4 Environmental Analysis

The following environmental analyses provide information relative to 17 environmental topics as they pertain to the proposed Costco/Vineyard II Retail Development Project (project). Each section of this chapter describes existing environmental and regulatory conditions, presents the criteria used to determine whether an impact would be significant, analyzes significant impacts, identifies mitigation measures for each significant impact, discusses the significance of impacts after mitigation is applied, and discusses cumulative impacts.

This chapter includes a separate section for each of the following issue areas:

- Section 4.1, Aesthetics
- Section 4.2, Air Quality
- Section 4.3, Biological Resources
- Section 4.4, Cultural Resources
- Section 4.5, Geology and Soils
- Section 4.6, Greenhouse Gas Emissions
- Section 4.7, Hazards and Hazardous Materials
- Section 4.8, Hydrology and Water Quality
- Section 4.9, Noise
- Section 4.10, Population and Housing
- Section 4.11, Public Services
- Section 4.12, Recreation
- Section 4.13, Transportation
- Section 4.14, Tribal Cultural Resources
- Section 4.15, Utilities and Service Systems
- Section 4.16, Energy
- Section 4.17, Wildfire

Agriculture and forestry resources and mineral resources were all considered to be less than significant or to have no impact in the Initial Study. These environmental topics are discussed in Section 5.4, Effects Found Not to Be Significant, of Chapter 5, Other CEQA Considerations, of this Environmental Impact Report (EIR), and are not discussed in further detail pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15128 (14 CCR 15000 et seq.). The project site does not contain any agriculture, forestry resources, or mineral resources as defined by the State Mining and Reclamation Act or the City of Murrieta's General Plan.

Additionally, impacts to Land Use and Planning were discussed in the Initial Study (Appendix A). The Initial Study determined that the project would not physically divide an established community, nor would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. The Initial Study did, however, conclude that the project could potentially conflict with an applicable habitat conservation plan or natural community conservation plan, and stated that the Draft EIR would analyze these potential impacts. However, in December 2018, the California Natural Resources Agency adopted final text to a comprehensive update to the CEQA Guidelines (2018 Update). The 2018 Update

included modifications to the land use planning threshold regarding conflicts with an applicable land use plan, policy, or regulation (additions are shown in underline and deletions are shown in ~~strikeout~~):

> Would the project cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of ~~(including, but not limited to the general plan, specific plan, local coastal plan, or zoning ordinance)~~ avoiding or mitigating an environmental effect?

Additionally, the 2018 Update moved the discussion pertaining to habitat conservation plans and natural community conservation plans to the biological resources section.

With regard to the conflicts with an applicable land use plan, policy, or regulation, the proposed project would not cause a significant environmental impact due to a conflict with an applicable plan, policy, or regulation, since the project would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. Furthermore, because the analysis of the project's consistency with habitat conservation plans and natural community conservation plans is discussed in the biological resources section of this EIR, impacts to land use and planning will not be discussed in further detail. Urban decay, a related topic to land use and planning, is discussed in Chapter 5.

The remainder of the CEQA checklist topics have been updated to reflect the 2018 Update throughout this EIR.

Chapter 6 analyzes alternatives, and Chapter 7 includes the list of preparers.

Analysis Format

This project EIR assesses how the proposed project would impact the issue areas listed above. Each environmental issue addressed in this EIR is presented in terms of the following subsections:

- **Introduction.** Discusses the resource area to be evaluated and describes the methodology used for the analysis. If applicable, this section includes a discussion of any surveys and documentation reviewed to conduct the analysis of existing conditions and potential impacts.
- **Existing Conditions.** Describes the existing setting on or surrounding the project site that may be subject to change as a result of implementation of the project. This setting describes the conditions that existed when the Notice of Preparation was sent to responsible agencies and the State Clearinghouse.
- **Relevant Plans, Policies, and Ordinances.** Describes relevant federal, state, and local policies and regulations pertaining to a particular issue area.
- **Thresholds of Significance.** Provides criteria for determining the significance of project impacts for each environmental issue.
- **Impacts Analysis.** Provides a discussion of the project's characteristics that may have an impact on the environment, includes a discussion of methodology as applicable, analyzes the nature and extent to which the proposed project is expected to change the existing environment, and indicates whether the project's impacts meet or exceed the levels of significance thresholds.
- **Mitigation Measures.** Identifies mitigation measures to reduce significant adverse impacts, if any, to the extent feasible.

- **Level of Significance after Mitigation.** Provides a discussion of significant adverse environmental impacts that cannot be feasibly mitigated or avoided, significant adverse environmental impacts that can be feasibly mitigated or avoided, and adverse environmental impacts that are not significant, if any.
- **Cumulative Impacts.** Provides a discussion of the past, present, and reasonably foreseeable projects relevant to each resource analysis, and documents cumulatively considerable environmental impacts that cannot be feasibly mitigated or avoided, cumulatively considerable environmental impacts that can be feasibly mitigated or avoided, and environmental impacts that are not cumulatively considerable. Mitigation measures to reduce cumulative impacts are included where necessary.
- **References**. Lists the sources cited during preparation of the EIR.

Cumulative Projects Analysis

Section 15130(b)(1)(A) of the CEQA Guidelines (14 CCR 15000 et seq.) allows for the preparation of a list of past, present, and reasonably anticipated future projects as a viable method of determining cumulative impacts. Table 3-2, Related Projects, in Chapter 3, Project Description, presents the cumulative projects accounted for in this EIR.

INTENTIONALLY LEFT BLANK

4.1 Aesthetics

This section describes the existing visual setting of the proposed Costco/Vineyard II Retail Development Project (project) site and vicinity, identifies associated regulatory requirements, and evaluates potential impacts of the proposed project.

4.1.1 Existing Conditions

4.1.1.1 Existing Visual Character and Quality of the Project Site

The approximately 26.3-acre project site is located within the Paloma Valley, which stretches from the Antelope Hills west of Interstate (I) 215 across the valley to the foothills in the east. The Paloma Valley is generally bounded by Bell Mountain and the Menifee Valley to the north, the Hogback Hills to the south, and the Sedco Hills to the southwest. The project site is located east of I-215 and is bounded by vacated Antelope Road to the west, residential development to the east, and vacant undeveloped land to the north and south.

Prior to 2006, the project site and surrounding properties were undeveloped and featured two low-lying hills. The hills and surrounding slopes featured a mix of bare soils and stands of low-growing shrubs and grasses. Elevations range from approximately 1,510 to 1,605 feet above mean sea level. In 2006, the City approved an Initial Study and permit for mass grading for an approximately 18.7-acre portion of the project site (Antelope and Cape Aire Mass Grading Plan, EA 2005-1763). Until termination of that grading operation in December 2019, soil and rocks removed from the site were sold by North County Sand and Gravel to surrounding construction operations for use as clean fill material. As part of that operation, the majority of the project site, as well as the Vineyard I property immediately south of the project site, has been graded and excavated, resulting in an expanse of bare soil with stockpiles of gravel, sand, and boulders distributed throughout the site. Over the course of these operations, the topography of the area was changing as fill was removed from the site. Except for a pole-mounted transformer located at the northwestern corner of the site, there are no permanent structures on site.

The North County Sand and Gravel mass grading operation covered the majority of the project site, but its eastern edges have not yet been graded and can be characterized as disturbed land. This area is generally flat and south sloping. It features predominantly bare ground and compacted soils with a sparse covering of non-native plant species and other disturbance-tolerant plant species. There are two small natural catch basins for stormwater siltation and pollution prevention purposes, one located at the southeast corner of the project site and the other at the northwest corner.

4.1.1.2 Existing Visual Character and Quality of the Surrounding Area

The project site is surrounded by commercial development, residential development, a high school, and vacant land. Figure 3-3, Surrounding Land Uses, shows specific land uses located in the immediate vicinity of the project site.

The property immediately south of the project site has also been part of the mass grading operation and is also the site of the Vineyard I project, which is currently under construction. Immediately west of the project site lies the vacated portion of old Antelope Road, followed by a narrow undeveloped property. This undeveloped property is a westward sloping, vacant site that contains non-native grasses and low-growing scattered shrubs. This property is proposed for development of the Vineyard III commercial development. The property north of the project site is the

least disturbed of the undeveloped properties and features thick stands of California buckwheat (*Eriogonum fasciculatum*) among various non-native grasses.

Although land on three sides of the project site is currently vacant, as discussed above, the project site is located in a generally urbanized and developed area of the City (see Figure 3-3 for a map of uses in the vicinity of the project site). The area east of the project site includes a residential development with single-family and multi-family units. An approximately 6-foot-high concrete masonry unit split faced block wall separates these residences from the project site, along with a row of pepper trees and a drainage area. Clinton Keith Road runs parallel to the southern border of the property south of the project site (i.e., the Vineyard I site). On the southern side of Clinton Keith Road, Vista Murrieta High School sits on a 60-acre lot. The school is approximately 0.1 miles away from the project site. It includes instructional classrooms, three parking lots, eight tennis courts, a baseball field, outdoor pool, football stadium, and two softball fields. West of the school is a high-density multi-family residential development that occupies approximately 27 acres and is approximately 0.1 miles from the project site. Access to this multi-family development is taken via Creighton Avenue from Clinton Keith Road. I-215 is located approximately 200 feet west of the project site, followed by large retail development known as The Orchard, which is located west of the freeway. This development features a variety of uses, including a gas station, bank, fast food restaurants, and several retail pads. The largest retail pad features a Super Target store, which is approximately 0.2 miles northwest of the project site. The property north of the project site is vacant undeveloped land, followed by an approximately 9-acre nursery, a single-family home, and two construction storage yards. A bus storage and bus refurbishment facility is located just north of these uses and approximately 0.5 miles from the project site.

4.1.1.3 Light and Glare

The project site is located in an area where nighttime lighting is a relatively common feature. Existing light sources in the area include streetlights installed along I-215, Clinton Keith Road, Antelope Road, Creighton Avenue, and local neighborhood roads; exterior and interior lighting associated with residential, commercial, and school development in the surrounding area; lighting from signage associated with commercial development along the I-215 corridor; and lights from motorists. On occasion, nighttime lighting in the area includes lighting associated with the Vista Murrieta High School football stadium.

Glare is the result of sharply reflected light caused by sunlight or artificial light reflecting from highly finished surfaces such as window glass or brightly colored surfaces, and the direct view of a bright, unshielded light source. Glare can be uncomfortable (discomfort glare) and/or disabling (disability glare). Glare decreases visibility, but the level of receptors' sensitivity to glare can vary widely. Potential sources of glare in the project area are limited and proposed light sources are shielded to only allow light to go downward and not to the sides.

The project site is located approximately 24 miles northwest of the Mount Palomar Observatory and is therefore within Zone B (15- to 45-mile radius) of the Mount Palomar Nighttime Lighting Policy Area.

4.1.2 Relevant Plans, Policies, and Ordinances

Federal

There are no applicable federal regulations regarding the protection of visual resources that would be applicable to the proposed project or the project site.

State

The California Scenic Highway Program

California's Scenic Highway Program was created by the state legislature in 1963. This program's purpose is to "preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways" (Caltrans 2014). The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The California Scenic Highway System includes a list of highways that either have already been designated as scenic highways or that are eligible for designation as scenic highways. There are no state designated or eligible scenic highways in the project area (Caltrans 2019).

California Building Standards Code

Title 24 of the California Building Standards Code serves as the basis for the design and construction of buildings in California. In addition to safety, sustainability, new technology, and reliability, the California Building Standards Code addresses light pollution and glare hazards through the establishment of maximum allowable backlight, uplight, and glare ratings (State of California 2011). The following components of Title 24 include standards related to lighting.

Title 24, Part 6 – California Energy Code

The California Energy Code stipulates allowances for lighting power and provides lighting control requirements for various lighting systems, with the aim of reducing energy consumption through efficient and effective use of lighting equipment.

Title 24, Part 11 – California Green Building Standards Code

The California Green Building Standards Code, which is Part 11 of Title 24, is commonly referred to as the CALGreen Code. Paragraph 5.1106.8, Light pollution reduction, requires that all non-residential outdoor lighting comply with the minimum requirements in the California Energy Code or the applicable local ordinance if more stringent.

California Vehicle Code

Chapter 2, Article 3 of the California Vehicle Code stipulates limits to the location of light sources that may cause glare and impair the vision of drivers.

Article 3, Offenses Relating to Traffic Devices [21450–21468] (Article 3 enacted by Stats. 1959, Ch. 3.), Section 21466.5, stipulates that no person shall place or maintain or display, upon or in view of any highway, any light of any color of such brilliance as to impair the vision of drivers upon the highway.

Local

County of Riverside General Plan

The Circulation Element of the County of Riverside General Plan identifies I-215 as a County Eligible Scenic Highway (County of Riverside 2016), and the Circulation Element, Land Use Element, and Multipurpose Open Space Element contain policies related to the protection and maintenance of resources along scenic corridors and highways (County of Riverside 2015, 2016, 2017).

County of Riverside Ordinance 655 (Regulation of Light Pollution)

The intent of Ordinance 655 is to "restrict the permitted use of certain light fixtures emitting into the night sky undesirable light rays which have a detrimental effect on astronomical observation and research" (County of Riverside 1988). The ordinance establishes requirements for lamp source and shielding for outdoor lighting fixtures based on location: more stringent lighting standards are applicable to lands located within a 15-mile radius of Mount Palomar Observatory (these lands are located in "Zone A") than for lands located greater than 15 miles from the observatory (i.e., lands in "Zone B"). The project site is located approximately 24 miles from the observatory and would, thus, be subject to the lamp source and shielding requirements applicable to Zone B areas. Low-pressure sodium and lamp types of 4,050 lumens and less (including yellow LED lights and white LED lights with cut offs) are allowed (no shielding is required), and lamp types of 4,050 lumens and more are prohibited after 11:00 p.m. (County of Riverside 1988).

Murrieta General Plan 2035

The Conservation Element and Recreation and Open Space Element of the Murrieta General Plan 2035 (City of Murrieta 2011a, 2011b) include goals and policies related to the preservation of aesthetic resources. Following are the relevant goals and policies within the General Plan.

Conservation Element

Goal CSV-5 Hills and ridges are protected for their environmental and aesthetic values.

Policy CSV-5.1 Promote compliance with hillside development standards and guidelines to maintain the natural character and the environmental and aesthetic values of sloped areas.

Recreation and Open Space Element

Goal ROS-7 Open space areas are planned to protect, conserve, and utilize resources of unique character and value for the community.

Policy ROS-7.2 Designate open space to preserve habitat and scenic views of natural areas.

City of Murrieta Municipal Code

Title 16 of the City's Municipal Code contains regulations that identify the permitted land uses on all parcels in the City through assigned districts. It also identifies applicable use regulations, site development criteria (e.g., lot size, density/intensity, yard setbacks, open space, heights, parking, landscaped areas), performance standards, and general design regulations (e.g., site design, building orientation, access, parking areas, landscaping, fencing/screening, lighting, building design).

Section 16.18.100, Lighting, of the City's Municipal Code, contains regulations specific to lighting. These regulations include the following [original numbering and lettering retained throughout this section]:

A. Exterior lighting shall be:
   1. Architecturally integrated with the character of adjacent structure(s);
   2. Directed downward and shielded so that glare is confined within the boundaries of the subject parcel;

3. Installed so that lights do not blink, flash, or be of unusually high intensity or brightness; and
4. Appropriate in height, intensity, and scale to the uses they are serving. Outside and parking lot lighting shall not exceed 0.3 foot candles at residential property lines.

B. Security lighting shall be provided at all entrances/exits, to structures in multi-family zoning districts and nonresidential zoning districts. The minimum illumination shall be two-foot candles at ground level in front of the entrance/exit.

