACCEPTABLE LOS AT TWO ADDITIONAL INTERSECTIONS. THERE WOULD BE LESS THAN SIGNIFICANT IMPACTS WITH MITIGATION INCORPORATED.

The project would generate approximately 10,446 net daily trips, including 701 and 900 trips in the AM and PM peak hours, respectively. Table 4.12-5 shows the trip generation for the project.

Table 4.12-5 Project Trip Generation

Land Use	Size[2]	ITE Code	Daily Trips[3]	Estimated Trip Generation[1] AM Peak Hour Trips In	Out	Total	PM Peak Hour Trips In	Out	Total
Proposed Land Uses Reduction[4]									
Apartments	482 du	220	3,528	51	23	74	170	100	270
Internal capture (-10%)			(353)	(5)	(2)	(7)	(17)	(10)	(27)
Subtotal Trips			**3,175**	**46**	**21**	**67**	**153**	**90**	**243**
Hotel	229 room	310	1,914	64	44	108	70	67	137
Internal capture (-10%)			(191)	(6)	(4)	(11)	(7)	(7)	(14)
Subtotal Trips			**1,723**	**58**	**40**	**97**	**63**	**60**	**123**
Shopping Center	18.500 TSF	820	698	11	7	18	34	37	71
Internal capture (-10%)			(70)	(2)	(1)	(3)	(4)	(4)	(8)
Pass-By Reduction (-25%)			(157)	0	0	0	(8)	(8)	(16)
Subtotal Trips			**471**	**9**	**6**	**15**	**22**	**25**	**47**
High-Turnover Restaurant	22.000 TSF	932	2,468	120	98	218	133	82	215
Internal capture (-10%)			(247)	(12)	(10)	(22)	(14)	(9)	(23)
Pass-By Reduction (-25%)			(555)	0	0	0	(18)	(18)	(36)
Subtotal Driveway Trips			**1,666**	**108**	**88**	**196**	**101**	**55**	**156**
Fast-Food with Drive-Thru	4.000 TSF	934	1,884	82	79	161	68	63	131
Internal capture (-10%)			(189)	(9)	(8)	(17)	(7)	(7)	(14)
Pass-By Reduction (-25%)[5]			(424)	(18)	(18)	(36)	(14)	(14)	(28)
Subtotal Driveway Trips			**1,271**	**55**	**53**	**108**	**47**	**42**	**89**
Gas Station with Market and Car Wash	16 VFP	945	3,171	162	162	324	179	179	358
Internal capture (-10%)			(318)	(17)	(17)	(34)	(18)	(18)	(36)
Pass-By Reduction (-25%)[5]			(713)	(36)	(36)	(72)	(40)	(40)	(80)
Subtotal Driveway Trips			**2,140**	**109**	**109**	**218**	**121**	**121**	**242**
Total Net External Trips			**10,446**	**385**	**316**	**701**	**507**	**393**	**900**

[1] Since the TIA was initial drafted, the project has undergone minor changes, including a reduction of four gas station fueling positions and the addition of RV parking (detailed in Section 4.1 of the TIA). Due to these changes, this analysis is conservative and trip generation and resulting impacts may be overestimated.

[2] du = Dwelling Unit; TSF = thousand square feet, VFP = vehicle fueling positions

[3] Source for trip generation rates: *Trip Generation Manual, 10th Edition*, Institute of Transportation Engineers (ITE), 2017.

[4] Consistent with the City's traffic study guidelines

Source: Table 4-1 of the TIA, Appendix L

Project Traffic Conditions and Level of Service

Table 4.12-6 summarizes the intersection LOS analysis under Existing and Existing plus Project conditions.

As indicated, the following three intersections currently operate at unacceptable LOS under existing conditions. Implementation of the project will contribute to additional impacts at these intersections.

- Orange Street and Oakley Avenue/SR 60 Westbound Off-Ramp (#11) – LOS E PM peak hour only
- West La Cadena Drive and Interchange Street/I-215 Southbound Ramps (#14) – LOS E PM peak hour only
- East La Cadena Drive and I-215 Northbound Ramps (#16) – LOS F AM and PM peak hours

In addition, with the addition of project traffic, the following project study area intersections are anticipated to operate at unacceptable LOS, or result in an unacceptable increase in delay:

- Main Street and Strong Street (Intersection #3) - delay increase of more than 10.0 seconds in the PM peak hour
- Orange Street and Strong Street (#8) – LOS E PM peak hour only

The remaining study intersections operate at LOS D or better under Existing and Existing plus project peak-hour traffic conditions.

Mitigation Measures

To reduce project impacts to traffic operations at intersections #3, #8, 11, #14, and #16, prior to the issuance of building permits, the applicant shall implement Mitigation Measures T-1 through T-3 and pay the project fair share for mitigation measures T-4 and T-5, as agreed to by the City and the applicant.

T-1 Main Street and Strong Street (Intersection #3)

Restripe the eastbound and westbound approaches to provide a left turn lane and a shared through-right turn lane. A conceptual striping plan is provided in Appendix 1.2 of the TIA.

T-2 Orange Street and Strong Street (Intersection #8)

Install a traffic signal.

Table 4.12-6 Existing (2017) Plus Project Intersection Level of Service Analysis

			Existing (2017)				Existing (2017) + Project							Mitigated Conditions			
			Delay[1]		LOS		Delay		LOS		Change in Delay			Delay		LOS	
No.	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	Significant Impact?[4]	AM	PM	AM	PM
1	Riverside Avenue/Main Street and Placentia Lane	CSS	17.4	20.7	C	C	18.9	26.3	C	D	1.5	5.6	No	–	–	–	–
2	Main Street and Columbia Avenue	TS	19.2	21.2	B	C	19.7	21.7	B	C	0.5	0.5	No	–	–	–	–
3	Main Street and Strong Street	TS	31.8	12.3	C	B	39.4	51.5	D	D	7.6	**39.2**	**Yes**	12.6	12.8	B	B
4	Main Street and SR 60 WB On-Ramp/Oakley Avenue	TS	23.1	29.5	C	C	24.5	33.7	C	C	1.4	4.2	No	–	–	–	–
5	Main Street and SR 60 EB Ramps	TS	16.3	18.6	B	B	16.6	22.9	B	C	0.3	4.3	No	–	–	–	–
6	Main Street and Russell Street	CSS	14.2	17.4	B	C	16.6	21.9	C	C	2.4	4.5	No	–	–	–	–
7	Orange Street and Columbia Avenue	TS	13.3	14.8	B	B	13.6	16.0	B	B	0.3	1.2	No	–	–	–	–
8	Orange Street and Strong Street	AWS	10.8	17.0	B	C	13.5	**37.5**	B	**E**	2.7	**20.5**	**Yes**	10.3	10.2	B	B
9	Orange Street and Driveway 1	CSS/**TS**	14.4	12.7	B	B	18.2	22.8	B	C	–	–	No	–	–	–	–
10	Orange Street and Driveway 2	**CSS**	Future Intersection				10.2	12.0	B	B	–	–	No	–	–	–	–
11	Orange Street and Oakley Avenue/SR 60 WB Off-Ramp																
	Existing Lanes	AWS	19.2	**38.9**	C	**E**	33.3	**111.1**	D	**F**	**14.1**	**72.2**	**Yes**	14.0	17.4	B	B
	Proposed Lanes[3]	AWS	Not Applicable				**45.2**	**131.0**	**E**	**F**	**–**	**–**	**Yes**	12.9	15.4	B	B
12	Orange Street and Russell Street	AWS	14.3	14.4	B	B	21.2	24.5	C	C	6.9	10.1	No	–	–	–	–
13	Primer Street and Columbia Avenue	TS	12.3	13.7	B	B	12.6	14.6	B	B	0.3	0.9	No	–	–	–	–
14	West La Cadena Drive and Interchange Street/I-215 SB Ramps	AWS	25.9	**36.0**	D	**E**	33.2	**52.1**	D	**F**	**7.3**	**16.1**	**Yes**	37.4	39.6	D	D
15	West La Cadena Drive and Driveway 3 and Strong Street	UC/**AWS**	0.0	0.0	A	A	8.0	8.9	A	A	–	–	No	–	–	–	–
16	East La Cadena Drive and I-215 NB Ramps	CSS	**>200.0**	**78.1**	**F**	**F**	**>200.0**	**141.4**	**F**	**F**	**>1.0**	**63.3**	**Yes**	15.6	14.8	B	B
17	East La Cadena Drive and Columbia Avenue	TS	35.3	19.5	D	B	39.5	22.0	D	C	4.2	2.5	No	–	–	–	–

[1] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All Way Stop; CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled; **bold underline** = Improvement

[3] The proposed lane geometrics for Mitigation Measure T-3 include constructing a dedicated 200-foot right turn lane for the westbound approach.

[4] Significant impact occurs when the addition of project-related trips causes either peak hour LOS to degrade from acceptable LOS (LOS A through LOS D) to unacceptable levels (LOS E or LOS F) or the peak hour delay is increased by the following values:

LOS A/B = 10 seconds or more

LOS C = 8 seconds or more

LOS D = 5 seconds or more

LOS E = 2 seconds or more

LOS F = 1 second or more

Source: Table 5-1 and Table 5-4 of the TIA, Appendix L

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T-3 Orange Street and Oakley Avenue/SR 60 Westbound Ramps (Intersection #11)

Install a traffic signal, construct a northbound left turn lane, and construct a westbound right turn lane with a minimum of 200 feet of storage.

T-4 West La Cadena Drive and Interchange Street/I-215 Southbound Ramps (Intersection #14)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of signalization, a northbound left turn lane, and a southbound left turn lane.

T-5 East La Cadena Drive and I-215 Northbound Ramps (Intersection #16)

Prior to the issuance of building permits, the applicant shall contribute its fair-share amount for the recommended improvements at this intersection, which consist of signalization, restriping the northbound through lane as a shared through-left lane and construction a second receiving lane on the on-ramp.

Significance After Mitigation

Implementation of Mitigation Measure T-1 through T-3 would reduce impacts at Intersections #3, #8, and #11 to less than significant levels, as shown in Table 4.12-6. In addition, the City of Riverside recognizes fair share contributions to be considered appropriate mitigation in order to reduce project-specific impacts to less than significant levels. These programs are recognized as City policy decisions and assumed to be implemented as soon as fully-funded. Therefore, Mitigation Measures T-4 and T-5 would reduce impacts at Intersections #14 and #16 to less than significant levels, also shown in Table 4.12-6.

Threshold:	1) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? 2) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact T-2 UNDER EXISTING CONDITIONS, ALL ROADWAY SEGMENTS OPERATE AT AN ACCEPTABLE LOS. UNDER EXISTING PLUS PROJECT CONDITIONS, ALL ROADWAY SEGMENTS WOULD CONTINUE TO OPERATE AT AN ACCEPTABLE LOS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Under Existing Plus Project conditions, the project would add 6,113 vehicles per day to Roadway Segment #1; 110 vehicles per day to Roadway Segment #2; and 1,828 vehicles per day Roadway Segment #3. As shown in Table 4.12-7 under the Existing plus Project scenario all roadway segments would continue to operate acceptably. Additionally, with the implementation of Mitigation Measure

Table 4.12-7 Existing Plus Project Roadway Segment Level of Service

			Existing (2017) Conditions				Existing Plus Project Conditions				Acceptable
No.	Roadway	Segment Limits	Capacity[1]	Vol.[2]	V/C[3]	LOS[4]	Capacity	Vol.	V/C	LOS[4]	LOS
1	Orange Street	North of Oakley Avenue	12,500	6,942	0.56	A	12,500	13,055	0.73	C	D
2	Strong Street	East of Orange Street	12,500	2,496	0.20	A	12,500	2,606	0.21	A	D
3	West La Cadena Drive	North of Strong Street	12,500	1,850	0.15	A	12,500	3,678	0.29	A	D

[1] These maximum roadway capacities have been extracted from the following source: City of Riverside Traffic Impact Analysis Preparation Guide (Exhibit D) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] Vol. = Volume

[3] V/C = Volume-to-capacity

[4] LOS = Level of Service

[5] The additional capacity along Orange Street would result from the implementation of Mitigation Measure T-3, described above under Impact T-2, which includes the construction of a second northbound lane along Orange Street.

Source: Table 5-2 of the TIA, Appendix L

T-3, Roadway Segment #1 would increase its capacity and impacts would be further reduced. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Less than significant without mitigation.

Threshold:	1) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? 2) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact T-3 UNDER OPENING YEAR (2022) WITHOUT PROJECT CONDITIONS, SIX PROJECT STUDY AREA INTERSECTIONS WOULD OPERATE AT UNACCEPTABLE LOS. UNDER OPENING YEAR (2022) WITH PROJECT CONDITIONS, THE PROPOSED PROJECT WOULD RESULT IN ADDITIONAL IMPACTS TO THESE INTERSECTIONS AS WELL AS RESULT IN UNACCEPTABLE LOS AT TWO ADDITIONAL INTERSECTIONS. IMPLEMENTATION OF MITIGATION MEASURES WOULD REQUIRE THE PROJECT TO PAY A FAIR SHARE TOWARD INTERSECTION IMPROVEMENTS. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Table 4.12-8 summarizes the intersection LOS analysis under Opening Year (2022) without Project and Opening Year (2022) With Project conditions. As shown, the following study area intersections are anticipated to operate at unacceptable LOS, or result in an unacceptable increase in delay, without the addition of project traffic. Implementation of the project would contribute to additional impacts at these intersections:

- Riverside Avenue/Main Street and Placentia Lane (#1) - LOS E AM peak hour; LOS F PM peak hour
- Main Street and Strong Street (#3) – LOS E PM peak hour only
- Orange Street and Strong Street (#8) - LOS E PM peak hour only
- Orange Street and Oakley Avenue/SR 60 Westbound Off-Ramp (#11) - LOS F PM peak hour only
- West La Cadena Drive and Interchange Street/I-215 Southbound Ramps (#14) – LOS E AM peak hour; LOS F PM peak hour
- East La Cadena Drive and I-215 Northbound Ramps (#16) – LOS F AM and PM peak hours

In addition, with the addition of project traffic, the following project study area intersections are anticipated to operate at unacceptable LOS, or result in an unacceptable increase in delay:

- Orange Street and Russell Street (#12) – LOS E AM peak hour; LOS F PM peak hour
- East La Cadena Drive and Columbia Avenue (#17) – LOS E AM peak hour only

The remaining study intersections would operate acceptably under both Opening Year (2022) Without Project and Opening Year (2022) With Project peak hour traffic conditions.

Mitigation Measures

T-6 Riverside Avenue/Main Street and Placentia Lane (Intersection #1)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of installation of a traffic signal.

T-7 Orange Street and Russell Street (Intersection #12)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of installation of a traffic signal, and construction of northbound, southbound, eastbound, and westbound left turn lanes.