C. Light sources shall be shielded to direct light rays onto the subject parcel only. The light source, whether bulb or tube, shall not be visible from an adjacent property, with the exception of residential uses, sign illumination, traffic safety lighting, or public street lighting.

Similar to County of Riverside Ordinance 655, Section 16.18.100 of the City's Municipal Code establishes regulations to restrict the use of certain light fixtures that may have a detrimental effect on astronomical observation and research at the Mount Palomar Observatory. However, unlike the County of Riverside ordinance, the City's Municipal Code establishes a "Dark Sky Zone" that includes all areas located within a 30-mile radius of the observatory. Within the Dark Sky Zone (within which the project site is located), all outdoor lighting fixtures must be fully shielded or constructed such that emitted light rays are projected below the horizontal plane passing through the lowest point on the fixture from which light is emitted, and lighting shall be below 4050 lumens after 11:00 p.m.

Section 16.18.120, Screening and Buffering, of the City's Municipal Code provides standards for the screening and buffering of adjoining land uses, equipment, outdoor storage areas, and surface parking areas. Multi-family and nonresidential land uses are required to comply with the requirements of this section. The relevant standards of Section 16.18.120 of the City's Municipal Code are as follows:

A. Screening Between Different Land Uses. An opaque screen consisting of plant material and a masonry wall, a minimum of six feet in height, shall be installed along parcel boundaries whenever a commercial development adjoins a residential zoning district.

B. Mechanical Equipment, Utility Services, Loading Docks, and Refuse Areas. The manner and adequacy of the screening for mechanical equipment, utility services, loading docks and refuse areas shall consider the adjacent structures, land uses and zoning, as well as the overall site and building design.

1. All building-mounted and ground-mounted mechanical equipment and utility services (air conditioning, heating, cooling, elevator shafts, ventilation ducts and exhaust, equipment panels, etc.) shall be adequately screened from view in all horizontal directions as determined by the Director and in accordance with the following standards:

a. The screening method shall be architecturally compatible and integrated with the site development in terms of design, materials, color, form, architectural style and landscaping.

b. At a minimum, adequate screening shall be based on a line-of-sight in all directions from a point five (5) feet above the grade of the building finished floor at a distance of six-hundred and sixty (660) feet.

c. Line-of-sight details shall be prepared by a qualified draftsperson, licensed contractor, licensed architect, registered civil engineer or licensed land surveyor and provided to the City.

C. Parking Areas Abutting Public Streets and Rights-of-Way. An opaque screen shall be installed along parking areas abutting public streets and rights-of-way. The screening shall have a height of not less than thirty (30) inches and not more than forty-two (42) inches at maturity. Where the finished elevation of a parking area is lower at the boundary line than an abutting property elevation by at least twenty-four (24) inches, the change in elevation may be used in lieu of, or in combination with, additional screening to satisfy the requirements of this subsection.

The opaque screen shall consist of one, or a combination, of the following:

1. Landscaped Berm. A berm constructed of earthen materials and landscaped to form an opaque screen;
2. Fences. A solid fence constructed of wood, or other materials a minimum nominal thickness of two inches to form an opaque screen; and/or
3. Walls, Including Retaining Walls. A wall of concrete, block, stone, brick, tile, or other similar type of solid masonry material, a minimum of six inches thick (Ord. 440-10 § 1, 2010; Ord. 182 § 2 (part), 1997).

Section 16.24, Hillside Development, contains regulations for the development of areas in the city that, because of their topography, require special consideration to ensure that they are developed in a way that substantially maintains their natural character and environmental and aesthetic values to implement the General Plan, and to provide for the safety, health, and welfare of the public. The provisions of Section 16.24 apply to uses and structures within areas that have a natural slope of 20% or greater and/or are designated on the significant features map on file with the Planning Department. Because the project site has been graded and excavated as part of the mass grading, no natural slopes exist on the project site, and the provisions of this section do not apply to the project or project site. Additionally, the project site is not listed on a significant features map.

Section 16.38, Sign Standards, contains regulations regulating the size, height, design, quality of materials, construction, location, lighting, and maintenance of signs and sign structures not enclosed within a building. Specifically, Section 16.38.060, Comprehensive Sign Program, allows for the development of a comprehensive sign program, which provides a means for the flexible application of sign regulations for multi-tenant projects. All comprehensive sign programs must be reviewed and approved by the Planning Director, who will issue a development plan permit for implementation of the comprehensive sign program.

Section 16.34.070, Development Standards for Off-Street Parking, establishes regulations for off-street parking areas. The relevant standards of Section 16.34.070 of the City's Municipal Code are as follows:

I. Lighting. Parking areas shall have lighting capable of providing adequate illumination for security and safety. Lighting standards shall be energy-efficient and in scale with the height and use of the on-site structure(s). All illumination, including security lighting, shall be directed downward, away from adjacent properties and public rights-of-way in compliance with Section 16.18.100 (Lighting).

Section 16.34.100, Off-Street Loading Space Requirements, establishes regulations for off-street loading space areas, which affects the aesthetic design of the proposed project. The relevant standards of Section 16.34.100 of the City of Murrieta's Municipal Code are as follows:

B. Standards for Off-Street Loading Areas. Off-street loading areas shall be provided in the following manner:
   1. Lighting. Loading areas shall have lighting capable of providing adequate illumination for security and safety. Lighting standards shall be energy-efficient and in scale with the height and use of adjacent structure(s) in compliance with Section 16.18.100 (Lighting);
   2. Loading Doors and Gates. Loading bays and roll-up doors shall be painted to blend with the exterior structure wall(s) and be located on the rear of the structure only. Bays and doors may be located on the side of a structure, away from a street frontage, where the director determines that the bays, doors, and related trucks will be adequately screened from view from adjacent streets;

3. Location. Loading spaces shall be located and designed as follows:
    b. Loading facilities shall be fully screened from view from adjacent public streets and freeways with architectural elements, landscaping or a combination of both.

4.1.3 Thresholds of Significance

The significance criteria used to evaluate project impacts to aesthetics are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to aesthetics would occur if the project would:

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. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Thresholds 1 and 2 were analyzed in the project's Initial Study (see Appendix A). The project site is located in a developed area of the City and is not located within the viewshed of any identified scenic vistas. As described in the Murrieta General Plan 2035 Final EIR, a scenic vista is described as "a view of undisturbed natural lands exhibiting a unique or unusual feature that comprises an important or dominant portion of the viewshed" (City of Murrieta 2011c). Given that the project site is currently the site of a mass grading operation within a developed part of the City, it was determined that the project site is not located within a scenic vista. Additionally, there are no designated or proposed state scenic highways within the vicinity of the project site. For these reasons, the impacts of the project with respect to scenic vistas and state scenic highways were determined to be nonexistent or less than significant, and will not be analyzed further in this Environmental Impact Report (EIR).

4.1.4 Impacts Analysis

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

Less-than-Significant Impact. Section 21071 of the California Public Resources Code (i.e., CEQA) defines an "urbanized area" as "(a) an incorporated city that meets either of the following criteria: (1) Has a population of at least 100,000 persons, or (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons." As of January 1, 2019, the U.S. Census Bureau estimated the population of the City to be 118,125 persons (DOF 2019). Therefore, the City is located within an urbanized area as defined by CEQA.

To ensure that both current and future development within the City is designed and constructed to conform to existing visual character and quality of the surrounding built environment, the City's Municipal Code includes design

standards, specific to each Zoning District, related to building height, parking, landscaping requirements, and other visual considerations. The purpose is to regulate and restrict the uses of buildings and structures, and to encourage the most appropriate use of land. The City's General Plan Land Use Map designates the project site as Commercial (C), and the City's Zoning Map shows the site as zoned Regional Commercial (RC). The proposed project will be required to be developed in accordance with the existing land use and zoning designations. The project's consistency with these land use and zoning designations would be reviewed during the plan-check phase of project review. Therefore, because the project would be required to comply with all applicable regulations governing scenic quality, potential impacts would be less than significant.

Additionally, development of the project would be consistent with surrounding development and would not degrade the existing visual character of the project site and its surroundings. The project site is located in an urbanized area of the City and is currently characterized as an undeveloped site that has been the site of rock, sand, and gravel removal. As indicated above, the City's hillside development standards (set forth in the City's Municipal Code Section 16.24) apply to uses and structures within areas that have a natural slope of 20% or greater and/or are designated on the significant features map on file with the Planning Department. Because the project site has been graded and excavated as part of the mass grading, no natural slopes exist on the project site, and the provisions of this section do not apply to the project or project site. Additionally, the project site is not listed on a significant features map.

Construction of the project would require the use of heavy machinery such as large trucks, cranes, bull dozers, and other equipment needed for construction activities. Given that the project site has already been subject to construction-like activities as part of the mass grading, construction of the project would not degrade the visual character or quality of public views of the site. Furthermore, these activities would be temporary, and would conclude with completion of construction of the project.

Once construction of the project is complete, the condition of the site would change from an undeveloped site with grading activities to a developed condition for commercial purposes. The project would be built consistent with existing patterns of development in the surrounding area, which is becoming more urbanized, including the residential neighborhoods east and southwest of the project site, Vista Murrieta High School, the Vineyard I project under construction to the south, and the retail development west of I-215 known as The Orchard (see Figures 3-3 through 3-7, Building Elevations, in Chapter 3, Project Description). In addition, the project would be subject to design review by the City and would meet the City's conditions of approval, which will ensure that proposed structures, landscaping, signs, and perimeter walls would be consistent with the City's General Plan and Municipal Code. To minimize the visual impact of large retail warehouses and retail pads, the design would integrate design techniques such as compatible color schemes, landscaping, and varying parapet cap heights. Project buildings would vary in height from approximately 24 to 39.5 feet, and would be constructed of materials in warm, natural earth tones consistent with the architectural detailing of the more recent buildings in the area. Using these design elements would break up long elevations horizontally and vertically. The technique of breaking a long elevation into smaller elements would be used to create a more visually interesting building that is at a pedestrian-friendly scale. The color and material board for the project is consistent with the previously approved retail project immediately south of the project site, which uses real natural rock on sign bases, mansards, and column bases.

The landscape plan would include a mix of drought-tolerant shrubs and grasses and a variety of shade trees to be used throughout the parking field and along the street that are appropriate for the climate in Murrieta (see Figure 3-8, Landscaping Plan, in Chapter 3, Project Description). The landscape plan would include a "buffer yard" (a 30-foot-wide vegetated area between commercial and residential land uses) along the eastern property line of the project site. The buffer yard would contain a row of trees, along with other low-growing shrubs that would soften the transition between the project and residential uses. The trees would also partially obstruct private views of the

commercial buildings from the residences east of the project site. Two bio-filtration basins (depressed landscaped areas to collect stormwater and runoff) would also be located at the northeast and southeast corners of the project site. The exterior details of the project, including architectural character, materials, and landscaping, were designed to blend together to create a look and feel that acknowledges the design of the surrounding environment. Therefore, implementation of the proposed project consistent with the development standards in the City's Municipal Code, as required by the City's conditions of approval and as reviewed as part of the plan check process, would not substantially degrade the existing visual character or quality of the site or its surroundings or result in significant visual impacts. Impacts would be less than significant and no mitigation is required.

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

Light

Less-than-Significant Impact. Currently, there are no existing lighting sources on the project site since it is undeveloped and vacant; however, the project site is located in an area where nighttime lighting is a relatively common feature. Existing light sources in the area include streetlights installed along I-215, Clinton Keith Road, Antelope Road, Creighton Avenue to the south of the project site, and local neighborhood roads; exterior and interior lighting associated with residential, commercial, and school development in the surrounding area; lighting from signage associated with commercial development along the I-215 corridor; and lights from motorists. On occasion, nighttime lighting in the area includes lighting associated with the Vista Murrieta High School football stadium.

The project would include exterior lighting for safety and security purposes. The project would comply with the California Green Building Standards, County ordinances, and the City's Municipal Code requirements with respect to lighting. Parking and site lighting would incorporate cutoff lenses to keep light from spilling over onto adjacent properties and to keep light sources from being visible on or directing light rays onto adjoining property. Lighting on the project site would be reduced to levels below 4050 lumens prior to 11:00 p.m. to ensure compliance with Section 16.18.100 of the City's Municipal Code and to reduce nighttime lighting impacts on the Mount Palomar Observatory. A lighting plan for the project would be submitted to City staff for review and approval to ensure compliance with the City's lighting regulations (City's Municipal Code Section 16.18.100) and with the Palomar Observatory lighting requirements as established in City's Municipal Code Section 16.18.110.

Light spillage refers to the undesirable condition in which light is cast where it is not wanted. The City has not established a quantitative threshold of significance for light spillage. However, the Electric Power Research Institute and the Institute of Lighting Engineers have established recommendations for lighting "spillage" onto adjacent residential properties. They have determined that light spillage of up to 0.3 foot-candles would not result in significant illumination affecting adjacent residential properties (EPRI 2000; ILE 2011). This standard is incorporated into the City's Municipal Code, which prohibits light spillage onto residential areas in excess of 0.3 foot-candles at residential property lines.

The photometric plan (see Figure 4.1-1, Photometric Plan) completed for the project's parking lot lighting illustrates that the project would comply with the Municipal Code in that no light (0.0 foot-candles) would spill over the project's eastern border onto adjacent residential properties. Light spillage would occur at up to 1.3 foot-candles on the project's northern, western, and southern borders on future commercial uses. However, given that future commercial development is planned to occur at these locations, light spillage would not be considered a nuisance to the planned uses.

Building facades would include a variety of signs on each storefront for identification purposes. Additionally, two monument signs would be installed along Warm Springs Parkway at Vineyard II driveways. All project signage, including signage part of the monument signs, would be designed consistent with the Vineyard Sign Program, which has been prepared as part of separate projects (i.e., the Vineyard I project and the Vineyard III project [also referred to as the "related projects" for this analysis]) pursuant to Section 16.38, Sign Standards, of the City's Municipal Code. While the exact sign design would vary based on the occupant of each store, signs would feature a unified architectural theme that is consistent with the overall theme of the development. Under the proposed Vineyard Sign Program, signs may be comprised of face-illuminated channel letters. However, pursuant to Section 16.38.110 (D) of the City's Municipal Code, all illuminated signs are required to be designed in such a way that limits direct illumination of any object other than the sign. Additionally, Section 16.38.110 (D) stipulates that light from an illuminated sign shall not be of an intensity or brightness that may interfere with the reasonable enjoyment of surrounding residential properties. These standards are incorporated into the City's Municipal Code for the purposes of ensuring that potential light impacts are minimized to acceptable levels. Pursuant to Section 16.38 of the City's Municipal Code, the design and illumination specifications of all proposed signage underwent review by City's Planning Director and was approved on November 4, 2019. As a result of this process, project signage has been designed such that it does not have adverse effects on receptors that would be sensitive to nighttime lighting, such as surrounding residences. Moreover, illumination from project signage would either be directed west towards Warm Springs Parkway and away from residences to the east (as in the case for the Vineyard II project signage) or would be blocked from affecting residences to the east by the Vineyard II buildings and landscape buffer along the eastern boundary of the project site.

Although the lighting proposed by the project would change the lighting on the site compared to existing conditions, the project would not create a new source of substantial light that would adversely affect daytime or nighttime views in the area. Given these factors, the contribution of light emitted from the project would be less than significant.