T-8 East La Cadena Drive and Columbia Avenue (Intersection #17)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of modifying the traffic signal to implement overlap phasing on the westbound right turn lane.

Significance After Mitigation

Implementation of Mitigation Measure T-6 through T-8 would reduce impacts at Intersections #1, #12, and #17 to less than significant levels, as shown in Table 4.12-8. The City of Riverside recognizes fair share contributions to be considered appropriate mitigation in order to reduce project-specific impacts to less than significant levels. These programs are recognized as City policy decisions and assumed to be implemented as soon as fully-funded. Therefore, Mitigation Measures T-6 through T-8 would reduce impacts at Intersections #1, #12, and #17 to less than significant.

Table 4.12-8 Opening Year (2022) + Project Intersection Level of Service Analysis

			2022 Without Project				2022 With Project							Mitigated Conditions			
			Delay[1]		LOS		Delay		LOS		Change in Delay		Significant Impact?[4]	Delay		LOS	
No.	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		AM	PM	AM	PM
1	Riverside Avenue/Main Street and Placentia Lane	CSS	**43.4**	**100.7**	**E**	**F**	**51.7**	**156.3**	**F**	**F**	**8.3**	**55.6**	**Yes**	12.4	14.1	B	b
2	Main Street and Columbia Avenue	TS	20.5	22.9	C	C	21.2	23.4	C	C	0.7	0.5	No	–	–	–	–
3	Main Street and Strong Street	TS	45.8	**75.3**	D	**E**	53.7	**84.2**	D	**F**	**7.9**	**8.9**	**Yes**	13.1	13.5	B	B
4	Main Street and SR 60 WB On-Ramp/Oakley Avenue	TS	24.4	29.3	C	C	26.1	35.9	C	D	1.7	6.6	No	–	–	–	
5	Main Street and SR 60 EB Ramps	TS	16.8	20.0	B	B	17.5	24.4	B	C	0.7	4.4	No	–	–	–	
6	Main Street and Russell Street	CSS	16.1	20.3	C	C	21.0	27.9	C	D	4.9	7.6	No	–	–	–	
7	Orange Street and Columbia Avenue	TS	13.9	16.8	B	B	14.3	18.4	B	B	0.4	1.6	No	–	–	–	
8	Orange Street and Strong Street	AWS	13.2	**39.9**	B	**E**	19.2	**91.6**	C	**F**	6.0	**51.7**	**Yes**	10.9	12.7	B	
9	Orange Street and Driveway 1	CSS/**TS**	18.0	15.0	C	C	20.5	28.8	C	C	–	–	No	–	–	–	
10	Orange Street and Driveway 2	**CSS**	Future Intersection				10.5	12.7	B	B	–	–	No				
11	Orange Street and Oakley Avenue/SR 60 WB Off-Ramp																
	Existing Lanes	AWS	29.1	**76.1**	D	**F**	**56.1**	**163.7**	**F**	**F**	**27.0**	**87.6**	**Yes**	15.8	21.1	B	C
	Proposed Lanes[3]	AWS	Not Applicable				**79.5**	**216.3**	**F**	**F**	–	–	**Yes**	14.3	18.0	B	B
12	Orange Street and Russell Street	AWS	20.0	21.5	C	C	**39.4**	**52.2**	**E**	**F**	**19.4**	**30.7**	**Yes**	10.8	14.1	A	B
13	Primer Street and Columbia Avenue	TS	13.3	15.3	B	B	14.1	16.5	B	B	0.8	1.2	No	–	–	–	–
14	West La Cadena Drive and Interchange Street/I-215 SB Ramps	AWS	**38.3**	**65.1**	**E**	**F**	**50.2**	**94.3**	**F**	**F**	**11.9**	**29.2**	**Yes**	47.7	54.9	D	D
15	West La Cadena Drive and Driveway 3 and Strong Street	UC/**AWS**	0.0	0.0	A	A	8.1	9.2	A	A	–	–	No	–	–	–	–
16	East La Cadena Drive and I-215 NB Ramps	CSS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	**>1.0**	**>1.0**	**Yes**	16.0	15.4	B	B
17	East La Cadena Drive and Columbia Avenue	TS	54.0	22.6	D	C	**59.3**	25.7	**E**	C	**5.3**	3.1	No	26.9	24.5	C	C

[1] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All Way Stop; CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled; **bold underline** = Improvement

[3] The proposed lane geometrics for Mitigation Measure T-3 include constructing a dedicated 200-foot right turn lane for the westbound approach.

[4] Significant impact occurs when the addition of project-related trips causes either peak hour LOS to degrade from acceptable LOS (LOS A through LOS D) to unacceptable levels (LOS E or LOS F) or the peak hour delay is increased by the following values:

LOS A/B = 10 seconds or more

LOS C = 8 seconds or more

LOS D = 5 seconds or more

LOS E = 2 seconds or more

LOS F = 1 second or more

Source: Table 6-1 and 6-4 of the TIA, Appendix L

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Threshold:	1) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? 2) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Impact T-4 UNDER OPENING YEAR (2022) WITHOUT PROJECT CONDITIONS, ALL ROADWAY SEGMENTS WOULD OPERATE AT AN ACCEPTABLE LOS. UNDER OPENING YEAR (2022) WITH PROJECT CONDITIONS, ALL ROADWAY SEGMENTS WOULD CONTINUE TO OPERATE AT AN ACCEPTABLE LOS. THEREFORE, IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Table 4.12-9 provides a summary of the Opening Year (2022) conditions roadway segment capacity analysis based on the applicable roadway segment capacity. Under Opening Year (2022) With Project conditions, the project would add 6,113 vehicles per day to Roadway Segment #1; 110 vehicles per day to Roadway Segment #2; and 1,828 vehicles per day Roadway Segment #3. As shown on Table 4.12-9, all study area roadway segments, would continue to operate at an acceptable LOS under Opening Year (2022) With Project conditions. Additionally, with the implementation of Mitigation Measure T-3, Roadway Segment #1 would increase its capacity and impacts would be further reduced. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Less than significant without mitigation.

4.12.3 Cumulative Impacts

Analysis Scenarios

2040 Without Project

This scenario includes the refined post-processed traffic volumes obtained from the SCAG regional traffic model that have been modified to reflect 2040 traffic conditions plus cumulative development traffic. The weekday daily trips and weekday AM and PM peak hour volumes under this scenario are shown on Exhibit 7-1 of the TIA (Appendix L).

The traffic forecasts reflect the area-wide growth anticipated between Existing (2017) conditions and 2040 Without Project conditions. As with the Opening Year (2022) Without Project scenario, the 2040 Without Project peak hour forecasts were refined and checked for minimum growth. Post processing worksheets for 2040 Without Project traffic conditions are provided in Appendix 4.3 of the TIA (Appendix L).

Table 4.12-9 Opening Year (2022) With Project Roadway Segment Level of Service

			Opening Year (2022) without Project Conditions				Opening Year (2022) with Project Conditions				Acceptable
No.	Roadway	Segment Limits	Capacity[1]	Vol.[2]	V/C[3]	LOS[4]	Capacity	Vol.	V/C	LOS[4]	LOS
1	Orange Street	North of Oakley Avenue	12,500	8,386	0.67	B	12,500	14,499	0.81	D	D
2	Strong Street	East of Orange Street	12,500	2,881	0.23	A	12,500	2,991	0.24	A	D
3	West La Cadena Drive	North of Strong Street	12,500	2,024	0.16	A	12,500	3,852	0.31	A	D

[1] These maximum roadway capacities have been extracted from the following source: City of Riverside Traffic Impact Analysis Preparation Guide (Exhibit D) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] Vol. = Volume

[3] V/C = Volume-to-capacity

[4] LOS = Level of Service

Source: Table 5-2 of the TIA, Appendix L

The 2040 conditions analysis is used to determine if improvements funded through regional transportation mitigation fee programs or other approved funding mechanisms can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the lead agency. If the programmed improvements can provide the target LOS, then payment of requisite fees into established fee programs would satisfy the project's proportional mitigation requirements and would be considered as feasible cumulative mitigation.

The currently adopted SCAG 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the unincorporated areas of the City identifies projected growth in population of 310,700 in 2012 to 386,600 in 2040, or a 24.4 percent increase over the 28-year period. The change in population equates to roughly a 0.78 percent growth rate, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 28.4 percent, or 0.90 percent annual growth rate. Finally, growth in employment over the same 28-year period is projected to increase by 67.08 percent, or a 1.85 percent annual growth rate.

Based on a comparison of existing traffic volumes to the 2040 forecasts, the average growth rate is estimated to be 1.68 percent per year between Existing (2017) and 2040 traffic conditions. The annual growth rate applied to each individual intersection ranges from 1.29 percent to 2.47 percent. Therefore, the traffic forecasts utilized for the purposes of this analysis would appear to approximate the anticipated regional growth conservatively in traffic volumes in the City of Riverside for 2040 traffic conditions. As such, the growth in traffic volumes assumed in this analysis would tend to overstate, as opposed to understate, the potential impacts to the cumulative traffic and circulation setting.

2040 With Project

Project traffic has been added to the 2040 Without Project traffic forecasts for 2040 With Project traffic conditions. The weekday and weekday AM and PM peak hour volumes under this scenario are shown in Exhibit 7-2 of the TIA (Appendix L).

Cumulative Impacts to Intersections

Table 4.12-10 summarizes the intersection LOS analysis under 2040 Without Project and 2040 With Project conditions. As shown, the following study area intersections are anticipated to operate at unacceptable LOS, without the addition of project traffic:

- Riverside Avenue/Main Street and Placentia Lane (#1) – LOS F AM and PM peak hours
- Main Street and Strong Street (#3) – LOS E AM peak hour; LOS F PM peak hour
- Orange Street and Strong Street (#8) – LOS F PM peak hour only
- Orange Street and Oakley Avenue/SR 60 Westbound Off-Ramp (#11)[2] – LOS E AM peak hour; LOS F PM peak hour
- Orange Street and Russell Street (#12) – LOS E AM peak hour; LOS F PM peak hour

[2] The TIA includes a freeway off-ramp queuing analysis consistent with Caltrans standards. This intersection would not provide enough stacking to meet the 95th percentile stacking distance in the PM peak hour under the 2040 Without Project scenario, and the 2040 With Project scenario would result in the need for additional stacking. See Section 2.4 and Table 7-3 of the TIA, Appendix L. As shown in Table 7-5 of Appendix L, with the incorporation of improvements associated with the project (i.e., Mitigation Measures T-2 through T-12), the intersection would be able to accommodate 95th percentile peak hour queues. Refer to Appendix L for additional information on freeway off-ramp queuing analysis.

- West La Cadena Drive and Interchange Street/I-215 Southbound Ramps (#14) – LOS F AM and PM peak hours
- East La Cadena Drive and I-215 Northbound Ramps (#16)[3] – LOS F AM and PM peak hours
- East La Cadena Drive and Columbia Avenue (#17) – LOS F AM peak hour only

Implementation of the project would contribute to additional impacts at these intersections. In addition, with the addition of project traffic, the following project study area intersections are anticipated to operate at unacceptable LOS, or result in an unacceptable increase in delay:

- Main Street and SR 60 EB Ramps (Intersection #5) – delay increase of more than 8.0 seconds in the AM and PM peak hours
- Main Street and Russell Street (Intersection #6) – delay increase of more than 5.0 seconds in the PM peak hour

The remaining study intersections would operate acceptably under both 2040 Without Project and 2040 With Project peak hour traffic conditions.

Mitigation Measures

The Applicant shall pay the project fair share for the following improvements:

T-9 Riverside Avenue/Main Street and Placentia Lane (Intersection #1)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of construction of a southbound approach to provide a second left turn lane.

T-10 Main Street and SR 60 EB Ramps (Intersection #5)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of construction of a second southbound left turn lane.

T-11 West La Cadena Drive and Interchange St/I-215 SB Ramps (Intersection #14)

Prior to the issuance of building permits, the applicant shall contribute their fair-share amount for the recommended improvements, which consist of construction of a second southbound left turn lane and the westbound approach to provide a left turn lane.

Significance After Mitigation

Implementation of Mitigation Measures T-9 through T-11 would reduce the project's contribution to cumulative impacts to intersections #1, #5, and #14 to less than significant levels, while mitigation measures T-1, T-2, T-3, T-5, T-7, and T-8 would reduce impacts at intersections #3, #8, #11, #12, #16, and #17 to less than significant levels. The City of Riverside recognizes fair share contributions appropriate mitigation in order to reduce project-specific impacts to less than significant levels. These programs are recognized as City policy decisions and therefore assumed to be implemented

[3] This intersection would not provide enough stacking to meet the Caltrans 95th percentile stacking distance in the AM peak hour in the 2040 Without Project scenario, though the project would not add any required stacking at this location. As shown in Table 7-5 of Appendix L, with the incorporation of improvements associated with the project (i.e., mitigation measure T-2 through T-12), the intersection would be able to accommodate 95th percentile peak hour queues.

Table 4.12-10 2040 Intersection Conditions With and Without Project

			2040 Without Project				2040 With Project							Mitigated Conditions			
			Delay[1]		LOS		Delay		LOS		Change in Delay		Significant Impact?[4]	Delay		LOS	
No.	Intersection	Traffic Control[2]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		AM	PM	AM	PM
1	Riverside Avenue/Main Street and Placentia Lane	CSS	**129.0**	**>200.0**	**F**	**F**	**162.2**	**>200.0**	**F**	**F**	**33.2**	**>1.0**	**Yes**	15.3	23.2	B	C
2	Main Street and Columbia Avenue	TS	24.3	26.3	C	C	25.7	28.1	C	C	1.4	1.8	No	–	–	–	–
3	Main Street and Strong Street	TS	**63.6**	**94.1**	**E**	**F**	**75.1**	**124.9**	**E**	**F**	**11.5**	**30.8**	**Yes**	147	16.4	B	b
4	Main Street and SR 60 WB On-Ramp/Oakley Avenue	TS	42.6	33.6	D	C	45.5	41.4	D	D	2.9	7.8	No	–	–	–	–
5	Main Street and SR 60 EB Ramps	TS	20.8	20.7	C	C	38.8	30.3	D	C	**18.0**	**9.6**	**Yes**	27.3	26.8	C	c
6	Main Street and Russell Street	CSS	18.0	25.0	C	D	19.4	34.2	C	D	1.4	**9.2**	**Yes**	No feasible mitigation			
7	Orange Street and Columbia Avenue	TS	14.7	23.0	B	C	15.6	25.9	B	C	0.9	2.9	No	–	–	–	–
8	Orange Street and Strong Street	AWS	16.1	**82.9**	C	**F**	28.0	**161.6**	D	**F**	**11.9**	**78.7**	**Yes**	11.9	19.6	B	B
9	Orange Street and Driveway 1	CSS/**TS**	21.4	16.2	C	C	23.3	34.3	B	C	–	–	No	–	–	–	–
10	Orange Street and Driveway 2	CSS	Future Intersection				10.7	13.4	B	B	–	–	No	–	–	–	–
11	Orange Street and Oakley Avenue/SR 60 WB Off-Ramp																
	Existing Lanes	AWS	**49.0**	**129.6**	**E**	**F**	**80.1**	**216.9**	**F**	**F**	**31.1**	**87.3**	**Yes**	20.0	32.2	B	C
	Proposed Lanes[3]	AWS	Not Applicable				**101.0**	**275.9**	**F**	**F**	–	–	**Yes**	16.2	23.3	B	c
12	Orange Street and Russell Street	AWS	**44.7**	**55.5**	**E**	**F**	**82.2**	**107.5**	**F**	**F**	**37.5**	**52.0**	**Yes**	12.6	18.7	B	b
13	Primer Street and Columbia Avenue	TS	15.9	19.5	B	B	17.0	21.6	B	C	1.1	2.1	No	–	–	–	–
14	West La Cadena Drive and Interchange Street/I-215 SB Ramps	AWS	**67.9**	**115.4**	**F**	**F**	**86.4**	**145.6**	**F**	**F**	**18.5**	**30.2**	**Yes**	35.7	45.4	D	d
15	West La Cadena Drive and Driveway 3 and Strong Street	UC/AWS	0.0	0.0	A	A	8.3	9.8	A	A	–	–	No	–	–	–	–
16	East La Cadena Drive and I-215 NB Ramps	CSS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	**>1.0**	**>1.0**	**Yes**	18.4	18.3	B	B
17	East La Cadena Drive and Columbia Avenue	TS	**83.1**	34.2	**F**	C	**89.4**	40.5	**F**	D	**6.3**	6.3	**Yes**	38.9	36.1	D	D

[1] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] AWS = All Way Stop; CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled; **bold underline** = Improvement

[3] The proposed lane geometrics include constructing a dedicated 200-foot right turn lane for the westbound approach.

[4] Significant impact occurs when the addition of project-related trips causes either peak hour LOS to degrade from acceptable LOS (LOS A through LOS D) to unacceptable levels (LOS E or LOS F) or the peak hour delay is increased by the following values:

LOS A/B = 10 seconds or more

LOS C = 8 seconds or more

LOS D = 5 seconds or more

LOS E = 2 seconds or more

LOS F = 1 second or more

Source: Table 7-1 and Table 7-4 of the TIA, Appendix L

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as soon as fully funded. However, cumulative impacts to Intersection #6 under 2040 With Project Conditions would be significant and unavoidable, as the installation of a traffic signal and access restrictions at this location are infeasible.

Cumulative Impacts to Roadways

Under 2040 With Project conditions, the project would add 6,113 vehicles per day to Roadway Segment #1; 110 vehicles per day to Roadway Segment #2; and 1,828 vehicles per day Roadway Segment #3. As shown in Table 4.12-11, all the study area roadway segments are anticipated to continue to operate at an acceptable LOS under 2040 conditions with the addition of project traffic, with the exception of Roadway Segment #1.

Table 4.12-11 2040 Roadway Segment Level of Service

No.	Roadway	Segment Limits	2040 Without Project Conditions: Capacity[1]	Vol.[2]	V/C[3]	LOS[4]	2040 With Project Conditions: Capacity	Vol.	V/C	LOS[3]	Acceptable LOS	Mitigated Conditions: Capacity[5]	Vol.	V/C	LOS
1	Orange Street	North of Oakley Avenue	12,500	11,092	0.89	D	12,500	**17,205**	**1.38**	**F**	D	18,000	**17,205**	**0.96**	**E**
2	Strong Street	East of Orange Street	12,500	4,267	0.34	A	12,500	4,377	0.35	A	D	12,500	4,377	0.35	A
3	West La Cadena Drive	North of Strong Street	12,500	2,421	0.19	A	12,500	4,249	0.34	A	D	12,500	4,249	0.34	A

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] These maximum roadway capacities have been extracted from the following source: City of Riverside Traffic Impact Analysis Preparation Guide (Exhibit D) for each applicable roadway type. These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective classifications. Capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic.

[2] Vol. = Volume

[3] V/C = Volume-to-capacity

[4] LOS = Level of Service

[5] The additional capacity along Orange Street would result from the implementation of Mitigation Measure T-3, described above under Impact T-2, which includes the construction of a second northbound lane along Orange Street.

Source: Table 7-2 of the TIA, Appendix L

Mitigation Measures

Mitigation Measure T-3 would provide additional capacity to Roadway Segment #1. No additional mitigation is recommended.

Significance After Mitigation

Implementation of Mitigation Measure T-3 would result in the widening of Orange Street and therefore, increase its capacity.

Roadway capacities are “rule of thumb” estimates for planning purposes, and capacity is affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian and bicycle traffic. Additionally, peak hour intersection operations analysis (as shown in Table 4.12-10), indicates that intersections adjacent to Roadway Segment #1 would operate at acceptable LOS without additional widening. Therefore, the TIA did not identify Roadway Segment #1 as experiencing a significant impact, and no additional improvements were recommended at this location.

References

Riverside, City of. 2017. Traffic Impact Analysis Preparation Guide. City of Riverside Public Works Department. Riverside, CA. December 2017.

Southern California Association of Governments (SCAG). The 2016-2040 Regional Transportation plan/Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life. Adopted April 2016.

____. 2018. Welcome to the Southern California Association of Governments. http://www.scag.ca.gov/Pages/default.aspx. (Accessed October 2018).

Transportation Research Board. 2010. Highway Capacity Manual. Washington, DC.

4.13 Tribal Cultural Resources

This section analyzes the effects of the proposed mixed-use project on tribal cultural resources. The following discussion and analysis includes findings about tribal cultural resources from the Initial Study, included in its entirety as Appendix A. This analysis is based the Phase I Cultural Study prepared by Rincon Consultants and provided as Appendix H. Additionally, the discussion and analysis contained herein is informed by comments received during the NOP public review period.

4.13.1 Setting

a. Regulatory Setting

Federal

Native American Involvement

Several federal and state laws address Native American involvement in the development review process. The most notable of these are the federal Native American Graves Protection and Repatriation Act (1990) and the California Native American Graves Protection and Repatriation Act (2001). These acts ensure that Native American human remains and cultural items be treated with respect and dignity.

State

Senate Bill 18

Enacted on March 1, 2005, Senate Bill (SB) 18 (California Government Code Sections 65352.3 and 65352.4) requires cities and counties to notify and consult with California Native American tribal groups and individuals regarding proposed local land use planning decisions for the purpose of protecting traditional tribal cultural places (sacred sites), prior to adopting or amending a General Plan or designating land as open space. Tribal groups or individuals have 90 days to request consultation following the initial contact.

Assembly Bill 52

California Assembly Bill (AB) 52 of 2014 was enacted in 2015, expanding the California Environmental Quality Act (CEQA) by defining a new resource category: “tribal cultural resources.” AB 52 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (Public Resource Code [PRC] Section 21084.2). It further states the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and that are either:

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)
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 PRC Section 5024.1.

In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments, and to respect the interests and roles of project proponents, it is the intent AB 52 to:

1. Recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities.
2. Establish a new category of resources in CEQA called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation.
3. Establish examples of mitigation measures for tribal cultural resources that uphold the existing mitigation preference for historical and archaeological resources of preservation in place, if feasible.
4. Recognize that California Native American tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated. Because CEQA calls for a sufficient degree of analysis, tribal knowledge about the land and tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources.
5. In recognition of their governmental status, establish a meaningful consultation process between California Native American tribal governments and lead agencies, respecting the interests and roles of all California Native American tribes and project proponents, and the level of required confidentiality concerning tribal cultural resources, at the earliest possible point in CEQA environmental review process, so that tribal cultural resources can be identified, and culturally appropriate mitigation and mitigation monitoring programs can be considered by the decision making body of the lead agency.
6. Recognize the unique history of California Native American tribes and uphold existing rights of all California Native American tribes to participate in, and contribute their knowledge to, the environmental review process pursuant to CEQA.
7. Ensure that local and tribal governments, public agencies, and project proponents have information available, early in CEQA environmental review process, for purposes of identifying and addressing potential adverse impacts to tribal cultural resources and to reduce the potential for delay and conflicts in the environmental review process.
8. Enable California Native American tribes to manage and accept conveyances of, and act as caretakers of, tribal cultural resources.
9. Establish that a substantial adverse change to a tribal cultural resource has a significant effect on the environment.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. AB 52 requires lead agencies to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

Local

City of Riverside General Plan 2025

The Historic Preservation Element of the General Plan 2025 contains policies related to the historic and prehistoric cultural resources in the City of Riverside (City). In addition to the objectives and policies relevant to cultural resources provided in Table 4.4-1 in Section 4.4, *Cultural Resources*, the following policy of the Historic Preservation Element would also apply to the proposed project:

> **Policy HP-4.3:** The City shall work with the appropriate tribe to identify and address, in a culturally appropriate manner, cultural resources and tribal sacred sites through the development review process (City of Riverside 2012).

b. Existing Tribal Resource Setting

The project site is situated in an area near the boundaries of several Native American groups identified by anthropologists in the early 20th century (Kroeber 1907). The historically-identified territories occupied by the Cahuilla, Gabrieleño, Luiseño, and Serrano all exist within a 15- to 20-mile range of the project site. Section 4.4 *Cultural Resources* and the Cultural Resources Assessment (Appendix H) provide an ethnographic overview of the four tribes.

Review of previously recorded resources and results of a pedestrian field survey by an archaeologist did not reveal findings of significant tribal cultural resources present on the project site. Though there are no known tribal cultural resources present on the project site, the project requires discretionary review by the City of Riverside and includes a request for a General Plan land use designation amendment. Therefore, notification of Native American tribes in the vicinity of the project site was required for this project under both SB 18 and AB 52.

In present day, there are 9 Native American tribes in the vicinity of the project site, including:

- Agua Caliente Band of Cahuilla Indians
- Cahuilla Band of Indians
- Gabrieleño Band of Mission Indians
- Morongo Band of Mission Indians
- Pechanga Cultural Resources Department
- Rincon Band of Luiseño Indians
- San Gabriel Band of Mission Indians
- San Manuel Band of Mission Indians
- Soboba Band of Luiseño Indians

4.13.2 Impact Analysis

a. Methodology and Significance Thresholds

Potential impacts on tribal cultural resources are analyzed based on the potential for the project to impact any tribal cultural resources during construction or operation. The significance of a tribal cultural resource and subsequent significance of any impact is determined by, among other things, consideration of whether or not that resource has heritage value to California Native Americans. Further, this impact analysis is also based on consultations with the interested tribe leaders as discussed above.

In March 2018, the City of Riverside distributed SB 18 and AB 52 consultation letters for the proposed project, including project information and a map, to each of the nine Native American tribes near the project area. The Morongo Band of Mission Indians and the Rincon Band of Luiseño Indians are the only tribes that requested government-to-government consultation. The tribes also requested they receive copies of any archaeological documentation and be given notification prior to any ground disturbances, including construction activities. The City communicated with these two tribes about the project via phone and email. Representatives from both tribes have been added to the list of groups to be notified when project documents are ready for public review, and they will be notified before any ground-disturbing activities commence for the project. A copy of the City's SB 18 and AB 52 consultation letters are included in Appendix I. Tribal consultation between the two tribes and the City concluded in September 2018.

The discussion of tribal cultural resources is based on consultations with interested Native American tribal leaders and lead by the City of Riverside.

In accordance with Appendix G of the *State CEQA Guidelines*, an impact to Tribal Cultural Resources from the proposed project would be significant if the project would:

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 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)
    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

The Initial Study concluded there could be potentially significant impacts to tribal cultural resources since the origin of potential resources is unknown. Grading and ground-disturbing activity could impact currently unknown subsurface cultural resources of tribal or Native American importance. Therefore, impacts associated with the thresholds above are analyzed below.

b. Project Impacts and Mitigation Measures

Threshold 1: 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?

Impact TCR-1 CONSTRUCTION OF THE PROJECT WOULD INVOLVE GROUND-DISTURBING ACTIVITIES SUCH AS GRADING AND SURFACE EXCAVATION, WITH THE POTENTIAL TO UNEARTH OR ADVERSELY IMPACT PREVIOUSLY UNIDENTIFIED TRIBAL CULTURAL RESOURCES. NO KNOWN TRIBAL CULTURAL RESOURCES ARE PRESENT ON THE PROJECT SITE. THEREFORE, PROJECT IMPACTS WOULD BE LESS THAN SIGNIFICANT IMPACTS WITH MITIGATION INCORPORATED.

No known significant tribal cultural resources are located on the project site based on the findings of the project-specific cultural resources report (Appendix H), and on consultation with the Morongo Band of Mission Indians and the Rincon Band of Luiseño Indians (Appendix I). However, grading and ground-disturbing activities during project construction could impact currently unknown subsurface cultural resources of tribal or Native American importance.

The City and the consulting tribes agreed that, in the event of the discovery of previously unknown cultural resources of tribal or Native American importance during construction activities, appropriate mitigation measures would be followed.

Mitigation Measures

Avoidance or preservation in place of a previously unknown tribal cultural resource would be preferred in the event that such a resource is discovered on the project site during ground disturbing activities. However, if avoidance or preservation in place of the resource is not feasible and/or recommended by the qualified archaeologist or Native Tribal American monitor(s), Mitigation Measures CR-1 through CR-4 would be implemented to reduce potential project impacts and ensure proper handling of the discovered resource. Mitigation measures CR-1, CR-2, CR-3, and CR-4, as defined in Section 4.4, *Cultural Resources* and restated below, would require cultural sensitivity training for contractors, an archaeological monitoring plan and archaeological spot checking, and compliance with procedures for the treatment and disposition of cultural resources.

CR-1 Archaeological Monitoring Plan

At least 30 days prior to issuance of grading permit and before any grading, excavation, and/or ground disturbing activities take place, the developer shall retain a qualified archaeologist, defined as an archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983), to carry out all mitigation measures related to archaeological and historic resources.

The project archaeologist, in consultation with consulting tribes, the developer, and the City, shall develop an Archaeological Monitoring Plan to address the details, timing, and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the plan shall include:

1. Project grading and development scheduling
2. A rotating or simultaneous schedule in coordination with the developer and the project archaeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation, and ground-disturbing activities on the site, including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors' authority to stop and redirect grading activities in coordination with all project archaeologists
3. The protocols and stipulations that the developer, tribes, and project archaeologist/paleontologist shall follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits, or non-renewable paleontological resources that shall be subject to a cultural resources evaluation
4. Treatment and final disposition of any cultural and paleontological resources, sacred sites, and human remains if discovered on the project site
5. The scheduling and timing of the Cultural and Archaeological Sensitivity Training noted in mitigation measure CR-2

CR-2 Cultural and Archaeological Sensitivity Training

A qualified archaeologist and any consulting tribes shall attend the pre-grading meeting with the developer's contractors to conduct a Worker's Environmental Awareness Program training for cultural and archaeological sensitivity for all construction personnel prior to the commencement of any ground-disturbing activities. Archaeological sensitivity training shall include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, procedures to follow during ground disturbance in sensitive areas, and protocols in the event unanticipated resources are discovered. Only construction personnel who received this training can conduct construction and disturbance activities in sensitive areas. All attendees shall confirm attendance by signing a sign-in sheet to be submitted to the City of Riverside.