Glare

Less-than-Significant Impact. The project would comply with City's Municipal Code requirements with respect to glare, including Section 16.18.100(A)(2), which requires that exterior lighting be directed downward and that shielding be provided so that glare is confined within the boundaries of the site. Additionally, as discussed above, illumination from project signage would either be directed west towards Warm Springs Parkway and away from residences to the east (as in the case for the Vineyard II project signage) or would be blocked from affecting residences to the east by the Vineyard II buildings. As a result, project signage would not affect receptors who may be sensitive to nighttime lighting, such as the residences east of the project site. Additionally, the landscape buffer along the eastern boundary of the project site would further shield these residences from any potential project-related glare.

The project would include two drive-through restaurants where motorists would line up while waiting for service. Given that the restaurants would operate during nighttime hours, headlights from motorists' vehicles could shine onto oncoming traffic, creating a potential hazard to opposing motorists. However, these drive-through restaurants would be required to comply with Section 16.44.080 of the City's Municipal Code, which requires drive-through aisles to be appropriately screened with a combination of landscaping, low walls, and/or berms to prevent headlight glare from impacting adjacent streets and parking lots. These drive-through lanes would be below the adjoining street grade such that headlights would not shine onto oncoming traffic on Warm Springs Parkway, and they would also be screened as required by code. The project would incorporate metal and glass into the façade of the buildings. The color of the buildings' exteriors would be warm, natural earth tones that would blend with the colors of the surrounding landscape. The windows used in the project would have glazing that is predominately lightly tinted in a natural glass color that has a low reflectance. As a result, the reflection of natural or artificial light off the structural façade would not cause any visual

impacts or result in safety issues along adjacent public roads, Clinton Keith Road, Antelope Road, the future Warm Springs Parkway, or I-215. Additionally, the project would be designed in accordance with the California Building Standards Code, which addresses light pollution and glare hazards. As such, impacts would be less than significant and no mitigation is required.

4.1.5 Mitigation Measures

Impacts related to aesthetics would be less than significant. Therefore, no mitigation measures are necessary.

4.1.6 Level of Significance After Mitigation

Since there would be no significant impacts needing mitigation, residual impacts would be less than significant.

4.1.7 Cumulative Impacts

The Murrieta General Plan 2035 designates land uses in the vicinity of the project site, including commercial uses immediately north, west, and south of the project site (City of Murrieta 2011d). Commercial development combined with the proposed project may have cumulative impacts on the visual landscape of the area, and residents and visitors may notice the visual effects of increased development. However, the proposed project would not block a scenic view or result in the change of a unique scenic resource. In addition, the project would not conflict with applicable zoning and other regulations governing scenic quality. The anticipated development is similar in scale and approach to others along the I-215 corridor, and is consistent with the expectations of the City as expressed in its General Plan. The change in the appearance of the surrounding properties was anticipated as part of the City's existing General Plan designation that calls for regional commercial development on and around the project site (City of Murrieta 2011d). The project would have the potential to result in a cumulative impact if, in combination with other projects, it would result in a significant increase in light and glare at adjoining properties. In order to contribute to cumulative light or glare impacts, related projects must be located in the same field of view as the project. As such, impacts with respect to light and glare are typically localized. Because of the project's proximity to the related projects, there exists the possibility for the project to result in a cumulative light and glare impact. However, the project would adhere to existing regulations and requirements that govern light and glare, and therefore the project would avoid light trespass and glare. All other projects, including the related projects, would also be subject to applicable local, regional, and state regulations regarding light and glare and the City's Municipal Code requirements for project signage, which would ensure that cumulative light and glare impacts are minimized. Additionally, the related projects' participation in the approved Vineyard Sign Program, which includes design standards for all project signage, as well as conditions of approval, would further ensure cumulative light and glare impacts are minimized.

As with the proposed project, future developments would be required to comply with the City's Municipal Code requirements and General Plan policies that regulate the visual characteristics of projects, including prevention of light spillover onto adjoining properties, and the County of Riverside Ordinance 655 (Regulation of Light Pollution), which minimizes regional nighttime glare and lighting impacts. In addition, future development would be required to undergo its own CEQA review, which may require mitigation measures to reduce aesthetic impacts. Because the General Plan and the City's Municipal Code would regulate design of the anticipated development of the project site, and the City design review would regulate the appearance of all future projects and the amount of light in the night sky, the proposed project would result in a less-than-significant impact to aesthetics when measured cumulatively with future development occurring in the City.

4.1.8 References Cited

Caltrans. 2019. "List of Eligible and Officially Designated State Scenic Highways." Last updated August 2019. Accessed April 2020. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

Caltrans. 2014. "The California Scenic Highway Program." Accessed July 25, 2018. http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm.

City of Murrieta. 2011a. *Murrieta General Plan 2035 – Chapter 8: Conservation Element.* Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5178.

City of Murrieta. 2011b. *Murrieta General Plan 2035 – Chapter 9: Recreation and Open Space Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5177.

City of Murrieta. 2011c. *Murrieta General Plan 2035 Final Environmental Impact Report*, *Section 5.3: Aesthetics*. SCH no. 2010111084. Prepared by RBF Consulting. Irvine, California: RBF Consulting. July 2011.

City of Murrieta. 2011d. *Murrieta General Plan 2035 – Chapter 3: Land Use Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5183.

County of Riverside. 1988. Ordinance No. 655: An Ordinance of the County of Riverside Regulating Light Pollution. Adopted June 7, 1988; effective July 7, 1988.

County of Riverside. 2015. C*ounty of Riverside General Plan – Chapter 5: Multipurpose Open Space Elements*. Revised December 8, 2015. http://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch05_MOSE_120815.pdf?ver=2017-10-11-102103-833.

County of Riverside. 2016. *County of Riverside General Plan – Chapter 4: Circulation Element.* Revised December 13, 2016. http://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch04_Circulation_121316.pdf?ver=2017-10-11-093743-433.

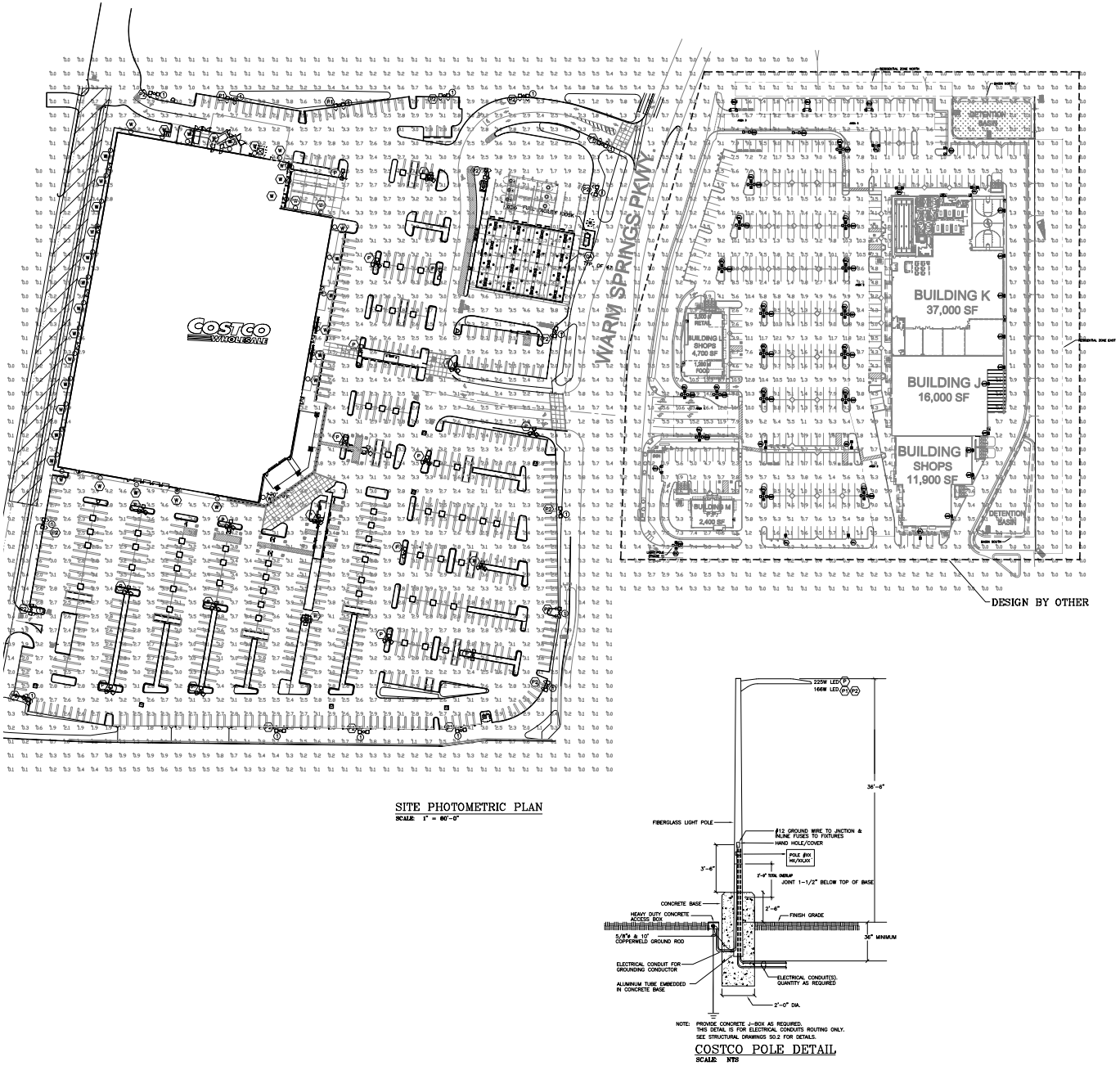
County of Riverside. 2017. *County of Riverside General Plan – Chapter 3: Land Use Element.* Revised July 11, 2017. http://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch03_Land_Use_July2017.pdf?ver=2017-10-06-093429-517.

DOF (California Department of Finance). 2019. "E-1 Population Estimates for Cities, Counties, and the State — January 1, 2018 and 2019." Accessed April 2020. http://dof.ca.gov/Forecasting/Demographics/Estimates/E-1/.

EPRI (Electric Power Research Institute). 2000. Light Trespass Research: Technical Report (TR-114914). April 2000. https://www.epri.com/#/pages/product/TR-114914/?lang=en.

ILE (Institution of Lighting Engineers). 2011. Guidance Notes for the Reduction of Obtrusive Light.

State of California. 2011. Building Standards Commission: Building Standards Bulletin 11-02: Changes to the California Green Building Standards Code Regarding Light Pollution. April 26, 2011.



SOURCE: MG2, Inc

DUDEK

FIGURE 4.1-1

Photometric Plan

Costco/Vineyard II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK

4.2 Air Quality

This section describes the existing setting related to air quality, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco/Vineyard II Retail Development Project (project). The air quality analysis is based on the Air Quality and Greenhouse Gas Emissions Analysis Technical Report prepared for the project (Appendix B).

4.2.1 Existing Conditions

Meteorological and Topographical Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of air pollutants. The South Coast Air Basin's (SCAB's) air pollution problems are a consequence of the combination of emissions from the nation's second largest urban area, meteorological conditions adverse to the dispersion of those emissions, and mountainous terrain surrounding the SCAB that traps pollutants as they are pushed inland with the sea breeze (SCAQMD 2017). Meteorological and topographical factors that affect air quality in the SCAB are described below.[1]

Climate

The SCAB is characterized as having a Mediterranean climate (typified as semiarid with mild winters, warm summers, and moderate rainfall). The general region lies in the semi-permanent high-pressure zone of the eastern Pacific; as a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (e.g., weather and topography) and of manufactured influences (e.g., development patterns and lifestyle). Moderate temperatures, comfortable humidity, and limited precipitation characterize the climate in the SCAB. The average annual temperature varies little throughout the SCAB, averaging 75°F. However, with a less-pronounced oceanic influence, the eastern inland portions of the SCAB show greater variability in annual minimum and maximum temperatures. All portions of the SCAB have recorded temperatures over 100°F in recent years. Although the SCAB has a semiarid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry air is brought into the SCAB by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70% at the coast and 57% in the eastern part of the SCAB. Precipitation in the SCAB is typically 9 to 14 inches annually and is rarely in the form of snow or hail because of typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the SCAB.

In the City of Murrieta (City), the climate is typically warm during summer when temperatures tend to be in the 80s and cool during winter when temperatures tend to be in the 50s. The warmest month of the year is August with an average maximum temperature of 98°F; whereas, the coldest month of the year is December with an average minimum temperature of 34°F. The wettest month of the year is February with an average rainfall of 2.86 inches (City of Murrieta 2011).

[1] The discussion of meteorological and topographical conditions of the SCAB is based on information provided in the Final 2016 Air Quality Management Plan (SCAQMD 2017).

Sunlight

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain "primary" pollutants (mainly reactive hydrocarbons and oxides of nitrogen (NO_x)[2]) react to form "secondary" pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind of the emission sources. Southern California also has abundant sunshine, which drives the photochemical reactions that form pollutants such as ozone (O_3) and a substantial portion of fine particulate matter ($PM_{2.5}$, particles less than 2.5 microns in diameter). In the SCAB, high concentrations of O_3 are normally recorded during the late spring, summer, and early autumn months, when more intense sunlight drives enhanced photochemical reactions. Due to the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

Temperature Inversions

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air mix and disperse into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in coastal Southern California. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air, which acts as a lid through which the cooler marine layer cannot rise. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above mean sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet above mean sea level, the terrain prevents the pollutants from entering the upper atmosphere, resulting in the pollutants settling in the foothill communities. Below 1,200 feet above mean sea level, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours.

Mixing heights for inversions are lower in the summer and inversions are more persistent, being partly responsible for the high levels of O_3 observed during summer months in the SCAB. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods, allowing them to form secondary pollutants by reacting in the presence of sunlight. The SCAB has a limited ability to disperse these pollutants due to typically low wind speeds and the surrounding mountain ranges.

As with other cities within the SCAB, the City is susceptible to air inversions, which trap a layer of stagnant air near the ground where pollutants are further concentrated. These inversions produce haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources. Elevated particles less than 10 microns in diameter (PM_{10}) and $PM_{2.5}$ concentrations can occur in the SCAB throughout the year, but occur most frequently in fall and winter. Although there are some changes in emissions by day of the week and season, the observed variations in pollutant concentrations are primarily the result of seasonal differences in weather conditions.

[2] NO_x is a general term pertaining to compounds of nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[3] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. A more detailed discussion of health effects of criteria air pollutants is provided in Appendix B.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric O_3) and at the Earth's surface in the troposphere (ground-level O_3).[4] The O_3 that U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016b).

---

3 The descriptions of each of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's (EPA's) Criteria Air Pollutants (EPA 2016a) and the California Air Resources Board (CARB) Glossary of Air Pollutant Terms (CARB 2016a).

4 The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. PM_{10} tends to collect in the upper portion of the respiratory system; whereas, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$ (EPA 2009).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and, in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Volatile Organic Compounds. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

Non-Criteria Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics “Hot Spots” Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse

health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2016b). DPM is typically composed of carbon particles ("soot," also called black carbon, or BC) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2016b). The CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines, including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same noncancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2016b). Those most vulnerable to noncancer health effects are children whose lungs are still developing and the elderly who often have chronic health problems.

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Valley Fever. Coccidioidomycosis, more commonly known as "valley fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. When fungal spores are present, any activity that disturbs the soil, such as digging, grading, or other earth-moving operations, can cause the spores to become airborne and thereby increase the risk of exposure. The ecologic factors that appear to be most conducive to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline sandy soils.

Valley fever is not considered highly endemic to Riverside County. Per the California Department of Public Health, the 7-year average (2012–2018) for coccidioidomycosis cases in Riverside County is 2.1 cases per 100,000 people per year. For the zip code 92563, where the project site is located, incidences of coccidioidomycosis are too few to be reliably used to calculate a rate (Lopez, pers. comm. 2018). Statewide incidences in 2018 were 18.8 per 100,000 people (CDPH 2019).