CR-3 Treatment and Disposition of Cultural Resources

In the event cultural resources are encountered inadvertently during ground-disturbing activities, work in the immediate area must halt and the qualified archaeologist must be immediately contacted and may consult with the tribal monitor(s) to evaluate the find and develop a plan for treatment of the find/archaeological site. The following procedures shall be carried out for treatment and disposition of the discoveries:

1. **Temporary Curation and Storage.** During the course of construction, all discovered resources shall be temporarily curated in a secure location on site or at the offices of the project archaeologist. The removal of any artifacts from the project site shall need to be inventoried thoroughly with tribal monitor oversight, as necessary, of the process.

2. **Treatment and Final Disposition.** The landowner(s) shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains, as part of the required mitigation for impacts to cultural resources. The landowner(s) shall relinquish the artifacts through one or more of the following methods and provide the City of Riverside Community and Economic Development Department with evidence of same:

    a. Accommodate the process for on-site reburial of the discovered items with the consulting tribes. This shall include measures and provisions to protect the future reburial area from any future impacts. Reburial shall not occur until all cataloguing and basic recordation are completed.

    b. Secure a curation agreement with an appropriate qualified repository in Riverside County that meets federal standards per 36 CFR Part 79 and will professionally curate and make available findings to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility in Riverside County, to be accompanied by payment of the fees necessary for permanent curation.

    c. If more than one consulting tribe is involved with the project and cannot come to an agreement as to the disposition of cultural materials, they shall be curated at the Western Science Center or Riverside Metropolitan Museum by default.

    d. At the completion of grading, excavation, and ground-disturbing activities on the site, a Phase IV Monitoring Report shall be submitted to the City documenting monitoring activities conducted by the project archaeologist and Native Tribal Monitors, as necessary, within 60 days of completion of grading. This report shall document the impacts to the known resources on the property; describe how each mitigation measure was fulfilled; document the type of cultural resources recovered and the disposition of such resources; provide evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting; and, in a confidential appendix, include the daily/weekly monitoring notes from the archaeologist. All reports produced shall be submitted to the City of Riverside, Eastern Information Center, and consulting tribes.

CR-4 Paleontological Resources Monitoring

The following mitigation measure would address the potentially significant impacts relating to the discovery of paleontological resources during project implementation and ground-disturbing activities. This measure would apply to all phases of project construction and would ensure that any significant fossils present on-site are preserved. The following procedures shall be carried out:

a. Prior to the commencement of ground-disturbing activities under the project, a qualified professional paleontologist shall be retained to conduct paleontological monitoring during project ground disturbing activities. The Qualified Paleontologist (Principal Paleontologist) shall meet the education and professional experience standards as set forth by the SVP, which recommends the paleontologist shall have at least a Master’s Degree or equivalent work experience in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques.

b. Ground-disturbing construction activities (including grading, trenching, drilling with an auger greater than three feet in diameter, and other excavation) below five feet and within project areas with high paleontological sensitivity (i.e., Pleistocene alluvium; Qvof, Qof) shall be monitored on a full-time basis. Spot-check monitoring is recommended for ground disturbance below ten feet for project areas underlain by geologic units with low paleontological sensitivity (i.e., younger Quaternary alluvium; Qyf) to determine underlying sensitive units are being impacted. Monitoring shall be supervised by the Qualified Paleontologist and shall be conducted by a qualified paleontological monitor, who is defined as an individual who meets the minimum qualifications per standards set forth by the SVP, which includes a BS or BA degree in geology or paleontology with one year of monitoring experience and knowledge of collection and salvage of paleontological resources.

c. The duration and timing of the monitoring shall be determined by the Qualified Paleontologist. If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, he or she may recommend reducing monitoring to periodic spot-checking or cease entirely. Monitoring would be reinstated if any new ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist.

d. If a paleontological resource is discovered, the monitor shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Once salvaged, significant fossils shall be prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the Western Science Center in Hemet). Curation fees are the responsibility of the project owner.

e. A final report shall be prepared describing the results of the paleontological mitigation monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to the lead agency(s) for the project. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.

Significance After Mitigation

Implementation of mitigation measures CR-1 through CR-4 would reduce potential impacts to tribal cultural resources to less than significant levels.

4.13.3 Cumulative Impacts

The proposed project, in conjunction with other development in the City and surrounding areas as listed in Table 3.1 in Section 3, Environmental Setting, would cumulatively increase the potential to encounter sensitive tribal cultural resources. However, as discussed above, potential impacts to tribal cultural resources are site-specific and would be reduced to a less-than-significant level due to implementation of mitigation measures that would protect tribal cultural resources. In the event that tribal cultural resources are discovered, each individual project would be required to comply with the applicable regulatory requirements and the consultation requirements of AB 52 to determine and mitigate any potential impacts to tribal cultural resources. Therefore, cumulative impacts to tribal cultural resources would be less than significant and would not be cumulatively considerable.

References

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4.14 Utilities and Service Systems

This section analyzes the proposed project's potential to impact water supplies as it relates to utilities and service systems. The discussion and analysis contained herein addresses comments received during the Notice of Publication of an EIR public review period. It is informed by the Water Supply Assessment (WSA) prepared for the project (Appendix N) and publicly available sources, such as Riverside Public Utilities' Urban Water Management Plan (UWMP).

Impacts related to stormwater and stormwater facilities are discussed in detail in Section 4.8, *Hydrology and Water Quality*. Impacts related to solid waste and wastewater were determined to be less than significant and are discussed in Section 4.15, *Impacts Found to be Less than Significant*, and in the Initial Study (Appendix A).

4.14.1 Setting

a. Existing Setting

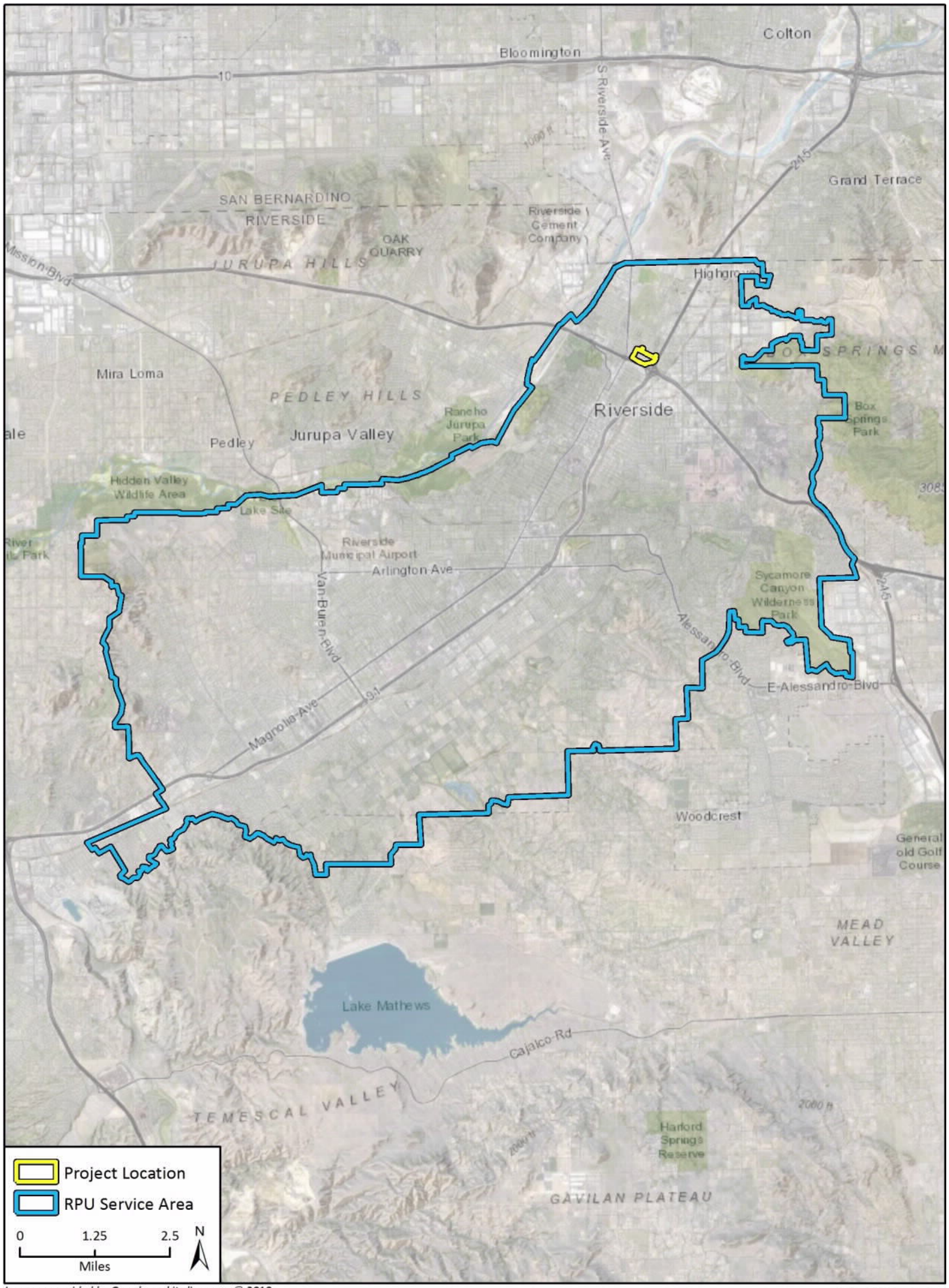
The following section discusses existing setting with respect to water supply, demand, and distribution in the City. A description follows of water supplies available to Riverside Public Utilities (RPU), including groundwater, imported water, and recycled water; Table 4.14-1 summarizes these supplies. Current and projected future water demand based on existing use, anticipated growth, and water conservation efforts, is detailed in Table 4.14-2.

Water Supply

RPU provides the majority of the City's water service, delivering to more than 64,000 service connections and over 300,000 people, mostly in the Riverside city limits (Western Municipal Water District [WMWD] and RPU 2017). WMWD and Eastern Municipal Water District serves all portions of the City. Figure 4.14-1 shows RPU's service area. The City of Riverside's water comes predominantly from two sources: local groundwater from the Bunker Hill and Riverside groundwater basins and recycled water from the Riverside Regional Water Quality Control Plant. RPU can purchase imported water from WMWD via a connection at the Metropolitan Water District of Southern California's Henry J. Mills Water Treatment Plant, to meet peak demand as needed.

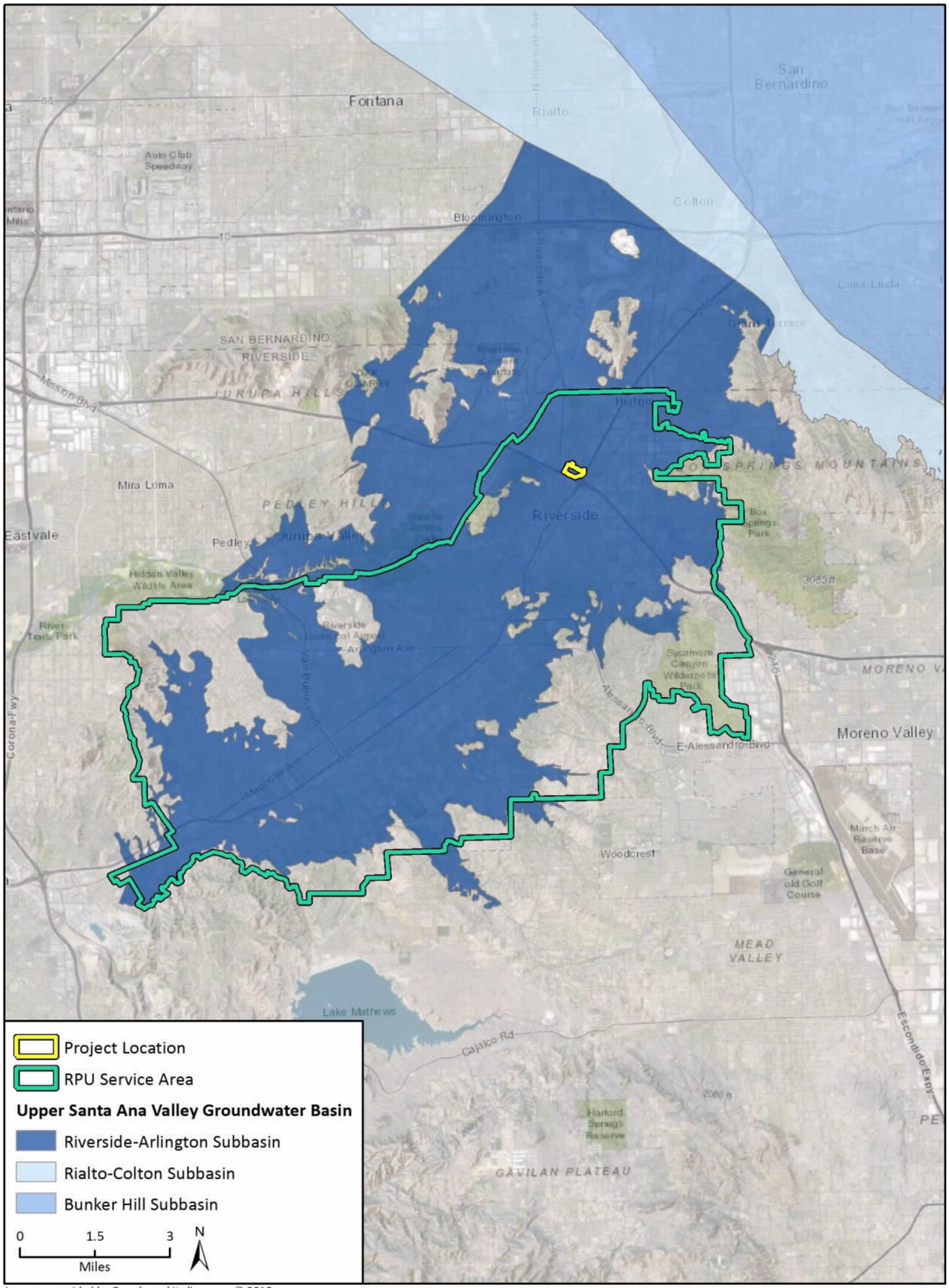
RPU has historically met nearly all of its demand from groundwater sources. Figure 4.14-2 shows the boundaries of groundwater basins from which RPU extracts water. RPU owns 201 wells across the Bunker Hill, Rialto-Colton, and Riverside basins, 50 of which extract potable water, 14 extract non-potable water, and the remainder are either inactive or provide monitoring. RPU has extraction rights from the adjudicated Bunker Hill, Rialto-Colton, and Riverside basins under the 1969 Western-San Bernardino Judgement (RPU 2016). Water available for purchase from WMWD is imported from the State Water Project (SWP); historically, such water has only been purchased to meet peak demand, as needed (RPU 2016). RPU has not purchased imported water from WMWD since 2009. RPU uses recycled water to meet some of its non-potable water needs, such as outdoor irrigation and commercial uses. Table 4.14-1 summarizes RPU's current and projected water resources.

Figure 4.14-1 Riverside Public Utilities Service Area



Imagery provided by Google and its licensors © 2018.
Additional data provided by RPU 2016.

Figure 4.14-2 Groundwater Basins



Imagery provided by Google and its licensors © 2018.
Additional data provided by RPU 2016; California Department of Water Resources 2018.

Table 4.14-1 RPU Water Supplies – Current and Projected

Water Supplies (AFY)	2015[1]	2020	2025	2030	2035	2040
Groundwater						
Bunker Hill Basin	53,793	55,263	55,263	55,263	55,263	55,263
Riverside North	6,357	10,902	10,902	10,902	10,902	10,902
Riverside South	13,571	16,880	16,880	16,880	16,880	16,880
Rialto-Colton	1,205	2,728	2,728	2,728	2,728	2,728
Future Groundwater Extraction/ Conjunctive Use Projects[2]	0	3,000	8,000	10,800	10,800	10,800
Groundwater Total	**74,926**	**88,773**	**93,773**	**96,573**	**96,573**	**96,573**
Other Sources						
Recycled Water from Riverside RWQCP	200	6,430	6,430	6,430	6,430	6,430
Imported/Purchased Water from WMWD[3]	0	21,700	21,700	21,700	21,700	21,700
Other Sources Total	**200**	**28,130**	**28,130**	**28,130**	**28,130**	**28,130**
Supply Total	**75,126**	**116,903**	**121,903**	**124,703**	**124,703**	**124,703**

[1]Actual supplies in 2015.

[2]Includes the Banking Bunker Hill Conjunctive Use; Seven Oaks Dam Conservation Phase II (Enhanced); Bunker Hill Active Recharge 2025; Riverside North Aquifer Storage and Recovery; Box Spring Local Stream Recharge and Direct Use ; and Stormwater Recharge at Columbia, Marlborough, and Kansas Detention Basins projects. These projects are accounted for in RPU's most recent Integrated Water Management Plan. Projects have planned implementation years ranging from 2020 to 2030. The Riverside North Aquifer Storage and Recovery project and Banking Bunker Hill Conjunctive Use projects are currently listed as in planning/design phase, with the Riverside North Aquifer Storage and Recovery project having completed project-specific environmental review.

[3]Imported water from WMWD is shown as a supply available to RPU. RPU intends to use this supply only if needed.

AFY = acre feet per year

Source: RPU 2016 (adapted from Table 1-3)

Water Demand

The RPU 2015 UWMP details water demand from 2011 to 2015 by sector, including retail customers and wholesale potable and raw water deliveries to other water districts (RPU 2016). After peaking at 90,401 acre feet (AF) in 2012, water demand declined to 74,928 AF in 2015. While some of this demand reduction is attributed to ongoing, relatively permanent conservation efforts, RPU also attributes the reduction to temporary behavioral changes triggered by severe drought conditions. As a result, RPU estimates future demand by assuming a five percent increase in per-capita consumption between 2015 and 2020 to account for the expected reversal of temporary behavioral water conservation changes among consumers.

The majority of RPU's supply comes from the adjudicated Bunker Hill, Riverside, and Rialto-Colton groundwater basins. The Western-San Bernardino Judgment adjudication limits production from these basins to ensure their long-term reliability. Local water suppliers identify potential future supply sources to augment water supplies and further insulate the region from hydrological uncertainty. Table 4.14-2 shows RPU's projected demands by sector, as stated in the 2015 UWMP.

Table 4.14-2 RPU's Projected Demands for Potable and Raw Water

Use Type	2020	2025	2030	2035	2040
Potable					
Single Family	29,931	31,064	32,241	33,462	34,730
Multi-Family	5,365	5,568	5,779	5,998	6,225
Commercial/Institutional	9,959	10,337	10,728	11,135	11,556
Industrial	9,845	10,218	10,605	11,006	11,423
Landscape	1,050	100	150	200	250
Agricultural Irrigation	1,707	1,772	1,839	1,908	1,981
Other	371	385	399	414	430
Deliveries to WMWD	4,300	4,300	4,300	4,300	4,300
Additional UC Riverside Demand	3,300	3,300	3,300	3,300	3,300
California Baptist University Added Demand	150	150	150	150	150
Gage Canal Company (Upper)	6,000	6,000	6,000	6,000	6,000
Potable Water Loss	5,278	5,375	5,559	5,750	5,948
Potable Water Total	**77,256**	**78,569**	**81,050**	**83,623**	**86,293**
Raw Water					
Gage Canal Company (Lower)	7,000	7,000	7,000	7,000	7,000
Overlying Uses	1,200	1,200	1,200	1,200	1,200
WMWD	2,500	2,500	2,500	2,500	2,500
Irrigation Water Loss	835	835	835	835	835
Raw Water Total	**11,535**	**11,535**	**11,535**	**11,535**	**11,535**
Recycled Water Demand	6,430	6,430	6,430	6,430	6,430
Demand (Potable and Raw Water) Total	95,221	96,534	99,015	101,588	104,258

Units in acre feet per year (AFY)
Source: RPU 2016

Dry Year Projections

RPU estimates future groundwater availability under single and multiple dry-year scenarios. Imported water availability was projected for single and multiple dry years based on scenarios identified for the SWP and associated percentages of water delivery amounts available to SWP water recipients.

Given the adjudication of the groundwater basins upon which it depends and the dependability of recycled water as a supply, RPU assumes 100 percent of its groundwater and recycled water supplies would remain available during both single and multiple dry year scenarios. Table 4.14-3 summarizes RPU's normal, single, and multiple dry year supply through 2040. Under all scenarios for all years, supply exceeds projected demand (Table 4.14-2).

Table 4.14-3 Water Supply in Single and Multiple Dry Years

Year-Type	2020	2025	2030	2035	2040
Normal Year	116,903	121,903	124,703	124,703	124,703
Single Dry Year	96,288	101,288	104,088	104,088	104,088
Multiple Dry Year 1st, 2nd, and 3rd Year Supply[1]	102,364	107,364	110,164	110,164	110,164

Units in acre feet per year (AFY)

[1]Expected supplies for a period of multiple dry years are slightly higher than a single dry year due to higher average availability of SWP water.

Source: RPU 2016

b. Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA), enacted by Congress in 1972, requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). The California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB) administer NPDES permitting authority. The project site is under the jurisdiction of the RWQCB Region 8 (Santa Ana Region).

Section 303(d) of the CWA (CWA, 33 USC 1250, et seq., at 1313(d)) requires states to identify "impaired" waterbodies as those which do not meet water quality standards. States are required to compile this information in a list and submit the list to the USEPA for review and approval. This list is known as the Section 303(d) list of impaired waters. As part of this listing process, states are required to prioritize waters and watersheds for future development of Total Maximum Daily Loads, or the maximum amount of a pollutant the waterbody can receive while still meeting water quality standards. The SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop Total Maximum Daily Load requirements.

State

State Water Resources Control Board

The SWRCB regulates water quality in California for human uses and environmental protection. The SWRCB, along with nine RWQCBs, regulates wastewater, stormwater, and irrigation discharges, dredge and fill activities, and alteration of federal water bodies under the CWA's 401 program. Additionally, the SWRCB implements the federal NPDES program under the CWA, including issuance of the NPDES Construction General Permit for regulation of construction stormwater discharges.

Senate Bill X7-7

California adopted Senate Bill (SB) X7-7, or the Water Conservation Act of 2009, in November 2009. The legislation requires urban water retailers to set urban water use targets to achieve a 20 percent reduction in per capita urban water use by December 31, 2020. Additionally, the law requires agricultural water suppliers to prepare, adopt, and regularly update agricultural water management plans. Agricultural and urban water providers are ineligible for certain state grants and loans if they do not adhere to water conservation requirements outlined in the law.

Senate Bills 610 and 221

In 2001, California adopted SB 610 and SB 221, thereby amending the California Water Code. Under these new laws, certain types of development projects are now required to provide detailed water supply assessments (WSAs) to planning agencies. Thresholds requiring the preparation of a WSA include residential developments of more than 500 dwelling units, shopping centers or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space, commercial office buildings employing more than 1,000 persons or having more than 250,000 square feet of floor space, and projects that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The primary purpose of a WSA is to determine if the identified water supply or water supplier will be able to meet projected demands for the project, in addition to existing and planned future uses, over a 20-year projection and with consideration to normal, dry, and multi-dry water years. A WSA was prepared for the project by the City in December 2018 and is included as Appendix N of this document.

Regional Water Management Planning Act

Adopted by the state legislature in 2002, the Regional Water Management Planning Act, or SB 1672, authorizes preparation of integrated regional water management plans. Such plans are developed by regional water management groups, defined as three or more local public agencies, at least two of which have statutory authority over water supply. Integrated regional water management plans address qualified programs and projects relating to water supply, water quality, flood protection, or other water-related topics undertaken by the participating public agencies. Qualified projects, as detailed in the legislation, include but are not limited to groundwater, urban, and agricultural water management planning efforts, levee or flood control infrastructure maintenance or construction, water recycling projects, and water conservation programs.

Regional

2015 Urban Water Management Plan for Riverside Public Utilities Water Division

The California Water Code requires any municipal water supplier serving over 3,000 connections or 3,000 acre feet per year (AFY) to prepare a UWMP. Water suppliers are required to update their UWMPs every five years. RPU is a consumer-owned water service provider serving both retail and wholesale customers. In 2015, RPU provided approximately 60,000 AFY to nearly 65,000 municipal connections (RPU 2016). RPU's service area includes 70 square miles in the City and 5 square miles outside the city limits but within the City's sphere of influence. Riverside's most recent UWMP update occurred in 2015.

RPU's 2015 UWMP forecasts demand through 2040 and details normal, dry year, and multiple dry year supplies needed to meet demand. Additionally, the UWMP describes water supply reliability, conservation and demand management strategies, and RPU's current and anticipated water infrastructure projects.

Updated Integrated Regional Water Management Plan Report

WMWD published the Updated Integrated Regional Water Management Plan Report (IRWMP) in May 2008 and includes the City as a designated stakeholder. While the IRWMP focuses on long-range water planning needs in WMWD's service area, the document includes a regional-scale assessment of water planning efforts, infrastructure, and pending studies and projects. The IRWMP also discusses regional water management efforts in the context of other applicable water and environmental regional plans, such as the Santa Ana Watershed Project Authority's One Water-One Watershed Program and the Multi-Species Habitat Conservation Plan (WMWD 2008).

Local

Riverside General Plan 2025

The Riverside General Plan 2025 guides land use, development, and strategic planning decision-making in the City. The Public Facilities and Infrastructure Element and the Conservation and Open Space Element include objectives and policies intended to support well-designed and maintained infrastructure, and to provide adequate water supply and water quality to accommodate the needs of the community now and into the future (City of Riverside 2007). Objectives and policies applicable to water service and supply are presented below:

PUBLIC FACILITIES AND INFRASTRUCTURE ELEMENT

Objective PF-1: Provide superior water service to customers.

Policy PF-1.1: Coordinate the demands of new development with the capacity of the water system.

Policy PF-1.2: Support the efforts of the Riverside Public Utilities Department, Eastern Municipal Water District and Western Municipal Water District to work together for coordination of water services.

Policy PF-1.3: Continue to require that new development fund fair-share costs associated with the provision of water service.

Policy PF-1.4: Ensure the provision of water services consistent with the growth planned for the General Plan area, including the Sphere of Influence, working with other providers.

Policy PF-1.5: Implement water conservation programs aimed at reducing demands from new and existing development.

Policy PF-1.7: Protect local groundwater resources from localized and regional contamination sources such as septic tanks, underground storage tanks, industrial businesses and urban runoff.

CONSERVATION AND OPEN SPACE ELEMENT

Objective OS-10: Preserve the quantity and quality of all water resources throughout Riverside

Policy OS-10.1: Support the development and promotion of water conservation programs.

Policy OS-10.2: Coordinate plans, regulations and programs with those of other public and private entities which affect the consumption and quality of water resources within Riverside.

Policy OS-10.4: Develop a recommended native, low-water-use and drought-tolerant plant species list for use with open space and park development. Include this list in the landscape standards for private development.

Policy OS-10.5: Establish standards for the use of reclaimed water for landscaping.

Policy OS-10.9: Evaluate development projects for compliance with NPDES requirements, and require new development to landscape a percentage of the site to filter pollutant loads in stormwater runoff and provide groundwater percolation zones.

Policy OS-10.11: Monitor the quality and quantity of groundwater and surface water resources and consider revisions to the General Plan's policies if monitoring identifies significant reductions in water quality.

City of Riverside Water Conservation Ordinance

Chapter 14.22, Water Conservation, of the Riverside Municipal Code (RMC) establishes procedures for implementing and enforcing water conservation measures. Section 14.22.010 establishes unreasonable water uses in the City, including, among others, application of potable water to outdoor landscapes in a manner that causes runoff to adjacent property, non-irrigated areas, or walkways; non-recirculating fountains or water features which use potable water; and application of potable water to outdoor landscaping within 48 hours of measureable rainfall.

The ordinance also establishes a four-stage Water Conservation Program, where stages increase with the severity of the water shortage. The four stages of the Water Conservation Program are as follows:

- **Stage One – Normal Water Supply.** The City can meet all water demands, but baseline conservation measures, such as time restrictions on non-agricultural irrigation, still apply.
- **Stage Two – Minimum Water Shortage.** There is a reasonable probability that the City will not be able to meet all of its water demands. Stage One restrictions apply, as well as other restrictions on irrigation and plumbing leaks. Customers will be asked to reduce monthly water consumption by up to 15 percent, and construction operations are not authorized to use water unnecessarily for any purpose, other than those required by regulatory agencies.
- **Stage Three – Moderate Water Shortage.** All measures from preceding stages apply and more restrictive irrigation measures are implemented. Water customers will be asked to reduce monthly consumption by up to 20 percent.
- **Stage Four – Severe Water Shortage.** The City's ability to meet water demand is seriously impaired. Stage Four includes the most restrictive irrigation measures, including a prohibition on outdoor lawn watering, as well as prohibitions on automobile washing, and pool filling.

Concurrently with a Stage Three or Stage Four declaration, the City Council may proclaim a Water Shortage Emergency. During such time, no new construction meters may be issued, no construction water may be used for earthwork including dust control, and no new building permits may be issued unless such projects meet certain water conservation requirements. RPU is operating currently under Stage One of the Water Conservation Program (RPU 2018).