Even if present at a site, earth-moving activities may not result in increased incidence of valley fever. Propagation of *Coccidioides immitis* is dependent on climatic conditions, with the potential for growth and surface exposure

highest following early seasonal rains and long dry spells. *Coccidioides immitis* spores can be released when filaments are disturbed by earth-moving activities, although receptors must be exposed to and inhale the spores to be at increased risk of developing valley fever. Moreover, exposure to *Coccidioides immitis* does not guarantee that an individual will become ill—approximately 60% of people exposed to the fungal spores are asymptomatic and show no signs of an infection (USGS 2000).

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). The SCAQMD identifies sensitive receptors as residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). Residential land uses are located along the project site boundary to the east of the project. The closest off-site sensitive receptors to the project site include residences located approximately 30 feet east of the project site boundary.

4.2.2 Relevant Plans, Policies, and Ordinances

Federal

Criteria Air Pollutants. The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the NAAQS within mandated time frames. A more detailed discussion of the NAAQS, as well as the California Ambient Air Quality Standards (CAAQS; discussed below), is provided in Appendix B.

Hazardous Air Pollutants. The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State

Criteria Air Pollutants. The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established the CAAQS, which are generally more restrictive than the NAAQS. As stated previously, an ambient air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without harm to the public's health. For each pollutant, concentrations must be below the relevant CAAQS before a basin can attain the corresponding CAAQS. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

California air districts have based their thresholds of significance for California Environmental Quality Act (CEQA) purposes on the levels that scientific and factual data demonstrate that the air basin can accommodate without affecting the attainment date for the NAAQS or CAAQS. Since an ambient air quality standard is based on maximum pollutant levels in outdoor air that would not harm the public's health, and air district thresholds pertain to attainment of the ambient air quality standard, this means that the thresholds established by air districts are also protective of human health.

The NAAQS and CAAQS are presented in Table 4.2-1.

Table 4.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—

Table 4.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
PM_{10}[i]	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[j,k]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24- hours	25 μg/m³	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016c.

Notes: O_3 = ozone; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter; mg/m³= milligrams per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

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

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

[f] On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

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

[h] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum

concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m³ to 12.0 μg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m³, as was the annual secondary standard of 15 μg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m³ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants. The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

California Health and Safety Code Section 41700. Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

South Coast Air Quality Management District. The South Coast Air Quality Management District (SCAQMD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SCAB, where the project is located. The SCAQMD operates monitoring stations in the SCAB, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The SCAQMD's Air

Quality Management Plans (AQMPs) include control measures and strategies to be implemented to attain state and federal ambient air quality standards in the SCAB. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

The most recent adopted AQMP is the 2016 AQMP (SCAQMD 2017), which was adopted by the SCAQMD governing board on March 3, 2017. The 2016 AQMP is a regional blueprint for achieving air quality standards and healthful air. The 2016 AQMP represents a new approach, focusing on available, proven, and cost effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities promoting reductions in GHGs and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017). Because mobile sources are the principal contributor to the SCAB's air quality challenges, the SCAQMD has been and will continue to be closely engaged with CARB and the EPA, who have primary responsibility for these sources. The 2016 AQMP recognizes the critical importance of working with other agencies to develop funding and other incentives that encourage the accelerated transition of vehicles, buildings, and industrial facilities to cleaner technologies in a manner that benefits not only air quality but also local businesses and the regional economy. These "win-win" scenarios are key to implementation of this 2016 AQMP with broad support from a wide range of stakeholders.

Applicable Rules

Emissions that would result from mobile, area, and stationary sources during construction and operation of the project are subject to the rules and regulations of the SCAQMD. The SCAQMD rules applicable to the project may include the following:

- **Rule 401 – Visible Emissions:** This rule establishes the limit for visible emissions from stationary sources.
- **Rule 402 – Nuisance:** This rule prohibits the discharge of air pollutants from a facility that cause injury, detriment, nuisance, or annoyance to the public or damage to business or property.
- **Rule 403 – Fugitive Dust:** This rule requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.
- **Rule 431.2 – Sulfur Content of Liquid Fuels:** The purpose of this rule is to limit the sulfur content in diesel and other liquid fuels for the purpose of reducing the formation of SO_x and particulates during combustion and of enabling the use of add-on control devices for diesel-fueled internal combustion engines. The rule applies to all refiners, importers, and other fuel suppliers such as distributors, marketers, and retailers, as well as to users of diesel, low-sulfur diesel, and other liquid fuels for stationary-source applications in the SCAQMD. The rule also affects diesel fuel supplied for mobile sources.
- **Rule 461 – Gasoline Transfer and Dispensing:** This rule requires testing of vapor recovery systems for gasoline dispensing facilities from certified vapor recovery testing companies and contractors. This rule applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler, and from any stationary storage tank or mobile fueler into any mobile fueler or motor fuel tank.
- **Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines:** This rule applies to stationary and portable engines rated at greater than 50 horsepower. The purpose of Rule 1110.2 is to reduce NO_x, VOCs, and CO emissions from engines. Emergency engines, including those powering standby generators, are generally exempt from the emissions and monitoring requirements of this rule because they have permit conditions that limit operation to 200 hours or less per year as determined by an elapsed operating time meter.

- **Rule 1113 – Architectural Coatings:** This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

Southern California Association of Governments. The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated metropolitan planning organization for the Southern California region and is the largest metropolitan planning organization in the United States.

With respect to air quality planning and other regional issues, SCAG has prepared the 2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future (2008 RCP) for the region (SCAG 2008). The 2008 RCP sets the policy context in which SCAG participates in and responds to the SCAQMD air quality plans and builds off the SCAQMD AQMP processes that are designed to meet health-based criteria pollutant standards in several ways (SCAG 2008). First, it complements AQMPs by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in AQMPs. Second, the 2008 RCP emphasizes the need for local initiatives that can reduce the region's GHG emissions that contribute to climate change, an issue that is largely outside the focus of local attainment plans, which is assessed in Chapter 3. Third, the 2008 RCP emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

On April 7, 2016, SCAG's Regional Council adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS). The 2016 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The 2016 RTP/SCS charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The 2016 RTP/SCS was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, nonprofit organizations, businesses, and local stakeholders within Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. In June 2016, SCAG received its conformity determination from the Federal Highway Administration and the Federal Transit Administration indicating that all air quality conformity requirements for the 2016 RTP/SCS and associated 2015 Federal Transportation Improvement Program Consistency Amendment through Amendment 15-12 have been met (SCAG 2016). The SCAQMD 2016 AQMP applies the updated SCAG growth forecasts assumed in the 2016 RTP/SCS.

City of Murrieta. The Air Quality Element of the City's General Plan 2035 (City of Murrieta 2011) includes goals and policies that would be applied to the project related to air quality. These applicable goals and policies are as follows:

GOAL AQ-1 Improved air quality through participation in regional and local efforts.

GOAL AQ-3 Reduced emissions during construction activities.

Policy AQ-3.1 Ensure that construction activities follow current SCAQMD rules, regulations, and thresholds.

Policy AQ-3.2 Ensure all applicable best management practices are used in accordance with the SCAQMD to reduce emitting criteria pollutants during construction.

Policy AQ-3.3 Require all construction equipment for public and private projects comply with CARB's vehicle standards. For projects that may exceed daily construction emissions established by the SCAQMD, Best Available Control Measures will be incorporated to reduce construction emissions to below daily emission standards established by the SCAQMD.

Policy AQ-3.4 Require project proponents to prepare and implement a Construction Management Plan, which will include Best Available Control Measures among others. Appropriate control measures will be determined on a project by project basis, and should be specific to the pollutant for which the daily threshold is exceeded.

GOAL AQ-5 Air quality is improved through an efficient circulation system, reduced traffic congestion, and reduced vehicle miles traveled.

Policy AQ-5.1 Encourage employers to implement transportation demand management (TDM) measures, such as the following programs to reduce trips and vehicle miles traveled:

- Transit subsidies
- Bicycle facilities
- Alternating work schedules
- Ridesharing
- Telecommuting and work-at-home programs
- Employee education
- Preferential parking for carpools/vanpools

Policy AQ-5.2 Re-designate truck routes away from sensitive land uses including schools, hospitals, elder and childcare facilities, or residences, where feasible.

Policy AQ-5.7 Reduce industrial truck idling by enforcing California's 5-minute maximum law, requiring warehouse and distribution facilities to provide adequate on site truck parking, and requiring refrigerated warehouses to provide generators for refrigerated trucks.

GOAL AQ-6 Stationary source pollution (point source and area source) are minimized through existing and future regulations and new technology.

Policy AQ-6.7 During the design review process, encourage the use of measures to reduce indoor air quality impacts (i.e., air filtration systems, kitchen range top exhaust fans, and low-VOC paint and carpet for new developments and busy roadways with significant volumes of heavy truck traffic).

GOAL AQ-7 Particulate matter and fugitive dust emissions are reduced throughout the City.

Policy AQ-7.4 Consider the suspension of all grading operations, not including dust control actions, at construction projects when the source represents a public nuisance or potential safety hazard due to reduced visibility on streets surrounding the property.

The City has established a policy program that addresses air quality through new development and balanced growth, land use compatibility, and coordination and compliance with regulatory agencies and new regulations/requirements. The responsibility of implementing the goals and policies of the Air Quality Element are assigned to the City's Community Development Department, and in some instances, this authority is shared with the SCAQMD and the SCAG.

Regional and Local Air Quality Conditions

South Coast Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS. Table 4.2-2 depicts the current attainment status of the project site with respect to the NAAQS and CAAQS, as well as the attainment classifications for the criteria pollutants are outlined in Table 4.2-2.

Table 4.2-2. South Coast Air Basin Attainment Classification

Pollutant	Designation/Classification	
	National Standards	*California Standards*
Ozone (O_3) – 1 hour	No National Standard	**Nonattainment**
Ozone (O_3) – 8 hour	**Extreme Nonattainment**	**Nonattainment**
Nitrogen Dioxide (NO_2)	Unclassifiable/Attainment	Attainment
Carbon Monoxide (CO)	Attainment/Maintenance	Attainment
Sulfur Dioxide (SO_2)	Unclassifiable/Attainment	Attainment
Coarse Particulate Matter (PM_{10})	Attainment/Maintenance	**Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	**Serious Nonattainment**	**Nonattainment**
Lead (Pb)	**Nonattainment**	Attainment
Hydrogen Sulfide	No National Standard	Unclassified
Sulfates	No National Standard	Attainment
Visibility-Reducing Particles	No National Standard	Unclassified
Vinyl Chloride	No National Standard	No designation

Sources: EPA 2016c (national); CARB 2016d (California).

Notes: Bold text = not in attainment; Nonattainment = does not meet the standards; Extreme Nonattainment = has a design value of 0.163 ppm and above; Unclassifiable/Attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data; Attainment = meets the standards; Attainment/Maintenance = achieve the standards after a nonattainment designation; Unclassified or Unclassifiable = insufficient data to classify.

In summary, the SCAB is designated as a nonattainment area for federal and state O_3 standards and federal and state $PM_{2.5}$ standards. The SCAB is designated as a nonattainment area for state PM_{10} standards; however, it is designated as an attainment area for federal PM_{10} standards. The SCAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and federal and state SO_2 standards. While the SCAB has been designated as nonattainment for the federal rolling 3-month average lead standard, it is designated attainment for the state lead standard (CARB 2016d; EPA 2016c).

Despite the current nonattainment status, air quality within the SCAB has generally improved since the inception of air pollutant monitoring in 1976. This improvement is mainly due to lower-polluting on-road motor vehicles, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by the SCAQMD. This trend toward cleaner air has occurred in spite of continued population growth. Despite this growth, air quality has improved significantly over the years, primarily due to the impacts of the region's air quality control program. PM_{10} levels have declined almost 50% since 1990, and $PM_{2.5}$ levels have also declined 50% since measurements began in 1999 (SCAQMD 2013). Similar improvements are observed with O_3, although the rate of O_3 decline has slowed in recent years.

Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. The SCAQMD monitors local ambient air quality at the project site. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2016 to 2018 are presented in Table 4.2-3. The Lake Elsinore monitoring station, located at 506 West Flint Street, Lake Elsinore, California 92530, is the nearest air quality monitoring station to the project site, located approximately 10.3 miles northwest from the project site. The data collected at this station are considered representative of the air quality experienced in the project vicinity. Air quality data for CO, O_3, NO_2, CO, and PM_{10} from the Lake Elsinore monitoring station are provided in Table 4.2-3. Because SO_2 and $PM_{2.5}$ are not monitored at the Lake Elsinore monitoring station, SO_2 measurements were taken from the Rubidoux monitoring station (5888 Mission Boulevard, Rubidoux, California 92509, approximately 30 miles northwest from the project site), and $PM_{2.5}$ measurements are taken from the Temecula monitoring station (12705 Pechanga Road, Temecula, California 92592, approximately 11.5 miles southeast from the project site). The number of days exceeding the ambient air quality standards are also shown in Table 4.2-3.

Table 4.2-3. Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2016	*2017*	*2018*	*2016*	*2017*	*2018*
Ozone (O_3)										
Lake Elsinore	ppm	Maximum 1-hour concentration	California	0.09	0.124	0.121	0.116	15	23	23
	ppm	Maximum 8-hour concentration	California	0.070	0.093	0.098	0.095	44	54	30
			National	0.070	0.093	0.098	0.095	44	54	30
Nitrogen Dioxide (NO_2)										
Lake Elsinore	ppm	Maximum 1-hour concentration	California	0.18	0.051	0.049	0.041	0	0	0
			National	0.100	0.0513	0.0490	0.041	0	0	0
	ppm	Annual concentration	California	0.030	—	—	—	—	—	—
			National	0.053	0.008	0.008	0.009	—	—	—
Carbon Monoxide (CO)										
Lake Elsinore	ppm	Maximum 1-hour concentration	California	20	—	—	—	—	—	—
			National	35	1.2	1.2	1.1	0	0	0
	ppm	Maximum 8-hour concentration	California	9.0	—	—	—	—	—	—
			National	9	0.6	0.8	0.8	0	0	0
Sulfur Dioxide (SO_2)										
Rubidoux	ppm	Maximum 1-hour concentration	National	0.075	0.056	0.020	0.017	—	—	—
	ppm	Maximum 24-hour concentration	National	0.14	0.0012	0.003	0.001	—	—	—
	ppm	Annual concentration	National	0.030	0.0002	0.0008	0.0005	—	—	—
Coarse Particulate Matter (PM_{10})[a]										
Lake Elsinore	$\mu g/m^3$	Maximum 24-hour concentration	California	50	—	—	—	—	—	—
			National	150	99	86	104	0	0	0
	$\mu g/m^3$	Annual concentration	California	20	—	—	—	—	—	—

Table 4.2-3. Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2016	*2017*	*2018*	*2016*	*2017*	*2018*
Fine Particulate Matter ($PM_{2.5}$)[a]										
Temecula	μg/m³	Maximum 24-hour concentration	National	35	18.9	16.7	—	—	—	—
	μg/m³	Annual concentration	California	12	9.8	6.5[a]	—	—	—	—
			National	12.0	9.6[a]	6.5[a]	—	—	—	—

Sources: CARB 2017; EPA 2016d.

Notes: ppm = parts per million; — = not available; μg/m³ = micrograms per cubic meter.

Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (https://www.epa.gov/outdoor-air-quality-data) represent the highest concentrations experienced over a given year. Exceedances of national and California standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed national or California standards during the years shown. There is no national standard for 1-hour O_3, annual PM_{10}, or 24-hour SO_2, nor is there a California 24-hour standard for $PM_{2.5}$.