Water Efficient Landscaping and Irrigation Ordinance

Chapter 19.570 of the RMC contains the City's Water Efficient Landscaping and Irrigation Ordinance, which is intended to promote quality landscaping as well as efficient use of water within the City. The ordinance requires preparation and implementation of a planting plan that identifies the Maximum Applied Water Allowance and the Estimated Annual Water Use of the project's landscaping, as well as irrigation design and soil management plans.

Title 6 – Health and Sanitation of the Riverside Municipal Code

The City's Health and Sanitation Code (Municipal Code, Title 6, Section 6.04 et seq.) specifies the requirements for handling solid waste and recycling materials. Impacts related to solid waste generation and landfill capacity were determined to be less than significant in the Initial Study (Appendix A) and are discussed in Section 4.15, *Impacts Found to be Less than Significant.*

4.14.2 Impact Analysis

a. Methodology and Significance Thresholds

Project-generated water demand was obtained from the WSA prepared by the City for the project (Appendix N). This demand was projected using RPU-specific duty factors for commercial development and roadways, and a per unit factor for residential development based on the 2015 UWMP. Anticipated water demand was then compared to normal and dry-year supply projections provided in the RPU's 2015 UWMP (RPU 2016).

RPU's 2015 UWMP did not publish land use-based demand factors to project future water demand, as recent drought regulations induced significant changes in water consumption patterns in the RPU service area and created uncertainty around demand generated by various land uses. To estimate cumulative water demand generated by the wide range of land uses included as planned or pending projects, land use-based water consumption factors employed by CalEEMod were used (California Air Pollution Control Officers Association 2017). CalEEMod estimates project-specific annual water use based on rates derived from statewide water consumption by sector in 2000, as reported by the Pacific Institute's *Waste Not, Want Not: The Potential for Urban Water Conservation in California* report (Gleick et al. 2003). CalEEMod water use projections have been used to assess potential water utility impacts for other development projects in the RPU service area (City of Riverside 2018). Similar to the project-specific impact analysis, cumulative water demand was then compared to existing and projected supplies to determine whether there would be a cumulative impact to water supply availability in the RPU service area. Additionally, CalEEMod's indoor and outdoor water use percentages were applied to the project-generated water demand calculated in the WSA to provide an estimate of the project's approximate indoor and outdoor water consumption.

For the purposes of this EIR, a utilities and service systems impact is considered significant if the proposed project would:

1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
3. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
4. Not have sufficient water supplies available to serve the project from existing water supply entitlements and resources, so that new or expanded entitlements are needed
5. 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
6. Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs
7. Not comply with federal, state, and local statutes and regulations related to solid waste

The Initial Study (Appendix A) determined the proposed project could result in potentially significant impacts related to Thresholds 3 and 4. Threshold 3 is addressed in Section 4.8, *Hydrology and Water Quality* under Impact HWQ-3. As discussed under Impact HWQ-3, the project would incorporate catch basins, underground storm drains, and a detention and infiltration chamber designed to capture and treat runoff from the 85th percentile, 24-hour rainfall depth of 0.61 inch. Because the proposed drainage system and infiltration chamber would capture all on-site runoff, the project would not exceed the capacity of existing stormwater facilities and this impact would be less than significant. Impacts pertaining to water supplies (Threshold 4) are analyzed in this section of the EIR. All other thresholds are discussed in the Initial Study and summarized in Section 4.15, *Impacts Found to be Less Than Significant*.

b. Project Impacts and Mitigation Measures

Threshold 4:	Would the project not have sufficient water supplies available to serve the project from existing water supply entitlements and resources, so that new or expanded entitlements are needed?

Impact U-1 THE PROJECT WOULD DEMAND 382 AFY OF WATER, WHICH WOULD REPRESENT LESS THAN 0.49 PERCENT OF RPU'S PROJECTED POTABLE WATER DEMAND FOR THE YEAR 2020. BASED ON THE WATER SUPPLY AND DEMAND PROJECTIONS, PROJECTED WATER SUPPLIES ARE SUFFICIENT TO MEET THE ANTICIPATED WATER DEMAND OF THE PROJECT. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The project would generate both construction-related and operational water demand. Discussions of both sources of water demand follow.

Construction Demand

Water would be required for temporary construction activities on the project site, including dust suppression, grading and grubbing, compaction, construction equipment wheel washing, and concrete mixing and casting. Water consumption by construction workers and cleaning of portable toilets on the project site may also account for a small portion of overall construction water demand.

Watering for dust suppression would demand the most water during construction. Pursuant to Mitigation Measure AQ-2 described in Section 4.2, *Air Quality*, areas of active construction during the site preparation and grading phases would be watered approximately four times per day to maintain a soil moisture content of at least 12 percent. As discussed in the air quality analysis, site preparation and grading would disturb up to 3.5 acres and 4 acres of the project site per day, respectively, with each phase lasting approximately 30 days. Water demand for dust suppression is highly dependent on a number of site-specific variables, including soil properties, antecedent moisture conditions, and other climatic factors. In other arid and semi-arid portions of southern California, water demand for construction dust control has been estimated at roughly 3,300 to 4,000 gallons per acre per day (County of San Diego 2013; Murphy 2015). Conservatively assuming an application rate of 4,000 gallons per acre per day, dust control during the site preparation and grading phases would require approximately 900,000 gallons of water, or approximately 2.8 AF in total. This temporary demand would amount to less than one percent of the project's annual operational water demand.

Construction water demand would be temporary and, therefore, would not result in a long-term strain on water supplies. As discussed in the regulatory setting above, the City's Water Conservation Ordinance allows the City Council to declare a Water Shortage Emergency, during which no construction water may be used for earthwork, including dust suppression and compaction activities. Given the temporary and minimal nature of construction water demand as compared to operational water consumption, as well as the fact that the City would restrict water intensive construction activities through a Water Shortage Emergency declaration if it lacked adequate water supply, impacts related to construction water consumption would be less than significant.

Operational Demand

The project would introduce a new mixed-use development containing multi-family residential units, two hotels, commercial retail and restaurant space, a fueling center, and RV overnight parking. The WSA estimated project water consumption using water duty factors from the RPU 2009 WQMP (Appendix K). Table 4.14-4 summarizes the WSA's projected water demand of the project (Appendix N).

Table 4.14-4 Estimated Project Water Demand

Land Use Type	Size	Duty/Demand Factor	Projected Total Water Demand (AFY)
Residential[1]	482 units	0.715 AFY/unit[2]	345
Commercial and Hotels	10.7 acres	2.0 GPM/acre	35
Road- La Cadena Drive	2.8 acres	0.5 GPM/acre	2
Road- Orange Street	0.2 acres	0.5 GPM/acre	<1
Total Water Demand			**382**

GPM = Gallons per Minute; AFY = acre feet per year

[1] For the purposes of estimating water demand, RV parking was analyzed as a residential unit.

[2] Derived from the Riverside 2015 Urban Water Management Plan pursuant to SB X7-7.

Source: WSA, Appendix N

Indoor Water Use

Indoor water use would account for approximately 75.3 percent of the project's total water demand, with the majority of indoor water use associated with the multi-family residential units. The project would comply with all requirements of the California Green Building Code, as adopted by the City, pertaining to maximum flow rates for plumbing fixtures, such as toilets, showerheads, and faucets in both residential and non-residential buildings. As discussed in Section 2, *Project Description*, the project would incorporate individual water use monitoring systems as a water conservation feature, which would reduce indoor water consumption.

Outdoor Water Use

Outdoor water use would account for approximately 24.7 percent of the project's total water demand and would include water used for landscape irrigation, outdoor swimming pools, and other water features. Landscaping throughout the project site would consist of native, low water use trees, shrubs, and ground cover, as well as various planted accent pots. Because the project would involve more than 2,500 square feet of developer-installed landscape area, it would be subject to the requirements of the City's Water Efficient Landscaping and Irrigation Ordinance, codified in Chapter 19.570 of the RMC. Pursuant to the ordinance, the project would prepare and submit for approval planting, irrigation design, and soil management plans and comply with landscape design and irrigation efficiency requirements. Furthermore, plant species proposed under the project's landscape plan consist predominantly of species on the California Friendly Plant List, included in the County of Riverside Guide to California Friendly Landscaping and adopted by reference in Chapter 19.570.030 of the RMC.

Overall Water Use

As discussed in Section 2, *Project Description*, project construction would begin in 2019 and take approximately two years to complete. Therefore, the project's estimated water demand is compared to projected RPU water demand for 2020, the closest year to the project's completion for which water demand and supply estimates are provided in the UWMP.

The project's estimated water demand would account for approximately 0.49 percent of RPU's projected potable water demand in 2020, or 0.40 percent of the utility's total (raw and potable) water demand. RPU supplies nearly all of its potable water from groundwater in the Bunker Hill, Riverside, and Rialto-Colton basins. RPU projects groundwater supplies in 2020 would total 88,773 AFY or approximately 11,517 AFY more than the anticipated potable water demand. The project would account for approximately 3.32 percent of the projected excess groundwater supply.

Because the project site is not served currently by recycled water and RPU rarely supplements its supply with imported water purchased from WMWD to meet peak demand, recycled and imported water supplies are not included in the analysis above. Furthermore, water use from the project would account for approximately 0.40 and 0.37 percent of RPU's projected 2020 single dry year and multiple dry year supplies, respectively. Therefore, based on the water demand projections, projected local water supplies are sufficient to meet the projected water demand of the proposed project. Planned expansions in the City's recycled water distribution system and the availability of 21,700 AFY of imported water will further increase RPU's projected water supplies and, consequently, would reduce the project's share of excess and dry year supplies in 2020 and subsequent years. Implementation of the project would not require new or expanded entitlements for water supplies. Impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Impacts would be less than significant without mitigation

4.14.3 Cumulative Impacts

Planned and pending development would increase water demand in the City. As described in Table 3-1 of Section 3, *Environmental Setting*, planned and pending projects in the City would add residential units, commercial and industrial space, educational facilities, and a hotel. This section analyzes the water demand associated with planned and pending development from Section 3. The cumulative projects list provided in Section 3 includes six projects in the City of Jurupa Valley and two projects in the City of Colton. These projects would not be served by RPU, and, as a result, would not draw from RPU's groundwater extraction rights in adjudicated basins, purchased water supplies from WMWD, or potential recycled water. Therefore, these projects would not result in a cumulative impact with respect to water supplies and are not considered in this analysis. The cumulative projects list contains six projects in unincorporated Riverside County. These projects are located in RPU's service area in the western portion of the unincorporated Highgrove community; therefore they are considered in this analysis.

Cumulative water demand was estimated using water demand factors employed by CalEEMod, which provides water demand factors for a wide range of land uses. As indicated in Table 4.14-5, cumulative water demand would total approximately 787.6 million gallons per year, or approximately 2,416.9 AFY in addition to the 382 AFY used by the project. This analysis does not account for water savings from water conservation design features that may be implemented by planned or pending projects. Therefore, the values presented in Table 4.14-5 may be a conservative estimate of cumulative water demand. Based on projections in the 2015 UWMP, projected groundwater supplies would exceed projected potable water demand by 11,517 AFY in 2020. Anticipated demand from the project and other cumulative projects within RPU's service area would account for approximately 24.3 percent of this excess groundwater supply in 2020.

By 2040, RPU's projected groundwater supply would total 96,573 AFY, exceeding projected potable water demand by 10,280 AFY. Water demand from the project and other cumulative development would account for approximately 27.2 percent of this excess groundwater supply. The groundwater basins from which RPU draws potable water are adjudicated, providing long-term supply reliability in the form of legally defined extraction rights based on basin-specific safe yield. However, RPU's projected 2040 groundwater supply accounts for a number of conjunctive use groundwater supply enhancement projects with planned implementation years between 2020 and 2030. RPU's most recent Integrated Water Management Plan accounts for these projects, with several, including the Riverside North Aquifer Storage and Recharge Project, in the planning and design phase and undergoing project-specific environmental review. Anticipated expansion of RPU's non-potable recycled water infrastructure and the availability of up to 21,700 AFY of imported water for purchase from WMWD, as needed, would further augment RPU's supplies in 2020 and subsequent years. Therefore, there would be adequate water supplies to meet the anticipated demand of the project and other cumulative development in the RPU service area.

Table 4.14-5 Estimated Cumulative Water Demand

Land Use[1]	Development Statistics	Unit	Indoor Water Demand Factor (annual)[2]	Outdoor Water Demand Factor (annual)[2]	Water Demand (Mgal/Year)[3]	Water Demand (AFY)
City of Riverside						
Residential	859	DU	65,154 gal/DU	41,075 gal/DU	91.3	280.0
Hotel	239	room	25,367 gal/room	2,819 gal/room	6.7	20.7
Industrial, Manufacturing, Storage	2,561	TSF	231,250 gal/TSF	N/A	592.2	1,817.4
Retail	32.63	TSF	74,073 gal/TSF	45,399 gal/TSF	3.9	12.0
Office	146.684	TSF	177,734 gal/TSF	108,934 gal/TSF	42.0	129.0
Restaurant	15.5	TSF	303,534 gal/TSF	19,374 gal/TSF	5.0	15.4
Schools	81.892	TSF	20,621 gal/TSF	53,025 gal/TSF	6.0	18.5
Research Lab	8.98	TSF	491,694 gal/TSF	N/A	4.4	13.6
Museum, Church	13.049	TSF	31,289 gal/TSF	48,939 gal/TSF	1.0	3.2
Vehicle Repair	3.008	TSF	94,081 gal/TSF	57,663 gal/TSF	0.5	1.4
City of Riverside Subtotal					**753.1**	**2,311.2**
County of Riverside[4]						
Residential	237	DU	65,154 gal/DU	41,075 gal/DU	25.2	77.3
Industrial, Manufacturing, Storage	28.949	TSF	231,250 gal/TSF	N/A	6.7	20.5
Retail	2.4	TSF	74,073 gal/TSF	45,399 gal/TSF	0.3	0.9
Office	7.989	TSF	177,734 gal/TSF	108,934 gal/TSF	2.3	7.0
County of Riverside Subtotal					**34.4**	**105.7**
Total Water Demand					**787.6**	**2,416.9**

TSF: thousand square feet; DU: dwelling unit; Mgal/year = million gallons per year; AFY: acre feet per year

Values may not sum exactly due to rounding.

[1] Land uses were classified based on a corresponding land use recognized by CalEEMod. For calculation purposes, the 1.88-acre school (Project 15 in the Cumulative Projects List) was converted to square footage and modeled as a junior high school; a 3,700-square foot museum was modeled under the library land use, and a 2,961-square foot laundromat was modeled under the General Light Industrial land use.

[2] Indoor and Outdoor water demand rates obtained from CalEEMod version 2016.3.2.

[3] Total annual water demand, including both indoor and outdoor demand.