Lake Elsinore Monitoring Station is located at 506 W Flint Street, Lake Elsinore, California 92530.

Rubidoux Monitoring Station is located 5888 Mission Boulevard, Rubidoux, California 92509.

Temecula Monitoring Station is located at 12705 Pechanga Road, Temecula, California 92592.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

4.2.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to air quality is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the project would (14 CCR 15000 et seq.):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the project would have a significant impact on air quality.

The SCAQMD has established Air Quality Significance Thresholds, as revised in March 2015, which set forth quantitative emission significance thresholds below which a project would not have a significant impact on air quality. The quantitative air quality analysis provided herein applies the SCAQMD thresholds identified in Table 4.2-4 to determine the potential for the project to result in a significant impact under CEQA.

Table 4.2-4. South Coast Air Quality Management District Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	*Construction (pounds per day)*	*Operation (pounds per day)*
VOCs	75	55
NO_x	100	55
CO	550	550
SO_x	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Lead[a]	3	3
TACs and Odor Thresholds		
TACs[b]	Maximum incremental cancer risk ≥10 in 1 million Cancer Burden >0.5 excess cancer cases (in areas ≥1 in 1 million) Chronic and acute hazard index ≥1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants[c]		
NO_2 1-hour average NO_2 annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.030 ppm (state) and 0.0534 ppm (federal)	

Table 4.2-4. South Coast Air Quality Management District Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds	
CO 1-hour average CO 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
PM_{10} 24-hour average PM_{10} annual average	10.4 μg/m^3 (construction)[d] 2.5 μg/m^3 (operation) 1.0 μg/m^3
$PM_{2.5}$ 24-hour average	10.4 μg/m^3 (construction)[d] 2.5 μg/m^3 (operation)

Source: SCAQMD 2019.
Notes: VOC = volatile organic compounds; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; TAC = toxic air contaminant; SCAQMD = South Coast Air Quality Management District; NO_2 = nitrogen dioxide; ppm = parts per million; μg/m^3 = micrograms per cubic meter.
Greenhouse gas emissions thresholds for industrial projects, as added in the March 2015 revision to the SCAQMD Air Quality Significance Thresholds, were not include included in Table 4.2-4 as they are addressed within the greenhouse gas emissions analysis and not the air quality study.

[a] The phaseout of leaded gasoline started in 1976. Since gasoline no longer contains lead, the project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.
[b] TACs include carcinogens and noncarcinogens.
[c] Ambient air quality standards for criteria pollutants are based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.
[d] Ambient air quality threshold are based on SCAQMD Rule 403.

The evaluation of whether the project would conflict with or obstruct implementation of the applicable air quality plan is based on the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993), Chapter 12, Sections 12.2 and 12.3. The first criterion assesses if the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP, which is addressed in detail under in Section 4.2.4. The second criterion is if the project would exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

To evaluate the potential for the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, this analysis applies the SCAQMD's construction and operational criteria pollutants mass daily thresholds, as shown in Table 4.2-4. A project would potentially result in a cumulatively considerable net increase in O_3, which is a nonattainment pollutant, if the project's construction or operational emissions would exceed the SCAQMD VOC or NO_x thresholds shown in Table 4.2-4. These emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur). This approach is used because O_3 is not emitted directly, and the effects of an individual project's emissions of O_3 precursors (VOC and NO_x) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods.

The assessment of the project's potential to expose sensitive receptors to substantial pollutant concentrations includes a localized significance threshold (LST) analysis, as recommended by the SCAQMD, to evaluate the potential of localized air quality impacts to sensitive receptors in the immediate vicinity of the project from construction and operation. For project sites of 5 acres or less, the SCAQMD LST Methodology (SCAQMD 2009) includes lookup tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing project-specific dispersion modeling. Although the proposed development area of the site is greater than 5 acres

(estimated to be 26 acres), the project would disturb less than 5 acres in one day, as discussed in detail in the following text, so it is appropriate to use the lookup tables for the LST evaluation.

The LST significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The LST significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. The allowable emission rates depend on the following parameters:

- Source-receptor area (SRA) in which the project is located
- Size of the project site
- Distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals)

The project site is located in SRA 26 (Temecula Valley). The SCAQMD provides guidance for applying the California Emissions Estimator Model (CalEEMod) to the LSTs. LST pollutant screening level concentration data is currently published for 1-, 2-, and 5-acre sites for varying distances. The maximum number of acres disturbed on the peak day was estimated using the "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" (SCAQMD 2011), which provides estimated acres per 8-hour day for crawler tractors, graders, rubber-tired dozers, and scrapers. Based on the SCAQMD guidance, and assuming an excavator can grade 0.5 acres per 8-hour day (similar to graders, dozers, and tractors), it was estimated that the maximum acres on the project site that would be disturbed by off-road equipment would be 4 acres per day (three excavators, two dozers, and three tractors operating during the grading phase). Because the total disturbed acreage would be approximately 26 acres over approximately 136 days, the estimate of 4 acres per day of disturbance is conservative. The SCAQMD lookup table does not include 4 acres; thus, the lookup table values for 2-acre and 5-acre sites within SRA 26 were interpolated.

The nearest sensitive-receptor land use (a residence) is located approximately 30 feet east of the project property boundary, approximately 150 feet or more from actual building construction work. As such, the LST receptor distance was assumed to be 82 feet (25 meters), which is the shortest distance provided by the SCAQMD lookup tables. The LST values from the SCAQMD lookup tables for SRA 26 (Temecula Valley) for an interpolated 4-acre project site and a receptor distance of 25 meters are shown in Table 4.2-5.

Table 4.2-5. Construction Localized Significance Thresholds for Source Receptor Area 26 (Temecula Valley)

Pollutant	Threshold (pounds per day)
NO_2	325
CO	1,677
PM_{10}	11
$PM_{2.5}$	7

Source: SCAQMD 2009.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
Localized significance thresholds (LSTs) were determined based on the values for an interpolated 4-acre site at a distance of 25 meters from the nearest sensitive receptor.

The construction HRA applies the SCAQMD risk thresholds presented in Table 4.2-4, which are a maximum incremental cancer risk greater than or equal to 10 in 1 million and a chronic hazard index greater than or equal to 1.0 (project increment). The CO hotspot assessment and construction HRA are evaluated under the potential for the project to expose sensitive receptors to substantial pollutant concentrations (Section 4.2.4), along with the LST analysis.

The potential for the project to result in other emissions, specifically an odor impact (Section 4.2.4), is based on the project's land use type and anticipated construction activity, and the potential for the project to create an odor nuisance pursuant to SCAQMD Rule 402.

4.2.4 Impacts Analysis

Project Design Features

To reduce construction and operational emissions to the extent feasible, Costco would incorporate the following project design features (PDFs) into the new facility (**PDF-AQ/GHG-1**):

a. New and renewable building materials shall be extracted and manufactured within the region whenever possible, reducing transportation emissions.
b. The project shall use pre-manufactured building components, including structural framing and metal panels, to help minimize waste during construction.
c. The main building structure shall be constructed with a pre-engineered system that uses 100% recycled steel materials and is designed to minimize the amount of material utilized.
d. Roof material shall be 100% recycled standing seam metal panel, designed to maximum efficiency for spanning the structure.
e. Exterior skin metal shall be 100% recycled.
f. Construction waste shall be recycled whenever possible.
g. Floor sealant contains no volatile organic compounds (VOCs) and represents over 80% of the floor area.
h. LED lamps shall be installed in the parking lots.
i. Parking lot and exterior lights are controlled by the building's automated energy management system.
j. Pre-manufactured metal wall panels with insulation carry a higher Resistance Value (more commonly known as R-Value), and greater solar reflectivity shall be installed to help conserve energy. Building heat absorption is further reduced by a decrease in the thermal mass of the metal wall when compared to a typical masonry block wall.
k. Costco would design the roofing structure to accommodate the additional structural load of the solar panels to allow for the flexibility for possible future installation.
l. The project shall plant native, drought-tolerant vegetation that would use less water than other common species.
m. The project shall install an irrigation system that uses deep-root watering bubblers for parking lot trees to minimize usage and ensure that water goes directly to the intended planting areas.
n. High-efficiency restroom fixtures shall be installed.
o. Building envelopes shall be insulated to meet or exceed current energy code requirements.

p. Heating, ventilation, and air conditioning (HVAC) comfort systems shall be controlled by a computerized building management system to maximize efficiency.
q. HVAC units shall be high-efficiency, direct-ducted units.
r. HVAC units shall not use hydrochlorofluorocarbons.
s. Interior lighting shall be controlled by the overall project energy management system.
t. Gas water heaters shall be direct vent and high efficiency.
u. Extensive recycling/reuse program shall be implemented for warehouse and office space including tires, cardboard, grease, plastics, and electronic waste.
v. All Costco trucks shall be equipped with an engine idle shut off timer.
w. Three electric vehicle (EV) charging stations shall be installed in the parking lot.
x. Within 2 years of opening the Costco Warehouse, a 708-kilowatt photovoltaic system shall be installed, which would generate a system output of 1,128,400 kilowatt-hours per year.
y. Stalls designated as Clean Air Vehicle/Van Pool would encourage use of such vehicles by employees and customers.

Vineyard II Retail Development would incorporate the following PDFs into the new facilities (**PDF-AQ/GHG-2**):

a. Design the roofing structure to accommodate the additional structural load of the solar panels to allow for the flexibility for possible future installation.
b. LED lamps shall be installed in the parking lots and outdoor lighting fixtures.
c. Parking lot and exterior lights shall be controlled by a time clock and photo cell device to turn lights off at dawn.
d. Fourteen EV charging stations shall be installed in the parking lot, four of which shall be tied to a solar source from the roofs of two buildings at the time of opening.
e. Electrical outlets on site shall allow recharging of battery-operated landscape maintenance equipment by landscape maintenance staff.
f. Each trash enclosure in the retail center shall have a recycling bin slot for each tenant.
g. Non-potable irrigation lines shall be installed in preparation for future recycled water.

Dust Control Strategies

The project would include various construction dust control strategies as a PDF. Compliance with these dust control measures would be identified on grading plan approvals. The following dust control strategies are proposed (**PDF-AQ-1**):

a. During clearing, grading, earth-moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease.
b. During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas later in the morning, after work is completed for the day, and whenever winds exceed 15 miles per hour during active operations. Watering of active disturbance areas, including active grading

areas and unpaved roads, would occur approximately every two hours of active operations, approximately three times per work day (at a minimum).

c. Speeds on unpaved roads shall be reduced to less than 15 miles per hour.
d. All grading and excavation operations shall be halted when wind speeds exceed 25 miles per hour.
e. Dirt and debris spilled onto paved surfaces at the project site and on the adjacent roadways shall be swept, vacuumed, and/or washed at the end of each workday.
f. All trucks hauling dirt, sand, soil, or other loose material to and from the construction site shall be covered and/or a minimum 2 feet of freeboard shall be maintained.

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

Potentially Significant Impact. As previously discussed, the project site is located within the SCAB under the jurisdiction of the SCAQMD, which is the local agency responsible for administration and enforcement of air quality regulations for the area. The SCAQMD has established criteria for determining consistency with the AQMP, currently the 2016 AQMP, in Chapter 12, Sections 12.2 and 12.3, in the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993). The criteria are as follows (SCAQMD 1993):

- **Consistency Criterion No. 1:** The proposed project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2:** The proposed project will not exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Consistency Criterion No. 1

The impact discussion below discusses the project's potential impacts regarding CEQA Guidelines Appendix G Threshold 2 (the project's potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation impact analysis). As discussed below, the project would exceed the SCAQMD significance threshold for VOCs and NO_x. Therefore, the project would result in an increase in the frequency or severity of existing air quality violations. Because the project would result in an increase in the frequency and severity of existing air quality violations with mitigation, the project would conflict with Consistency Criterion No. 1 of the SCAQMD CEQA Air Quality Handbook.

Consistency Criterion No. 2

While striving to achieve the NAAQS for O_3 and $PM_{2.5}$ and the CAAQS for O_3, PM_{10}, and $PM_{2.5}$ through a variety of air quality control measures, the 2016 AQMP also accommodates planned growth in the SCAB. Projects are considered consistent with, and would not conflict with or obstruct implementation of, the AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP (per Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook).

The SCAQMD primarily uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAG for its RTP/SCS (SCAG 2016), which is based on general plans for cities and counties in the SCAB, for the development of the AQMP emissions inventory (SCAQMD

2017).[5] The SCAG 2016 RTP/SCS, and associated Regional Growth Forecast, are generally consistent with the local plans; therefore, the 2016 AQMP is generally consistent with local government plans. The City General Plan Land Use Map designates the project site as Commercial (City of Murrieta 2011). The City's Zoning Map shows the site as being zoned Regional Commercial (City of Murrieta 2014). The project would be consistent with the current zoning and land use designation. Accordingly, the project would meet Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook.

As described previously, the project would result in an increase in the frequency and severity of existing air quality violations and would conflict with Consistency Criterion No. 1. However, implementation of the project would not exceed the demographic growth forecasts in the SCAG 2016 RTP/SCS; therefore, the project would also be consistent with the SCAQMD 2016 AQMP, which based future emission estimates on the SCAG 2016 RTP/SCS. Thus, the project would not conflict with Consistency Criterion No. 2. The project would exceed the SCAQMD significance threshold for VOC and NO_x and would conflict with Consistency Criterion No. 1; therefore, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be potentially significant.

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

Construction Emissions

Potentially Significant Impact. Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, rock crushing, rock popping, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

Criteria air pollutant emissions associated with temporary construction activity were quantified using CalEEMod. Construction emissions were calculated for the estimated worst-case day over the construction period associated with each phase and reported as the maximum daily emissions estimated during each year of construction (2020[6] through 2021). Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the project applicant and is intended to represent a reasonable scenario based on the best information available. Default values provided in CalEEMod were used where detailed project information was not available.

---

5 Information necessary to produce the emission inventory for the SCAB is obtained from the SCAQMD and other governmental agencies, including CARB, the California Department of Transportation (Caltrans), and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socioeconomic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. SCAG incorporates these data into their Travel Demand Model for estimating/projecting vehicle miles traveled and driving speeds. SCAG's socioeconomic and transportation activities projections in their 2016 RTP/SCS are integrated in the 2016 AQMP (SCAQMD 2017).

6 The analysis assumes a construction start date of September 2020, which represents the earliest date construction would initiate. Assuming the earliest start date for construction represents the worst-case scenario for criteria air pollutant and GHG emissions because equipment and vehicle emission factors for later years would be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.

Implementation of the project would generate air pollutant emissions from entrained dust, off-road equipment, vehicle emissions, architectural coatings, and asphalt pavement application. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. The project would implement various dust control strategies (**PDF-AQ-1**) and would be required to comply with SCAQMD Rule 403 to control dust emissions generated during the grading activities. Emission reductions from implementing **PDF-AQ-1** are as follows. Proposed construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites and unpaved roads three times per day depending on weather conditions and restricting vehicle speed on unpaved roads to 15 miles per hour. Internal combustion engines used by construction equipment, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SCAQMD's Rule 1113 (Architectural Coatings).

Emissions associated with rock crushing, rock popping, and associated diesel-engine generators were quantified in a separate calculation, since CalEEMod does not account for rock crushing, rock popping, and blasting.

Table 4.2-6 presents the estimated maximum daily construction emissions generated during construction of the project. The values shown are the maximum summer or winter daily emissions results from CalEEMod and include estimated emissions from rock crushing and popping activities, which were estimated outside of CalEEMod. Details of the construction emission calculations are provided in Appendix B.

Table 4.2-6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Unmitigated

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	pounds per day					
Vineyard II						
2020	8.70	97.93	54.43	0.13	14.91	9.38
2021	31.30	98.85	84.44	0.21	10.35	6.12
Costco						
2020	7.05	83.71	44.95	0.14	14.84	8.91
2021	30.60	77.26	62.24	0.17	9.78	5.25
Costco Rock Crushing and Rock Popping						
2020	2.60	23.25	18.58	0.06	1.24	0.94
Warm Springs Parkway						
2020	4.08	42.62	31.72	0.06	4.86	3.25
Warm Springs Parkway Crushing and Blasting						
2020	2.60	24.95	25.27	0.26	1.21	0.94
Total						
2020	25.04	272.46	174.96	0.66	37.06	23.42
2021	61.90	176.11	146.68	0.38	20.13	11.37
Maximum Daily Emissions	**61.90**	**272.46**	**174.96**	**0.66**	**37.06**	**23.42**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.

See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "mitigated" output, which accounts for compliance with SCAQMD Rule 1113 (Architectural Coatings) and implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 miles per hour.

Maximum daily emissions of NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions would occur during the grading phase in 2019 as a result of off-road equipment operation, rock popping, rock crushing, and on-road vendor trucks and haul trucks. The overlap of the building construction phase and the architectural coatings phases in 2020 would produce the maximum daily VOC emissions. As shown in Table 4.2-6, daily construction emissions would not exceed the SCAQMD significance thresholds for VOC, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years. However, the daily construction emissions would exceed the SCAQMD significance thresholds for NO_x in 2020 and 2021. Although construction-generated emissions would be temporary and would not represent a long-term source of criteria air pollutant emissions, impacts would be potentially significant and thus, require mitigation.

Operational Emissions

Potentially Significant Impact. The project involves development of a new retail development consisting of a Costco Wholesale warehouse and a gasoline dispensing facility, and the Vineyard II retail development consisting of a fitness center, a major retail pad, four smaller retail shops, one casual dining restaurant with a drive through, one fast-food restaurant with a drive through, and associated parking spaces. Operation of the project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from customers, employees, and delivery trips; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment (the Vineyard II project will require rechargeable, battery-operated landscape maintenance equipment and will provide exterior outlets for recharging on site, two of which will be tied to solar panel source on the roofs of two of the buildings on the Vineyard II site); and energy sources, including combustion of fuels used for space and water heating and cooking appliances. Pollutant emissions associated with long-term operations were quantified using CalEEMod. Project-generated mobile source emissions were estimated in CalEEMod based on project-specific trip rates. CalEEMod default values were used to estimate emissions from the project area and energy sources. Criteria air pollutant emissions were not quantified from implementation of project's **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**.

Table 4.2-7 presents the maximum daily area, energy, and mobile source emissions associated with operation (year 2021) of the project. Operational year 2021 was assumed upon completion of construction. The values shown are the maximum summer or winter daily emissions results from CalEEMod. Details of the operational emission calculations are provided in Appendix B.

Table 4.2-7. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions – Unmitigated

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	pounds per day					
Area	58.11	<0.01	0.15	<0.01	<0.01	<0.01
Energy	0.08	0.74	0.62	0.01	0.06	0.06
Mobile	17.20	55.92	362.44	1.02	98.84	24.81
Off-Road	0.39	3.54	3.50	<0.01	0.25	0.23
Total	**75.78**	**60.20**	**366.71**	**1.04**	**99.15**	**25.10**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**Yes**	**Yes**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; PDF = project design feature.

See Appendix B for complete results.
Totals may not sum due to rounding.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "unmitigated" output and operational year 2021, which accounts for compliance with SCAQMD Rule 1113 (Architectural Coatings) and implementation of project's **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, including installing low flow bathroom faucets and toilets, and installing water efficient irrigation systems. VOC emissions from gas dispensing operations are included in area source emissions.
VOC emissions – 52.93 lb/day of the total 58.11 lb/day area source VOC emissions are from gas dispensing operations.

As shown in Table 4.2-7, the combined daily area, energy, and mobile source emissions would not exceed the SCAQMD operational thresholds for CO, SO_x, PM_{10}, and $PM_{2.5}$. However, the project-generated emissions would exceed the SCAQMD operational threshold for VOC and NO_x. Thus, the project's operational impacts would be potentially significant.

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.

In considering cumulative impacts from the project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SCAB is designated as nonattainment for the CAAQS and NAAQS. If a project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution to nonattainment status in the SCAB. The basis for analyzing the project's cumulatively considerable contribution is if the project's contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact because it would exceed the SCAQMD significance thresholds) and consistency with the SCAQMD 2016 AQMP, which addresses the cumulative emissions in the SCAB.

The SCAB has been designated as a national nonattainment area for O_3 and $PM_{2.5}$ and a California nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SCAB, including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operation of the project would generate VOC and NO_x emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. As indicated in Tables 4.2-6 and 4.2-7, project-generated construction and operational emissions of NO_x and operational emissions of VOCs would exceed the applicable SCAQMD emission-based significance thresholds for NO_x and VOCs. As discussed in the analysis of the project's potential to conflict with or obstruct implementation of the applicable air quality plan, the project would not conflict with the SCAQMD 2016 AQMP, but would still result in a potentially significant impact under Criterion 1 above.

Based on the project-generated construction and operational emissions of NO_x and operational emissions of VOC, the project would result in a cumulatively considerable increase in emissions of nonattainment pollutants. Impacts would be potentially significant and thus require mitigation.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Localized Significance Thresholds Analysis

Potentially Significant Impact. Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). The closest off-site sensitive receptors to the project site include residences located approximately 30 feet east of the project site boundary.

An LST analysis has been prepared to determine potential impacts to nearby sensitive receptors during construction of the project. As indicated in the discussion of the thresholds of significance (Section 4.2.3), the SCAQMD also recommends the evaluation of localized NO_2, CO, PM_{10}, and $PM_{2.5}$ impacts as a result of construction activities to sensitive receptors in the immediate vicinity of the project site. The impacts were analyzed using methods consistent with those in SCAQMD's Final Localized Significance Threshold Methodology (2009). According to the Final Localized Significance Threshold Methodology, "off-site mobile emissions from the project should not be included in the emissions compared to the LSTs" (SCAQMD 2009). Hauling of soils and construction materials associated with the project construction are not expected to cause substantial air quality impacts to sensitive receptors along off-site roadways. Localized emissions from the trucks would be relatively brief in nature and would cease once the trucks pass through the main streets.

Construction activities associated with the project would result in temporary sources of on-site fugitive dust and construction equipment emissions. As discussed above, off-site emissions from vendor trucks, haul trucks, and worker vehicle trips are not included in the LST analysis. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 26 are presented in Table 4.2-8 and compared to the maximum daily on-site construction emissions generated during the project.

Table 4.2-8. Localized Significance Thresholds Analysis for Project Construction

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
Construction Emissions	181.95	139.88	24.11	16.47
SCAQMD LST	*325*	*1,677*	*11*	*7*
LST Exceeded?	No	No	Yes	Yes

Source: SCAQMD 2009.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
See Appendix B for complete results.
LSTs are shown for an interpolated 4-acre project sites corresponding to a distance to a sensitive receptor of 25 meters.
These estimates implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 miles per hour.
Greatest on-site NO_2, CO, PM_{10}, and $PM_{2.5}$ emissions are associated with the overlap between the site preparation, grading, rock crushing and rock popping, and paving phases in November 2020 through April 2021.

Although diesel equipment would be subject to the CARB air toxic control measures for in-use off-road diesel fleets, which would minimize DPM emissions, as shown in Table 4.2-8, construction activities would generate emissions in excess of site-specific LSTs for PM_{10} and $PM_{2.5}$; therefore, localized construction impacts during construction of the project would be potentially significant and thus require mitigation.

Valley Fever

Less-than-Significant Impact. As discussed above, valley fever is not highly endemic to Riverside County, and within the County, the incidence rate in the project site is below the County average and the statewide average. Construction of the project would comply with SCAQMD Rule 403 (Fugitive Dust), which requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. In addition, the project would implement various dust control strategies as included in **PDF-AQ-1**. The nearest sensitive-receptor land use (existing residence) is located approximately 30 feet east of the project boundary. Based on the low incidence rate of coccidioidomycosis on the project site and in the County, and with the project's implementation of dust control strategies, it is not anticipated that earth-moving activities during project construction would result in exposure of nearby sensitive receptors to valley fever. Therefore, the project would have a less-than-significant impact with respect to valley fever exposure for sensitive receptors.

Health Impacts of Carbon Monoxide

Less-than-Significant Impact. To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted based on the Traffic Impact Analysis (TIA) (Appendix I) results and the California Department of Transportation (Caltrans) Institute of Transportation Studies Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) (Caltrans 1997).

The project's TIA evaluated 18 intersections. As determined by the TIA using data from Caltrans Performance Measurement System (PeMS) for Interstate 215 where available and the Makena Hills Traffic Study (2017, see Appendix I), the following intersections under the Cumulative Year (2020) operate at level of service (LOS) E or worse during the AM or PM peak hours (Appendix I):

- Nutmeg Street/Clinton Keith Road (LOS E in PM)
- California Oaks Road/Clinton Keith Road (LOS E in PM)
- Murrieta Oaks Avenue/Clinton Keith Road (LOS E in AM and PM)
- Whitewood Road/Clinton Keith Road (LOS E in PM)

Operational 2021 year was assumed for the TIA; thus, the CO analysis was prepared for the operational year consistent with the TIA. For each scenario (existing with project; existing with ambient growth and the project; existing with ambient growth, cumulative projects, and the project), the screening evaluation presents LOS with project improvements (mitigation), whether the recommended improvements (mitigation measures) are feasible, and whether a quantitative CO hotspots analysis may be required. According to the CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed (Caltrans 2010).

Based on the CO hotspot screening evaluation (in Appendix D of the Costco Murrieta Air Quality and Greenhouse Gas Emissions Analysis Technical Report, provided as Appendix B to this EIR), the intersections that exceeded the CO hotspot screening criteria shown above all have different geometries and are signalized. Therefore, all intersections that exceeded the CO hotspot screening criteria were evaluated. The potential impact of the project on local CO levels was assessed at this intersection with the Caltrans CL4 interface based on the California LINE Source Dispersion Model (CALINE4), which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections (Caltrans 1998a).

The emissions factor represents the weighted average emissions rate of the local SCAB vehicle fleet expressed in grams per mile per vehicle. Consistent with the TIA, emissions factors for 2021 were used for the analysis. Emissions factors for 2021 were predicted by EMFAC 2017 based on a 5-mile-per-hour average speed for all of the intersections for approach and departure segments. The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour, was based on the traffic report.

Four receptor locations at each intersection were modeled to determine CO ambient concentrations. A receptor was assumed on the sidewalk at each corner of the modeled intersections, for a total of four receptors adjacent to the intersection, to represent the future possibility of extended outdoor exposure. CO concentrations were modeled at these locations to assess the maximum potential CO exposure. A receptor height of 5.9 feet (1.8 meters) was used in accordance with Caltrans recommendations for all receptor locations (Caltrans 1998b).

The SCAQMD provides projected future concentrations of CO emissions to assist the CEQA practitioner with a CO Hotspots Analysis. The projected future 1-hour CO background concentration of 5.1 parts per million (ppm) for 2021 for the Rubidoux monitoring station was assumed in the CALINE4 model for 2021 (SCAQMD 2002). The maximum CO concentration measured at the Lake Elsinore monitoring station over the last 3 years was 1.2 ppm, which was measured in 2016 and 2017; as such, the SCAQMD projected 1-hour CO ambient concentration of 5.1 ppm is a conservative assumption. The 8-hour average CO concentration was added to the SCAQMD projected 8-hour CO ambient concentration of 3.2 ppm for 2021 from the Rubidoux monitoring station to compare to the CAAQS (SCAQMD 2002).

The CALINE4 predicted CO concentrations are shown in Table 4.2-9. Model input and output data are provided in Appendix C of the Costco Murrieta Air Quality and Greenhouse Gas Emissions Analysis Technical Report (Appendix B of this EIR).

Table 4.2-9. CALINE4 Predicted Carbon Monoxide Concentrations

Intersection	Maximum Modeled Carbon Monoxide Project Plus Ambient Impact (ppm)	
	1-hour	*8-hour*
Nutmeg Street/Clinton Keith Road	5.3	4.04
California Oaks Road/Clinton Keith Road	5.4	4.11
Murrieta Oaks Avenue/Clinton Keith Road	5.4	4.11
Whitewood Road/Clinton Keith Road	5.2	3.97

Source: Caltrans 1998a (CALINE4).
Note: ppm = parts per million.

As shown in Table 4.2-9, the maximum CO concentration predicted for the 1-hour averaging period at the studied intersections would be 5.4 ppm, which is below the 1-hour CO CAAQS of 20 ppm (CARB 2016c). The maximum predicted 8-hour CO concentration of 4.11 ppm at the studied intersections would be below the 8-hour CO CAAQS of 9.0 ppm (CARB 2016c). Neither the 1-hour nor 8-hour CAAQS would be equaled or exceeded at any of the

intersections studied. Accordingly, the project would not cause or contribute to violations of the CAAQS, and would not result in exposure of sensitive receptors to localized high concentrations of CO. As such, impacts would be less than significant to sensitive receptors with regard to potential CO hotspots resulting from the project or its contribution to cumulative traffic-related CO impacts, and no mitigation is required.

Health Impacts of Toxic Air Contaminants

Potentially Significant Impact. Analysis of the health impacts of toxic air contaminants is presented below.

Construction Health Risk

An HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors as a result of project construction. Results of the construction HRA are presented in Table 4.2-10.

Table 4.2-10. Construction Health Risk Assessment Results – Unmitigated

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	Per Million	36.20	10	**Potentially Significant**
Chronic Hazard Index – Residential	Index Value	0.038	1.0	Less than Significant

Source: SCAQMD 2015.
Note: CEQA = California Environmental Quality Act.
See Appendix B.

As shown in Table 4.2-10, project construction activities would result in a Residential Maximum Individual Cancer Risk of 36.20 in 1 million, which exceeds the significance threshold of 10 in 1 million. Project construction would result in a Residential Chronic Hazard Index of 0.038, which is below the 1.0 significance threshold. The project construction TAC health risk impacts would be potentially significant and thus require mitigation.

Operational Health Risk

An HRA was performed to estimate the Maximum Individual Cancer Risk, the Chronic Hazard Index, and the Acute Hazard Index for residential receptors as a result of project operation including delivery truck trips, delivery truck idling, transport refrigeration unit emissions, light-duty trucks and passenger vehicles idling at the gas station, and Costco gasoline dispensing facility. Results of the operational HRA are presented in Table 4.2-11.

Table 4.2-11. Operational Health Risk Assessment Results – Unmitigated

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	Per Million	9.02	10	Less than Significant
Chronic Hazard Index – Residential	Index Value	0.025	1.0	Less than Significant
Acute Hazard Index – Residential	Index Value	0.086	1.0	Less than Significant

Source: SCAQMD 2015.
Notes: CEQA = California Environmental Quality Act.
See Appendix B.

As shown in Table 4.2-11, project operational activities would result in a Residential Maximum Individual Cancer Risk of 9.02in 1 million, which would be less than the significance threshold of 10 in 1 million. Project operation would also result in a Residential Chronic Hazard Index and Acute Hazard Index of 0.025 and 0.086, respectively, which are below the 1.0 significance threshold.

The cumulative health risk was assessed for exposure from project construction and operation. The unmitigated construction and operational activities would result in a Residential Maximum Individual Cancer Risk of 41.18 in 1 million, which would exceed the significance threshold of 10 in 1 million.