[4] For purposes of this analysis, all cumulative projects in the County of Riverside are assumed to be served by RPU as they are located in the unincorporated community of Highgrove within RPU's service area.

Large-scale residential, commercial, office, industrial, and mixed-use developments subject to the requirements of SB 610 would be required to prepare project-specific WSAs to ensure adequate water availability. This level of project-specific analysis would be required prior to approval of the largest planned and pending projects described in Section 3, Environmental Setting, and would compare anticipated water demand to the most currently-available RPU supply and demand projections. Given the information in this project-specific analysis and the analysis in RPU's 2015 UWMP that demonstrates adequate supplies to meet anticipated demand, water demand from the project and existing and planned development in RPU's service area would not result in a significant cumulative water supply impact.

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4.15 Impacts Found to be Less than Significant

This section summarizes the analysis of issue areas for which no significant adverse impacts were identified and, therefore, are not discussed in the Environmental Impact Report (EIR). Please refer to the Initial Study (Appendix A) for the complete issue area analysis. The items listed below are contained in the City's environmental checklist form as well as Appendix G of the CEQA Guidelines. Items not addressed in this section have been addressed in Section 4.0, Environmental Impact *Analysis*, of this EIR. Section 4.0 also includes an expanded discussion of the settings under each environmental issue area discussed therein. Issue areas found to have a project-specific less than significant impact, include a short discussion of the potential for cumulative impacts when assessing the project in addition to the projects listed in Table 3-1 in Section 3, Environmental Setting.

4.15.1 Aesthetics

Would the project:

1. Have a substantial adverse effect on a scenic vista?
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The project would construct structures at various heights up to four stories, which may limit distant views of ridgelines or peaks. There are currently no designated natural or scenic vistas in the project area, and the project is not located in an area with prominent natural features. The most notable scenic resources in the area are La Sierra/Norco Hills, approximately 10 miles northeast, Sycamore Canyon Wilderness Park, 3.5 miles southeast, Box Springs Mountain Reserve Park, 3 miles east, and Mount Rubidoux Park, 1.8 miles southwest. The project would also comply with the City's Citywide Design and Sign Guidelines and applicable development standards. The project is located adjacent to State Route (SR) 60 and Interstate 215 (I-215), neither of which is listed as eligible or designated as state scenic highways; it is also adjacent to Orange Street, which is not designated a Scenic Boulevard. The site is vacant and does not contain protected trees, rock outcroppings, or historic buildings. While the project would construct structures up to four stories in height, which could limit distant views of ridgelines or peaks in the adjacent neighborhood, there are no scenic vistas in close proximity. Therefore, impacts would be less than significant.

The cumulative projects in the area are listed in Table 3-1 in Section 3, Environmental Setting. The majority of the cumulative projects are located south of the project in the City's downtown core and north of the project along the border with the City of Colton, which are not located nearby scenic vistas. There are various warehouse projects located near Box Springs Mountain Reserve, but these would comply with adopted height standards for the area. Each individual project would analyze the impacts to trees, rock outcroppings, and historical resources on and near each project site. Therefore, cumulative impacts would be less than significant.

4.15.2 Agriculture and Forest Resources

Would the project:

1. Convert Prime Farmland, Unique Farmland, 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?
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?

3. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?
4. Result in the loss of forest land or conversion of forest land to non-forest use?
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 forest land to non-forest use?

The project is located in an urbanized area in the City that has no designated forest land or timberland. The site or adjacent area is not classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, and the property is not under Williamson Act contract. The project is proposing a General Plan Amendment and Zoning Code Amendment to facilitate the proposed project. The site is not zoned for or used for agricultural purposes. There would be no project impacts to agricultural resources.

4.15.3 Cultural Resources

Would the project:

1. Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 of the CEQA Guidelines?

A cultural resources study was conducted by Rincon Consultants, Inc. in 2017 that identified 81 previously recorded resources within a 1.0-mile radius of the site. One of these was located on the project site. The resource was recommended as ineligible for listing on California Record of Historic Resources and the National Record of Historic Places due to lack of integrity and historical association. The project would have no impacts on historical resources.

4.15.4 Geology and Soils

Would the project:

1a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: 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.

The southern California region is considered to be seismically active. There are, however, no Alquist-Priolo Fault Zones in Riverside and the project site does not contain any known fault lines. Therefore, there would be no project impacts.

1b. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

1d. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The project would be subject to ground shaking generated from regional fault activity from the San Jacinto and Elsinore Fault zones, which have the potential to cause moderate to large earthquakes. The project would construct multiple structures, all of which would be required to comply with applicable California Building Code (CBC) Title 24 regulations, including engineering standards appropriate for seismic ground shaking hazards. There would be a less than significant impact with compliance with CBC Title 24 regulations. The project site is also generally flat and not in an area prone to landslides. The cumulate projects in the area would comply with adopted CBC regulations and would determine risk on a project by project basis. These geologic hazards are project specific and would be analyzed on a case by case basis. Therefore, the project would not have a cumulatively significant impact.

2. Result in substantial soil erosion or the loss of topsoil?

The project site contains soil types which have slight to moderate erosivity. Construction activities may result in temporary erosion of topsoil during grading activities. However, upon project completion, the site would not contain any loose or exposed topsoil, and conditions that would cause long-term erosion would not be present. Combined with the relatively flat topography present at the project site, grading and development activities would not result in substantial soil erosion or loss of topsoil and impacts would be less than significant.

4. Development of the cumulative projects listed in Table 3-1 in Section 3, *Environmental Setting*, would have the potential to result in soil erosion or the loss of topsoil if the land is cleared or altered as part of the construction or operation of the project. Each project is evaluated individually based on site-specific soil typology and risk. Moreover, the cumulative projects in the area consist of the construction of residential, commercial, office, and warehouse development. Therefore, impacts to topsoil through disturbance would only occur during construction activities. There would not be long-term impacts; upon completion of project construction. Therefore, cumulative impacts would be less than significant. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The project site does not contain expansive soils and would be served by the municipal sewer system, the construction of septic tanks is not required, and there would be no impacts.

4.15.5 Hazards and Hazardous Materials

Would the project:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
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?
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The nearest school is Fremont Elementary, located directly across Orange Street, approximately 150 feet from the project site. Hazardous materials, such as fuel, would be used and stored on-site during the operation of a vehicle service station (gas station) as a stand-alone commercial building within the proposed project. The California Air Resources Board (CARB) recommends avoiding placing typical gasoline dispensing facilities (facility with a throughput of less than 3.6 million gallons per year) closer than 50 feet from sensitive receptors (CARB 2005). The facility is located approximately 150 feet from Fremont Elementary property line, 300 feet from handball recreational courts, and 500 feet from the nearest school building.

Potential hazardous materials, such as fuel, paint products, lubricants, solvents, and cleaning products, may be used and/or stored on-site during the construction of the proposed project. However, due to the limited quantities of these materials to be used by the project, they are not considered hazardous to the public at large. In accordance with the City's Hazardous Materials Policy, the transport, use, and storage of hazardous materials during the construction and operation of the site would be conducted pursuant to all applicable local, state, and federal laws, including but not limited to Title 49 of the Code of Federal Regulations implemented by Title 13 of the California Code of Regulations, which describes strict regulations for the safe transportation of hazardous materials, and in cooperation with the County's Department of Environmental Health. As required by California Health and Safety Code Section 25507, a business shall establish and implement a Hazardous Materials Business Emergency Plan for emergency response to a release or threatened release of a hazardous material. Furthermore, the proposed land use as residential, commercial/retail, and hotel development would not entail the manufacturing or disposal of hazardous materials. Compliance with all applicable local, state, and federal laws would ensure a less than significant impact of any routine transport, use, or disposal of hazardous materials on the public and nearby school.

The majority of the cumulative projects listed in Table 3-1 in Section 3, Environmental Setting, would not entail the manufacturing or disposal of hazardous materials, and although the proposed warehouse projects could potentially involve the use of hazardous materials in their operation, they are located away from sensitive land uses and would not create a significant hazard to the public. The cumulative projects would be required to comply with all applicable local, state, and federal laws when handling hazardous materials during construction or operation. Therefore, cumulative impacts would be less than significant.

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?

The project site is not listed as a hazardous materials site. The nearest hazardous site is located approximately 500 feet southwest of the project, and is not located on national priorities list because contaminants were removed through the remediation process. A Phase I Environmental Site Assessment was conducted by EDI Consultants, in conformance with standard practice and determined the project site has no evidence of hazardous environmental conditions in connection with the property (Appendix P). There would be no impact.

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

The nearest airport is Flabob Airport, located 2.5 miles southwest of the project site. The project is not located within an airport land use plan or within two miles of a public or private airport. There would be no project impact.

7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Project implementation would not alter or otherwise interfere with public rights-of-way and would provide internal ingress and egress to emergency response vehicles. The project would be required to comply with applicable California Fire Code requirements. The project is not located in an area for fire hazard as depicted in the General Plan 2025. With adherence to Riverside Fire Department practices and existing codes, there would be no project impacts.

4.15.6 Hydrology and Water Quality

10. Would the project have inundation by seiche, tsunami, or mudflow?

The project site is located over 40 miles from the Pacific Ocean coastline. There are no substantial standing bodies of water that pose seiche or tsunami risks to the project site. Mudflows are commonly associated with landslide risks. The project site is relatively flat with no identified landslide risks. There would be no project impact.

4.15.7 Land Use and Planning

Would the project:

1. Physically divide an established community?

The project site is currently vacant and bound by I-215 on the east and SR 60 on the south. Single-family homes are adjacent the project site to the north and Fremont Elementary School is located west of the proposed project, across Orange Street. Therefore, development of the site would not displace residents or result in the removal or division of an established community or infrastructure. There would be no impact.

4.15.8 Mineral Resources

Would the project:

1. 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?
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?

The General Plan 2025 determined that there are no areas within the City which have locally-important mineral resources recovery sites. The types of mineral deposits on the site are not known; however, there has been no historical use of the project site for mineral extraction purposes and the project does not involve the extraction of mineral resources. There would therefore be no project impacts.

4.15.9 Noise

Would the project result in:

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

The project is not located within an airport land use plan area or within two miles of a public airport. The nearest airport is Flabob Airport, located 2.5 miles southwest of the project site. There are also no private airstrips within the City or within vicinity of the proposed project location which would expose people working or living in the project to excessive noise levels. There would be no project impacts.

4.15.10 Population and Housing

Would the project:

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

According to Southern California Association of Government's 2016 Regional Transportation Plan and Sustainable Community Strategy, the population of the City of Riverside is estimated to increase to 386,600 by 2040 (Southern California Association of Government 2016). The project includes development of multi-family residential, commercial, and visitor-serving uses, which is estimated to increase the population by 1,897 persons. This represents approximately 2.8 percent of the total anticipated growth of the City to 2040. The project itself would provide housing, roads, and services to existing and new Riverside residents, and would contribute development fees for the City to continue to provide needed services. Project impacts, therefore, would be less than significant to population growth.

Based on the planned and pending residential developments in the cumulative projects list, it is anticipated that 2,422 dwelling units will be built in the City and nearby areas in the City of Colton, City of Jurupa Valley, and the County of Riverside in the foreseeable future. The Department of Finance established an average household size of 3.18 in the City. Using this number, cumulative residential development could increase the population by approximately 7,702 people. The addition of commercial and industrial space, educational facilities, and a hotel could generate approximately 5,858 new jobs, as detailed in Table 4.15-1.

Table 4.15-1 Cumulative Employee Projections

Project Type	Projects Overall Size	Employee Generation Rates	Total Employees
Warehouse	2,582,064 sf	1 employee per 581 sf	4,444
Office	476,547 sf	1 employee per 481 sf	990
Schools	1,100 students	20.8 students per teacher; 40.6 students per support staff[1]	80
Retail/Other	216,179 sf	1 employee per 629 sf	344
Total Employees			**5,858**

Sf = square feet, du = dwelling units

[1] National Center for Education Statistics

Source: Traffic Impact Report, Appendix L

Assuming that all new employees would relocate to the area and using the California Department of Finance average household size for the City, new jobs could generate a conservative estimate of 18,628 new people. Combining these population estimates with 1,897 people added from the subject project, there would be a cumulative population increase of 28,227 people in the foreseeable future. As discussed in Section 4.2, *Air Quality*, the region is expected to have a population increase of 60,740 from 2016 to 2040. The estimated population increase from the cumulative projects represents about 46 percent of the anticipated regional growth. This is a conservative estimate that assumes all new residents and employees would be moving into the area and either bringing or starting families. This conservative cumulative growth estimate is still below the 2016-2040 Regional Transportation Plan and Sustainable Community Strategy growth forecasts. Cumulative impacts would be less than significant.

2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?
3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The site is currently vacant and there is no existing housing or people occupying the site. The project would not displace a substantial number of people or require the construction of replacement housing. There would be no project impacts.

4.15.11 Public Services

1a-b. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Fire protection and police protection?

The project site is located within an area served the Riverside Fire Department and the Riverside Police Department. The closest fire station, Station 6 Northside, is located at 1077 Orange Street, approximately 1 mile north of the project site. The average Riverside Fire Department response time is five minutes and 30 seconds, with the goal to maintain a five-minute response time. The project is located in an urbanized area along major streets to allow for quick response times. The proposed structures would be constructed in conformance with the California Building Code and subject to inspection and approval by the Riverside Fire Department. Therefore, project impacts to fire protection services would be less than significant.

The closest Riverside Police Department station is located at 4102 Orange Street, approximately 1.43 miles south of the project site. The project would cause an incremental increase in the need for police services with the development of new residences, commercial uses, and hotels on a vacant site. However, the project is located in a developed area of the City and in close proximity of the 4102 Orange Street Station. Therefore, the project would have a less than significant impact on public services related to police.

The cumulative projects in the City would also be constructed in compliance with the most current iteration of the California Building Code and reviewed by City public service departments. The project in conjunction with the cumulative projects will contribute to increase demand for police and fire services. The cumulative development projects in the City are not likely to directly result in the need for new construction or expansion of fire station facilities as the buildout of the City, according to the General Plan 2025, was determined to have a less than significant impact on fire services (City of Riverside 2007). However, if the Riverside Fire Department determines construction of new facilities is necessary to serve the City's continued growth, the project would undergo CEQA analysis to determine the level of environmental impact. The project and cumulative projects' potential increase in demand for police services are absorbed into the General Plan 2025 policies which seek to provide a minimum response times. Furthermore, any incremental impacts on the level of police services will be offset from revenue generated for the City from property taxes. Therefore, cumulative impacts to fire and police services are less than significant.

1c-e. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Schools, Parks, or other public facilities?