Since the cancer risk from project operation at the maximally exposed individual resident exceeds 1 in a million, cancer burden, for which a SCAQMD significance threshold of 0.5, is evaluated. The maximum 70-year cancer risk for project operation was estimated at 10.62 in a million with HARP2 using the Population-Wide option in the model, which is specified for use in cancer burden estimates. The zone of impact was estimated to be 1.90 square kilometers. The total population in this area was estimated to be approximately 1,508 persons, based on the average densities of the census tracts that would be within the zone of impact (Census Tract 507) (U.S. Census Bureau 2010). Multiplying the maximum estimated 70-year cancer risk by the project population gives a cancer burden of 0.016. Accordingly, this would be less than the SCAQMD cancer burden threshold of 0.5. Thus, the impact with respect to potential cancer burden due to project operations would be less than significant. The project's operational TAC health risk impacts would be less than significant.

Health Effects of Criteria Air Pollutants

Potentially Significant Impact. Construction and operation of the project would result in emissions that would exceed the SCAQMD thresholds for VOC and NO_x. Project construction and operation would not exceed SCAQMD thresholds for CO, SO_x, PM_{10}, or $PM_{2.5}$.

The California Supreme Court decision on December 24, 2018, in *Sierra Club v. County of Fresno* (Friant Ranch), requires projects with significant air quality impacts to "relate the expected adverse air quality impacts to likely health consequences or explain why it is not feasible at the time of drafting to provide such an analysis, so that the public may make informed decisions regarding the costs and benefits of the project" (Friant Ranch at p. 6).

In requiring a health risk type analysis for criteria air pollutants, it is important to understand how O_3 is formed, dispersed and regulated. Ground level O_3 (smog) is not directly emitted into the air, but is instead formed when precursor pollutants such as VOCs or NO_X are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[7] Once formed, O_3 can be transported long distances by wind.[8] Because of the complexity of O_3 formation, a specific tonnage amount of VOCs or NO_X emitted in a particular area does not equate to a particular concentration of O_3 in that area.[9] In fact, even rural areas that have relatively low tonnages of emissions of VOCs or NO_X can have high levels of O_3 concentrations simply due to wind transport and other meteorological conditions such as temperature inversion and high pressure systems. Conversely, areas that have substantially more VOCs or NO_X emissions could experience lower concentrations of O_3 simply because sea breezes disperse the emissions.[10]

---

7 San Joaquin Valley Air Pollution Control District (SJVAPCD), Application for Leave to File Amicus Curiae Brief of SJVAPCD in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P., Page 4, April 13, 2015.

8 U.S. EPA, Ground-level Ozone: Basic Information, www.epa.gov/airquality/ozonepollution/basic.html.

9 SJVAPCD, Application for Leave to File Amicus Curiae Brief of SJUAPCD in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P., Page 4, April 13, 2015.

10 SJVAPCD, 2007 Ozone Plan, Executive Summary p. ES-6. www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_Ozone2007.htm.

The lack of link between the tonnage of precursor pollutants and the concentration of O_3 formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O_3 that causes these effects.[11] Indeed, the ambient air quality standards, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of O_3 and not as tonnages of their precursor pollutants.[12] Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature.

The computer models (e.g., Community Multiscale Air Quality modeling platform)[13] used to simulate and predict an attainment date for O_3 are based on regional inventories of precursor pollutants and meteorology within an air basin. At a very basic level, the models simulate future O_3 levels based on predicted changes in precursor emissions basin-wide. These computer models are not designed to determine whether the emissions generated by an individual development project will affect the date that the air basin attains the ambient air quality standards. Instead, the models help inform regional planning strategies based on the extent that all of the emission-generating sources within the air basin must be controlled in order to reach attainment.[14]

The SCAQMD and the San Joaquin Valley Air Pollution Control District have indicated that it is not feasible to quantify project-level health impacts based on existing modeling.[15,16] Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O_3 concentrations sufficent to accurately quantify O_3-related health imacts for an individual project.

In the case of the project, regional construction emissions exceed the SCAQMD's recommended daily significance thresholds for NO_X during construction and operation and for VOCs during operation. However, this does not mean that one can determine the concentration of O_3 that will be created at or near the project site on a particular day or month of the year, or the specific human health impacts that may occur from such exceedance. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentrations and locations of O_3. This is especially true for a project like the project, where most of the criteria pollutant emissions derive not from a single point source, but from area-wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from, and around the project site.

In addition, it would not be feasible to model the impact on attainment of the ambient air quality standards that these over-regional thresholds emissions from the project may have with any degree of reliability or certainty. As discussed above, the currently available tools are equipped to model the impact of all emission sources in an air basin on attainment. According to the most recent EPA-approved SCAQMD basin-wide emissions inventory, the VOC inventory is 162.4 tons per day (324,800 pounds), with 293.1 tons per day (586,200 pounds) of NO_X

11 SJVAPCD, Application for Leave to File Amicus Curiae Brief of SJVAPCD in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P., Page 5, April 13, 2015.

12 U.S. EPA, Table of Ozone National Ambient Air Quality Standards, https://www.epa.gov/ground-level-ozone-pollution/table-historical-ozone-national-ambient-air-quality-standards-naaqs.

13 The SCAQMD 2016 AQMP ozone attainment demonstration was developed using the U.S. EPA recommended Community Multiscale Air Quality (version 5.0.2) modeling platform with SAPRC07 chemistry, and the Weather Research and Forecasting Model (WRF) (version 3.6) meteorological fields.

14 SJVAPCD, Application for Leave to File Amicus Curiae Brief of SJVAPCD in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P., Page 6-7, April 13, 2015.

15 SCAQMD, Application of the SCAQMD for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae, April 6, 2015.

16 SJVAPCD, Application for Leave to File Amicus Curiae Brief of SJVAPCD in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P., April 13, 2015.

emissions for the baseline year of 2012.[17] From a scientific standpoint, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O_3 levels over an entire region. As an example, the SCAQMD's 2012 AQMP showed that reducing baseline year 2008 NO_X by 432 tons per day and reducing VOC by 187 tons per day would only reduce O_3 levels at the SCAQMD's monitor site with the highest levels by 9 parts per billion.[18] SCAQMD also conducted pollutant modeling for proposed Rule 1315, in which the CEQA analysis accounted for essentially all of the increases in emisssions due to new or modified sources in the SCAQMD between 2010 and 2030, or approximately 6,620 pounds per day of NO_X and 89,947 pounds per day of VOC. The results of the analysis showed that this increase of regional pollutant emissions would contribute to a small increase in the air basin-wide O_3 concentrations in 2030 by 2.6 parts per billion and less than 1 part per billion of NO_2.[19] Based on these results, current modeling methods are only able to provide results on a large scale and lack the resolution to model smaller sources such as individual projects. Therefore, O_3 modeling for individual projects would not be feasible or provide meaningful data to assess health impacts.

Based on the above information, at the project level, the project would represent a relatively small project, since peak daily construction regional NO_X emissions of 272 pounds per day and operational regional NO_X emissions of 60 pounds per day are more than the SCAQMD's signficance threshold. This represents approximately 172% and 109%, respectively, of the emissions analyzed by SCAQMD related to Rule 1315. Furthermore, approximately 24% of the project's peak daily construction NO_X emissions and 93% of the project's operational NO_X emissions would be regional (e.g., emitted by mobile sources distributed across region's roadway network), making them different from the identified stationary sources as modeled in SCAQMD's analysis of Rule 1315, which would add to the difficulties of modeling project-related emissions.

Running the regional-scale photochemical grid model used for predicting O_3 attainment with the emissions from the project (which equates to approximately a very small fraction of the VOC and NO_X in the air basin) is not likely to yield valid information regarding a measurable increase in O_3 concentrations sufficient to accurately quantify the project's O_3-related health impacts. Any identified modeled increase in O_3 concentrations would not be accurate, as it would be well within the error margins of such models. Similarly, it would also not be feasible to identify the project's impact on the days of nonattainment per year. Based on this information, a general description of the adverse health impacts resulting from the pollutants at issue is all that can be meaningfully provided at this time. Please see the above description of general adverse health impacts resulting from NO_X and VOCs.

CO tends to be a localized impact associated with congested intersections. The associated potential for CO hotspots were discussed previously and are determined to be a less-than-significant impact. Thus, the project's CO emissions would not contribute to significant health effects associated with this pollutant.

Construction and operation of the project would also not exceed regional thresholds for PM_{10} or $PM_{2.5}$; however, construction of the project would exceed localized thresholds for PM_{10} or $PM_{2.5}$ with implementation of **Mitigation Measure (MM) AQ-1**. However, the construction impacts would be temporary and would cease upon completion of construction. The project would not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure with implementation of **MM-AQ-1**.

17 SCAQMD, Final 2016 AQMP, Figure 3-1, March 2017, www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

18 SCAQMD, Final 2012 AQMP, February 2013, www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-20212-air-quality-management-plan; then follow "Appendix V: Modelling & Attainment Demonstrations" hyperlink, pp. v-4-2, v-7-4, v-7-24.

19 SCAQMD, Final Program Environmental Assessment for Re-Adoption of Proposed Rule 1315, 2011 (pp. 1–11). https://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/aqmd-projects---year-2011/re-adoption-of-proposed-rule-1315.

Additionally, the project would implement dust control strategies and be required to comply with SCAQMD Rule 403, which limits the amount of fugitive dust generated during construction. Emissions of particulate matter during construction would be temporary and cease upon completion of construction, and the project would implement dust control measures and use Tier 4 Final off-road equipment. Furthermore, there would be minimal contribution of particulate matter during operation, so the project is not anticipated to result in health effects associated with PM_{10} or $PM_{2.5}$. Furthermore, the project would reduce PM emissions with implementation of **MM-AQ-1**.

In summary, because construction and operation of the Project could result in exceedances of the SCAQMD significance thresholds for VOC and NO_x, the potential health effects associated with criteria air pollutants, specifically O_3, are considered potentially significant. Notably, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and there are currently no modeling tools that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects. These subjects are discussed further in Appendix B.

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

Less-than-Significant Impact. The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). Operation of the project would have the potential to create odors related to vehicle fueling at the proposed gas station. These odors would be temporary and dissipated quickly by regional air movement and localized winds, and no buildup of odors is expected to occur. Furthermore, the closest residential receptors are located 640 feet from the proposed gas station. Also, the gasoline dispensing facility would be equipped with phase I and phase II controls to be in compliance with CARB and SCAQMD requirements for vapor recovery to collect gasoline vapors during fuel delivery or fuel storage and vehicle fueling, which would also have a co-benefit for controlling odors. Therefore, project operations would result in an odor impact that is less than significant.

4.2.5 Mitigation Measures

MM-AQ-1: To reduce the potential for criteria air pollutants, specifically particulate matter (PM) and oxides of nitrogen (NO_x), as a result of construction of the project, the applicant shall:

Prior to the start of construction activities, the project applicant, or its designee, shall ensure that all 75-horsepower or greater diesel-powered equipment is powered with California Air Resources

Board (CARB)-certified Tier 4 Final engines, except where the project applicant establishes to the satisfaction of the City of Murrieta (City) that Tier 4 Final equipment is not available.

An exemption from these requirements may be granted by the City in the event that the City is provided with sufficient evidence that equipment with the required tier is not reasonably available and corresponding reductions in criteria air pollutant emissions are achieved from other construction equipment. Before an exemption may be considered by the City, the applicant shall: (1) be required to demonstrate that two construction fleet owners/operators in Riverside County were contacted and that those owners/operators confirmed Tier 4 Final equipment could not be located within Riverside County; and (2) the proposed replacement equipment has been evaluated using the California Emissions Estimator Model or other industry standard emission estimation method and documentation provided to the City to confirm the project-generated emissions do not exceed applicable South Coast Air Quality Management District mass daily thresholds of significance and localized significance thresholds.

MM-AQ-2: To reduce the potential impacts from criteria air emissions, specifically to reduce VOC and NO_x impacts, as a result of operation of the project, the applicant shall:

A. Provide preferential parking for electric vehicles (EVs), compressed natural gas vehicles, and carpool/vanpool rideshare vehicles.
B. Offer transit subsidies for 100% of employees of the project for 3 to 6 months.

As discussed in under the evaluation of the project's potential to generate VOC and NOx emissions in excess of the SCAQMD thresholds, the project would implement **PDF-AQ/GHG-1**, **PDF-AQ/GHG-2**, **MM-AQ-1**, and **MM-AQ-2** to reduce construction and operational emissions to the extent feasible.

4.2.6 Level of Significance After Mitigation

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

Significant and Unavoidable Impact. As presented in Table 4.2-12, construction emissions would be reduced to below the SCAQMD's thresholds with implementation of **MM-AQ-1**. However, the project would exceed significance thresholds of NO_x during operation with implementation of **MM-AQ-2**; thus, the impact related to the project's potential to conflict with or obstruct implementation of the SCAQMD 2016 AQMP would remain significant and unavoidable.

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

Construction

Less than Significant with Mitigation Incorporated. **MM-AQ-1** would reduce impacts related to criteria pollutant emissions during construction. To reduce NO_x emissions from construction activities, **MM-AQ-1**, requiring Tier 4 Final construction equipment, would be implemented. Implementation of **MM-AQ-1** would result in mitigated construction emissions summarized in Table 4.2-12. The values shown are the maximum summer or winter daily emissions results from CalEEMod.

Table 4.2-12. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Mitigated

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	pounds per day					
Vineyard II						
2020	1.60	12.86	55.34	0.13	10.89	5.69
2021	27.52	33.85	101.05	0.23	9.24	3.57
Costco						
2020	2.60	26.94	47.54	0.14	11.48	5.83
2021	26.19	26.30	67.90	0.17	7.09	2.77
Costco Rock Crushing and Rock Popping						
2020	2.60	23.25	18.58	0.06	1.24	0.94
Warm Springs Parkway						
2020	1.03	5.92	36.02	0.06	0.91	0.35
Warm Springs Parkway Crushing and Blasting						
2020	2.60	24.95	25.27	0.26	1.21	0.94
Total						
2020	10.44	93.93	182.74	0.66	25.73	13.75
2021	53.71	60.15	168.95	0.41	16.34	6.33
Maximum Daily Emissions	**53.71**	**93.93**	**182.74**	**0.66**	**25.73**	**13.75**
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod mitigated output, which accounts for compliance with SCAQMD Rule 1113 (Architectural Coatings), implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day and restricting vehicle speed on unpaved roads to 15 miles per hour, and implementation of MM-AQ-1, which requires equipment over 75 horsepower to meet specific engine emission standards (Tier 4 Final).

As shown in Table 4.2-12, following implementation of MM-AQ-1, project-generated NO_x emissions during construction would be reduced to below the SCAQMD's NO_x construction threshold. As such, impacts regarding NO_x emissions during construction activities would be mitigated to a less-than-significant level.

Operational

Significant and Unavoidable Impact. The major contributors to maximum operational daily emissions of VOC are from gasoline dispensing and mobile source emissions. Due to the size and type of the project, it is not feasible to implement mitigation measures to reduce the mobile source emissions. Land use strategies such as proximity to transit stations and implementation of MM-AQ-2 cannot be quantified due to uncertainty of quantified reductions from usage; therefore, reductions from MM-AQ-2 are not quantified. Thus, operational VOC emissions would remain significant and unavoidable.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Localized Significance Thresholds

Significant and Unavoidable Impact. As shown in Table 4.2-8, construction activities would generate emissions in excess of site-specific LSTs; therefore, site-specific construction impacts during construction of the project would be potentially significant. Implementation of **MM-AQ-1** would reduce project construction-generated criteria air pollutant emissions to the extent feasible. The emission results after incorporation of **MM-AQ-1** are presented in Table 4.2-13. As shown in Table 4.2-13, maximum daily on-site emissions of PM_{10} and $PM_{2.5}$ would exceed the LST; therefore, impacts after mitigation are significant and unavoidable.