The project is located within the Riverside Unified School District (RUSD) and across the street from Fremont Elementary School. The project would increase the population by an estimated 1,897 persons, which could include school age children who would enroll into the school district. The increase in population would also increase the demand on other public facilities in the City, such as libraries. The City, however, has a sufficient library system that includes five neighborhood libraries and two libraries that provide virtual material and resources. According to the RUSD Fee Justification Report there was an enrollment shortage at elementary and high school levels in 2012 (RUSD 2012). The RUSD Long Range Facilities Master Plan also shows available capacity in elementary, middle, and high schools (RUSD 2016). The project would also be required to pay school impact fees to offset impacts to school facilities. Therefore, there would be a less than significant impact to schools and other public facilities.

The population increase would also impact park facilities in the City and Northside neighborhood. There are 11 parks within two miles of the project site. The closest parks include Fairmount Park, Reid Park, Hunter Park, AB Brown Sports Park, and White Park. Impacts to park facilities are discussed in detail in Section 4.11, Recreation.

The cumulative projects would also be subject to applicable park development fees and school fees, which would be used to offset impacts from the increase in population and children using public facilities and schools.

4.15.12 Transportation and Traffic

Would the project:

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

The nearest airport is Flabob Airport, located 2.5 miles southwest of the project site. The project is not located within any airport land use plan or within 2.0 miles of a public airport, no changes to air traffic patterns will occur based upon the proposed project, therefore, there would be no impacts.

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

Vehicle access to the project would be accessible from two driveways on Orange Street, one of which would provide fully signalized access and the other would provide right-in/right-out access only. There would also be a secondary access point at the southern terminus of La Cadena Drive at Strong Street. Internally, the project would provide a series of drive aisles that would accommodate vehicular access to the proposed uses throughout the project site. The internal roadways would comply with California Building Code standards and would not include design features that would increase circulation hazards. The project would not result in any changes to the lane or street configuration of Strong Street. The project would require the expansion of the exit ramp from SR 60 at Orange Street to allow for a right-turn-only lane and the addition of a northbound lane on Orange Street form SR 60 to the project entrance. These changes would not affect the overall configuration or accessibility of area roadways and would not create safety hazards.

The project site is adjacent to Fremont Elementary School and the TIA found that there is increased pedestrian activity around the school during school commencement and dismissal. The project would include the installation of a sidewalk along the Orange Street frontage, which currently does not exist, and the installation of a signalized intersection at the project entrance across from the school entrance. These features would reduce potential safety impacts from new vehicles accessing or leaving the project site to less than significant levels.

5. Result in inadequate emergency access?

The project site would be accessible via two driveways on Orange Street and an extension of La Cadena Drive. The project roadways would be constructed in compliance with the Riverside Municipal Mode RMC), such as Section 16.32.290 which requires a 12-foot minimum width for fire apparatus access roads. Per RMC Section 18.210.030(F), that the minimum turn area radius for fire access is 36 feet, provided at the end of cul-de-sacs and dead-end streets. The proposed buildings and layout would also be constructed pursuant to the 2016 California Fire Code as adopted and amended by the City. A Conceptual Fire Plan would be provided by the applicant and subject to inspection and approval by the City Fire Department, along with access and circulation roadways, prior to occupancy. Therefore, there would be a less than significant project impact.

Cumulative projects would be construction pursuant to applicable building and safety codes, and they would be reviewed and subject to inspection by appropriate government departments. Cumulative impacts would be less than significant.

6. Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The project is located near existing pedestrian, bicycle and transit facilities. The closest Riverside Transit Agency public bus stops are located along Main Street, approximately 650 feet west of the project site, and on Russell Street, approximately 1,100 feet southwest of the project site. Sidewalks are currently located on the western side of Orange Street and northern side of Oakley Avenue. Class II bicycle lanes and sidewalks exist on both sides of Spruce Street, and a Park & Ride facility is located approximately 600 feet south of the project site#. The project's road and street improvements would not affect the overall configuration or accessibility of Orange Street or La Cadena Drive; nor would it impact the performance or safety of alternative transportation modes. The project would have a less than significant impact.

The cumulative projects would incrementally increase the need for transit facilities and people utilizing bicycle and pedestrian facilities. The General Plan 2025 Circulation and Mobility Element designates streets throughout the City as local streets, connector street, or arterial streets. Depending on the location of each cumulative project, the project would be required to maintain or implement the adopted street standards, including pedestrian right-of-ways. The City's Bicycle Master Plan provides recommendations for the location of future bicycle facilities based on street types. Cumulative projects would not inhibit the implementation of these facilities as they would not encroach into the right-of-way without proper permit approval and implementation of appropriate mitigation measures. Many of the cumulative projects are in the downtown core, an area with a high concentration of public transit stops. Individual projects would be evaluated on a project-by-project basis for the need to provide additional transit facilities. Also, each project would be reviewed and conditioned by the Public Works Department to maintain the appropriate right-of-ways and pedestrian facilities. Therefore, cumulative impacts would be less than significant.

4.15.13 Utilities and Service Systems

Would the project:

1. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

The City's Regional Water Quality Control Plant is subject to Waste Discharge Requirements for Order No. R8-2013-0016, National Pollutant Discharge Elimination System (NPDES) No. CA0105350, and the Western Riverside County Regional Wastewater Authority facility are subject to Order No. R8-2015-0013 NPDES No. CA8000316. The Regional Water Quality Control Board (RWQCB) administers NPDES permits. The project would be required to comply with all provisions of the NPDES program, as enforced by the RWQCB. Therefore, implementation of the project would not exceed applicable wastewater treatment requirements of the RWQCB with respect to discharges to the sewer system or stormwater system within the City. Therefore, impacts would be less than significant.

Similarly, the cumulative projects in the area would have their wastewater treated by facilities required to comply with applicable RWQCB permits. Therefore, cumulative impacts would be less than significant.

2. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
5. 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?

The City's Public Works Department provides sewer services to the project site. The sewer system would collect, treat, and dispose of project wastewater through the Riverside Regional Water Quality Control Plant (RRWQCP). In 2015, RRWQCP's plant capacity expanded to 46 million gallons per day (mgd) (City of Riverside 2016). The RRWQCP serves approximately 295,000 people, who generate approximately 18 mgd. Therefore, the RRWQCP currently has excess capacity. The project is anticipated to contribute approximately two percent of the total anticipated regional growth, which would contribute a nominal amount of additional wastewater. The project would generate approximately 48.6 million gallons per year or 0.12 million gallons per day, shown in Table 4.15-2 which is well within the capacity of the existing system. The project would also be subject to sewer, connection, and capacity fees to reduce impacts of additional wastewater and users on the system. Therefore, project impacts would be less than significant.

Table 4.15-2 Estimated Project Wastewater Demand

Land Use[1]	Development Statistics	Unit	Water Demand Factor (annual)[2]	Total Water Demand (Mgal/Year)
Residential	482	DU	65,154 gal/DU	31.4
Hotel	229	room	25,367 gal/room	5.8
Retail	15	TSF	74,073 gal/TSF	1.1
Restaurant	34	TSF	303,534 gal/TSF	10.3
Total Water Demand				**48.6**

TSF: thousand square feet; DU: dwelling unit; Mgal/year = million gallons per year; AFY: acre feet per year

[1] Land uses were classified based on a corresponding land use recognized by CalEEMod

[2] Water demand rates obtained from CalEEMod version 2016.3.2

Cumulative development in the area would increase wastewater flow and treatment. The cumulative projects list provided in Section 3 includes six projects in the City of Jurupa Valley and two projects in the City of Colton. RRWQCP would not serve projects in Colton and were not included in this analysis. Cumulative wastewater demand was estimated in Table 4.15-3 using the indoor water demand factors employed by CalEEMod, which provides water demand factors for a wide range of land uses.

Table 4.15-3 Estimated Cumulative Wastewater Demand

Land Use[1]	Development Statistics	Unit	Indoor Water Demand Factor (annual)[2]	Total Water Demand (Mgal/year)[3]
City of Riverside				
Residential	859	DU	65,154 gal/DU	56.0
Hotel	239	room	25,367 gal/room	6.1
Industrial, Manufacturing, Storage	2,561	TSF	231,250 gal/TSF	592.2
Retail	32.63	TSF	74,073 gal/TSF	2.4
Office	146.684	TSF	177,734 gal/TSF	26.1
Restaurant	15.5	TSF	303,534 gal/TSF	4.7
Schools	81.892	TSF	20,621 gal/TSF	1.7
Research Lab	8.98	TSF	491,694 gal/TSF	4.4
Museum, Church	13.049	TSF	31,289 gal/TSF	0.4
Vehicle Repair	3.008	TSF	94,081 gal/TSF	0.3
City Subtotal				**694.3**
County of Riverside[4]				
Residential	237	DU	65,154 gal/DU	15.4
Industrial, Manufacturing, Storage	28.949	TSF	231,250 gal/TSF	6.7
Retail	2.4	TSF	74,073 gal/TSF	0.2
Office	7.989	TSF	177,734 gal/TSF	1.4
County Subtotal				**23.7**
City of Jurupa Valley				
Retail	13.558	TSF	74,073 gal/TSF	1.0
Residential	1,706	DU	65,154 gal/DU	111.2
Retail	31.375	TSF	74,073 gal/TSF	2.3
Office	306.894	TSF	177,734 gal/TSF	54.5
Jurupa Valley Subtotal				**169.0**
Total Water Demand				**887.0**

TSF: thousand square feet; DU: dwelling unit; Mgal/year = million gallons per year; AFY: acre-feet per year

[1] Land uses were classified based on a corresponding land use recognized by CalEEMod. For calculation purposes, the 1.88-acre school (Project 15 in the Cumulative Projects List) was converted to square footage and modeled as a junior high school; a 3,700-square foot museum was modeled under the library land use, and a 2,961-square foot laundromat was modeled under the General Light Industrial land use.

[2] Indoor and Outdoor water demand rates obtained from CalEEMod version 2016.3.2

[3] Total annual water demand, including both indoor and outdoor demand

[4] For purposes of this analysis, all cumulative projects in the County of Riverside are assumed to be served by RRWQCP

As indicated in Table 4.15-3, cumulative wastewater demand would be approximately 887 million gallons per year, or 2.4 million gallons per day. The RRWQCP currently has over 20 million gallons per day of excess capacity and, therefore, would have adequate capacity to serve the cumulative projects. Similar to the project, each cumulative project would also be subject to sewer capacity fees in order to maintain sufficient capacity and facilities. Cumulative impacts would be less than significant.

6. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
7. Comply with federal, state, and local statutes and regulations related to solid waste?

The City of Riverside Public Works Department collects trash from 70 percent of the City's households and the remainder is collected by private contractors. The majority of the City's waste goes to the Badlands Sanitary Landfill (339,526 tons) and the El Sobrante Landfill (20,287 tons) (CalRecycle 2018c). The Badlands Sanitary Landfill has a permitted daily capacity of 4,800 tons, a permitted total capacity of 34,400,000 cubic yards, and a remaining capacity of 15,748,799 cubic yards. The landfill is projected to close in 2022 (CalRecycle 2018a). The El Sobrante Landfill has a permitted daily capacity of 16,054 tons, a permitted total capacity of 209,910,000 tons, and a remaining capacity of 143,977,170 tons. It is projected to close in 2051 (CalRecycle 2018b).

The project would generate both construction and operational solid waste, which would be disposed of at the aforementioned landfills. Based on the modeling results from CalEEMod, the project is estimated to generate approximately 674 tons of solid waste per year, which represents approximately 0.2 percent of the total solid waste sent to landfills from Riverside each year. Given the existing landfill capacity for this solid waste, the project would have a less than significant impact.

Cumulative development would increase the amount of solid waste entering local landfills. Cumulative solid waste demand was estimated using solid waste disposal rates in CalEEMod, as shown in Table 4.15-4.

Table 4.15-4 Estimated Cumulative Solid Waste Demand

Land Use[1]	Development Statistics	Unit	Solid Waste Disposal Rate	Solid Waste Demand (tons/year)[2]
City of Riverside				
Residential	859	DU	0.46 tons/DU/year	395.1
Hotel	239	room	0.55 tons/room/year	131.5
Industrial, Manufacturing, Storage	2,561	TSF	0.94 tons/TSF/year	2,407.3
Retail	32.63	TSF	1.05 tons/TSF/year	34.3
Office	146.684	TSF	0.93 tons/TSF/year	136.4
Restaurant	15.5	TSF	0.91 tons/TSF/year	14.1
Schools	500	STU	0.18 tons/STU/year	90
Research Lab	8.98	TSF	0.08 tons/TSF/year	0.7
Museum, Church	13.049	TSF	0.92 tons/TSF/year	12.0
Vehicle Repair	3.008	TSF	3.82 tons/TSF/year	11.5
City of Riverside Subtotal				**3,232.9**
County of Riverside[3]				
Residential	237	DU	0.46 tons/DU/year	109.0
Industrial, Manufacturing, Storage	28.949	TSF	0.94 tons/TSF/year	27.2
Retail	2.4	TSF	1.05 tons/TSF/year	2.5
Office	7.989	TSF	0.93 tons/TSF/year	7.4
County of Riverside Subtotal				**146.1**
City of Colton[3]				
Residential	887	DU	0.46 tons/DU/year	408.0
Schools	600	STU	0.18 tons/STU/year	108.0
Retail	6.5	TSF	1.05 tons/TSF/year	6.8
Fast Food with Drive Thru	5.5	TSF	11.52 tons/TSF/year	63.4
Warehouse	247	TSF	0.94 tons/TSF/year	232.2
City of Colton Subtotal				**818.4**
City of Jurupa Valley[3]				
Residential	1,706	DU	0.46 tons/DU/year	784.8
Office	306.9	TSF	0.93 tons/TSF/year	285.4
Retail	44.9	TSF	1.05 tons/TSF/year	47.1
City of Jurupa Valley Subtotal				**1,117.3**
Total Solid Waste Demand				**5,314.7**

TSF: thousand square feet; DU: dwelling unit; STU: student; Mgal/year = million gallons per year; AFY: acre-feet per year

[1] Land uses were classified based on a corresponding land use recognized by CalEEMod. For calculation purposes, schools modeled as elementary; a 3,700-square foot museum was modeled under the library land use, a 2,961-square foot laundromat was modeled under the General Light Industrial land use, residential projects were modeled conservatively under apartments low-rise.

[2] Solid waste disposal rates were obtained from CalEEMod version 2016.3.2.

[3] For purposes of this analysis, all cumulative projects are assumed to be served by Badland and El Sobrante Landfills.

As shown in Table 4.15-4, cumulative projects would produce approximately 5,314.7 tons of solid waste per year, or 14.6 tons of solid waste per day. The 14.6 daily tons of solid waste by the cumulative projects is well within the permitted daily capacity of 4,800 tons at the Badlands Sanitary Land and 16,054 tons at the El Sobrante Landfill. Moreover, these landfills have sufficient remaining capacity to handle the additional waste from the projects into the future. Also, local jurisdictions' current policies and regulations are seeking to divert solid waste, which are expected to improve. Therefore, cumulative projects would have a less than significant impact.

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