Table 4.2-13. Localized Significance Thresholds Analysis for Project Construction – Mitigated

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
Construction Emissions	35.37	147.86	14.78	8.73
SCAQMD LST	*325*	*1,677*	*11*	*7*
LST Exceeded?	**No**	**No**	**Yes**	**Yes**

Source: SCAQMD 2009.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
See Appendix B for complete results.
Localized significance thresholds are shown for an interpolated 4-acre project sites corresponding to a distance to a sensitive receptor of 25 meters.
These estimates implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 miles per hour.
Emissions include reductions from implementation of **MM-AQ-1**.
Greatest on-site NO_2, CO, PM_{10}, and $PM_{2.5}$ emissions are associated with the overlap between the site preparation, grading, rock crushing and rock popping, and paving phases in November 2020 through April 2021.

Health Impacts of Toxic Air Contaminants

Less than Significant with Mitigation Incorporated. As shown in Table 4.2-10, the construction HRA results from the unmitigated scenario show cancer risks exceeding the 10 in 1 million threshold and thus a potentially significant impact at the maximally exposed individual residential receptors. Implementation of **MM-AQ-1** would reduce project construction-generated DPM emissions to the extent feasible by requiring that equipment meet Tier 4 Final engine emission standards. The construction HRA results after incorporation of **MM-AQ-1** are presented in Table 4.2-14. Thus, impacts after mitigation are less than significant.

Table 4.2-14. Construction Health Risk Assessment Results – Mitigated

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	Per Million	3.96	10	Less than Significant
Chronic Hazard Index – Residential	Index Value	0.004	1.0	Less than Significant

Source: SCAQMD 2015.
Notes: CEQA = California Environmental Quality Act.
See Appendix B.

The cumulative mitigated construction and operational activities would result in a Residential Maximum Individual Cancer Risk of 8.94 in 1 million, which would be less than the significance threshold of 10 in 1 million.

4.2.7 Cumulative Impacts

Air pollution by nature is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are used by the SCAQMD to determine whether a project's individual emissions would have a cumulatively significant impact on air quality. The potential for the project to result in a cumulatively considerable impact, specifically a cumulatively considerable new increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS and/or CAAQS, is addressed in Section 4.2.4. As set forth therein, because the project would exceed the project-level thresholds for regional NO_x and VOC emissions during operation and project-level LSTs for PM_{10} and $PM_{2.5}$ during construction, the project's cumulative impacts with respect to such emissions would be considerable and significant. The project construction and operation would not exceed the cancer risk and chronic hazard index thresholds with implementation of mitigation; therefore, the project's cumulative impacts with respect to impacts of TACs is less than significant. Furthermore, the project's construction odor impacts would be short term in nature and disperse rapidly, and the project gasoline dispensing facility would be equipped with phase I and phase II controls, which would also have a co-benefit for controlling odors. Therefore, project construction and operations would result in an odor cumulative impact that is less than significant.

4.2.8 References

13 CCR 2025. Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles.

13 CCR 2449–2449.3 and Appendix A. General Requirements for In-Use Off-Road Diesel-Fueled Fleets.14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

17 CCR 93000. Substances Identified as Toxic Air Contaminants. In Subchapter 7, Toxic Air Contaminants.

Caltrans (California Department of Transportation). 1997. *Transportation Project-Level Carbon Monoxide Protocol.*

Caltrans. 1998a. CALINE4 - A Dispersion Model for Predicting Air Pollutant Concentrations Near Roadways. Version 1.32. Written by Sonoma Technology Inc. Sponsored by the University of California, Davis Institute of Transportation Studies and Caltrans. http://www.dot.ca.gov/hq/InfoSvcs/EngApps/.

Caltrans. 1998b. *User's Guide for CL4: A User-Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*. User's Guide STI-997480-1814-UG. June 1998. http://www.dot.ca.gov/hq/env/air/documents/CL4Guide.pdf.

Caltrans. 2010. "Users of CO Protocol." October 13, 2010. Accessed March 2017. http://www.dot.ca.gov/hq/env/air/documents/COProtocol_searchable.pdf.

CARB (California Air Resources Board). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October 2000. Accessed August 2016. http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf.

CARB. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005. Accessed August 2016. http://www.arb.ca.gov/ch/landuse.htm.

CARB. 2016a. "Glossary of Air Pollution Terms." CARB website. Accessed June 2016. http://www.arb.ca.gov/html/gloss.htm.

CARB. 2016b. "Overview: Diesel Exhaust and Health." April 12, 2016. Accessed December 2016. https://www.arb.ca.gov/research/diesel/diesel-health.htm.

CARB. 2016c. "Ambient Air Quality Standards." May 4, 2016. Accessed August 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

CARB. 2016d. "Area Designation Maps/State and National." Last updated May 5, 2016. http://www.arb.ca.gov/desig/adm/adm.htm.

CARB. 2017. "iADAM: Air Quality Data Statistics." Accessed August 2017. http://www.arb.ca.gov/adam/topfour/topfour1.php.

CDPH (California Department of Public Health). 2019. *Epidemiologic Summary of Coccidioidomycosis in California, 2018*. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2018.pdf.

City of Murrieta. 2011. *Murrieta General Plan 2035*. Accessed June 2018. https://www.murrietaca.gov/departments/planning/general.asp.

City of Murrieta. 2014. City of Murrieta Zoning Map.

EPA (U.S. Environmental Protection Agency). 2009. *Integrated Science Assessment for Particulate Matter*. U.S. EPA, EPA/600/R-08/139F, 2009.

EPA. 2013. *Integrated Science Assessment of Ozone and Related Photochemical Oxidants*. U.S. EPA, EPA/600R-10/076F, 2013.

EPA. 2016a. "Criteria Air Pollutants." July 21, 2016. Accessed August 2016. https://www.epa.gov/criteria-air-pollutants.

EPA. 2016b. *Integrated Science Assessment for Oxides of Nitrogen-Health Criteria (2016 Final Report)*. U.S. EPA, EPA/600/R-15/068, 2016.

EPA. 2016c. "EPA Region 9 Air Quality Maps and Geographic Information." Last updated April 27, 2016. Accessed August 2016. http://www.epa.gov/region9/air/maps/.

EPA. 2016d. "AirData: Access to Air Pollution Data." Last updated February 23, 2016. Accessed August 2016. http://www.epa.gov/airdata/ad_rep_mon.html.

Lopez, R. 2018. Coccidioidomycosis data requests. Email from R. Lopez (Riverside University Health Systems Public Health, Research Specialist/Syndromic Surveillance Coordinator) to S. Wang (Dudek). October 4, 2018.

SCAG (Southern California Association of Governments). 2008. *2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future.*

SCAG. 2016. *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted April 7, 2016. Accessed March 2017. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

SCAQMD (South Coast Air Quality Management District). 1993. *CEQA Air Quality Handbook*.

SCAQMD. 2002. Table 3, Projected Future Year 8-hour CO Concentrations (ppm). Accessed October 2018. http://www.aqmd.gov/docs/default-source/ceqa/handbook/carbon-monoxide-concentrations/projected-future-year-8-hour-concentration-(ppm).doc?sfvrsn=2.

SCAQMD. 2009. *Final Localized Significance Threshold Methodology*. Revised July 2009.

SCAQMD. 2011. "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds." Accessed August 2016. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2.

SCAQMD. 2013. *Final 2012 Air Quality Management Plan*. February 2013. Accessed August 2016. http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan.

SCAQMD. 2017. *Final 2016 Air Quality Management Plan.* March 16, 2017. Accessed March 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

SCAQMD. 2019. "SCAQMD Air Quality Significance Thresholds." Originally published in *CEQA Air Quality Handbook*, Table A9-11-A. Revised April 2019. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

U.S. Census Bureau. 2010. "2010 Census – American Fact Finder." Accessed July 2018. https://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06065_riverside/DC10CT_C06065_009.pdf.

USGS (U.S. Geological Survey). 2000. "Operational Guidelines (version 1.0) for Geological Fieldwork in Areas 1 Endemic for *Coccidioidomycosis* (Valley Fever)." USGS Open File Report 00-348, Version 1.0. Accessed March 22, 2019. https://pubs.usgs.gov/of/2000/0348/pdf/of00-348.pdf.

INTENTIONALLY LEFT BLANK

4.3 Biological Resources

This section describes the potentially adverse impacts to special-status species as identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS), resulting from implementation of the proposed Costco/Vineyard II Retail Development Project (project). This section identifies associated regulatory requirements, describes the existing biological resources of the project site, evaluates potential impacts, and identifies mitigation measures related to implementation of the project.

The information and analysis contained in this section are based on the April 2020 Biological Resources Letter Report and MSHCP Consistency for the Costco/Vineyard II Retail Development Project, City of Murrieta, California, prepared by Dudek for the project, provided as Appendix C of this Environmental Impact Report (EIR). The Biological Resources Letter Report included a literature review and field reconnaissance, as well as a Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) consistency analysis. To meet the requirements of the MSHCP, a habitat assessment was conducted to identify suitable habitat for burrowing owl (*Athene cunicularia*) within the project site, the off-site grading area, two off-site storm drain lines, and natural habitat within an associated 500-foot buffer surrounding the site (collectively referred to as the study area). In addition, a habitat assessment was conducted to identify suitable habitat for the following narrow endemic plant species: San Diego ambrosia (*Ambrosia pumila*), many-stemmed dudleya (*Dudleya multicaulis*), spreading navarretia (*Navarretia fossalis*), Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*), California orcutt grass (*Orcuttia californica*), and Munz's onion (*Allium munzii*). Access was not available within all natural habitat within the 500-foot buffer due to private property ownership and active construction. Therefore, vegetation mapping and the habitat assessment were both conducted using public roads and/or using aerial signatures of those communities occurring within the proposed project footprint.

For this analysis, "special-status" species are those that are (1) listed, proposed for listing, or candidates for listing under the federal Endangered Species Act as threatened or endangered; (2) listed or candidates for listing under the California Endangered Species Act as threatened or endangered; (3) California state fully protected species; (4) a CDFW Species of Special Concern; (5) a species listed on the CNPS Inventory of Rare and Endangered Plants with a California Rare Plant Rank of 1B or 2B; or (6) an MSHCP covered species (Appendix C). "Listed species" refer to species that fall into category 1 or 2 from the above definition. They are listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act or the California Endangered Species Act. "Non-listed species" refer to all other categories of special-status species from the above definition.

4.3.1 Existing Conditions

4.3.1.1 Vegetation Communities and Land Covers

The project site is characterized by six vegetation communities and two land cover types: California buckwheat scrub, disturbed California buckwheat scrub, fourwing saltbush scrub, chamise–black sage chaparral, chamise–California buckwheat, Mediterranean California naturalized annual and perennial grasslands grassland, disturbed habitat, and developed land. Figure 4.3-1, Biological Resources Map, illustrates the distribution of vegetation communities and land covers, and Table 4.3-1 provides a summary of each land cover's extent within the study area.

Table 4.3-1. Vegetation Communities and Land Covers within the Project Site, Off-Site Grading Area, Off-Site Storm Drain Lines, and Associated Study Area

Vegetation Community/Land Cover	Acreage
California Buckwheat Scrub	13.32
Disturbed California Buckwheat Scrub	0.87
Disturbed Fourwing Saltbush Scrub	0.65
Chamise–Black Sage Chaparral	0.32
Chamise–California Buckwheat	0.94
Mediterranean California naturalized annual and perennial grasslands	3.45
Disturbed Habitat	32.46
Developed Land	20.95
Total	72.98*

Source: Appendix C.
*72.98 acres represents the project parcel, the off-site grading area, two off-site storm drain lines, and the natural habitat within a 500-foot buffer (i.e., the associated study area.) The proposed project includes the 26.3-acre project site, 2.46-acre off-site grading area, and 0.43 acres of off-site storm drain lines.

California Buckwheat Scrub

The California buckwheat (*Eriogonum fasciculatum*) vegetation community is an open to continuous shrub layer where California buckwheat typically dominates. The shrub layer often occurs in two separate strata: low shrubs at 0–2 meters tall and tall shrubs at 1–5 meters tall. A variety of native or non-native species may make up the herb layer, and emergent trees only infrequently occur (Klein and Evens 2006).

California buckwheat scrub is located in the northern portion of the study area on the east side of Antelope Road. A small portion of California buckwheat scrub intersects with the western portion of the off-site grading area. This vegetation community is dominated by California buckwheat with low cover of black sage (*Salvia mellifera*).

Disturbed California Buckwheat Scrub

Disturbed California buckwheat vegetation community occurs on the east side of the project site and the steep slopes on the east and west sides of Antelope Road. The vegetation community on the eastern side of the project site is primarily dominated by California buckwheat; however, it also contains low cover of deerweed (*Acmispon glaber*) and tree tobacco (*Nicotiana glauca*), with an understory of common Mediterranean grass (*Schismus barbatus*) and bare ground. The vegetation community along either side of Antelope Road is heavily disturbed due to artificially incised slopes associated with the former mass-grading activities conducted on the project site and the grading of Antelope Road. Scattered California buckwheat occurs along the slopes, in addition to intermittent black sage. The herbaceous layer contains a low cover of non-native grasses, but is mostly composed of bare ground.

Disturbed Fourwing Saltbush Scrub

The fourwing saltbush scrub alliance is not recognized within the Vegetation Alliances of Western Riverside County (Klein and Evens 2006), but it is described in a Manual of California Vegetation, 2nd Edition, as being either dominated or co-dominated by fourwing saltbush (*Atriplex canescens*) in the shrub canopy (Sawyer et al. 2009). The shrub canopy is typically open or intermittent with a variable herbaceous layer composed of seasonal herbs or non-native grasses. Emergent trees may also be available at a low cover. Associated shrub species include burrowbush (*Ambrosia dumosa*), allscale saltbush (*Atriplex polycarpa*), and bush seepweed (*Suaeda nigra*) (Sawyer et al. 2009).

Within the study area, a disturbed form of this vegetation community occupies a small section of the eastern side of the project site, directly adjacent to the disturbed habitat of the former mass grading operations. This community is dominated by fourwing saltbush, but also contains a low cover of California buckwheat. The understory is composed of non-native grasses and bare ground.

Chamise – Black Sage Chaparral

The chamise–black sage chaparral vegetation community is co-dominated by chamise (*Adenostoma fasciculatum*) and black sage, with an intermittent to continuous canopy within the shrub layer. The shrub layer may occur in two separate strata: low shrubs at 0.5 to 2 meters tall and taller shrubs 1 to 5 meters tall (Klein and Evens 2006).

This vegetation community is located within the southern portion of the study area. It is composed primarily of chamise and black sage, but also contains some California buckwheat and a sparse understory of non-native grasses.

Chamise – California Buckwheat Association

The chamise–California buckwheat vegetation association is either dominated or co-dominated by chamise and California buckwheat, with a shrub layer of open to continuous canopy. The shrub layer may occur in two strata: low shrubs at 0 to 2 meters tall and taller shrubs 0.5 to 5 meters tall. Trees may occur at trace cover, and the herbaceous layer typically remains open to intermittent (Klein and Evens 2006).

This association occurs in small patches on the western side of the study area, outside of the project site. These patches are composed primarily of chamise, but are also co-dominated by a continuous presence of California buckwheat. The herbaceous layer is composed of non-native grasses.

Mediterranean California Naturalized Annual and Perennial Grassland

As defined by Klein and Evens (2006), Mediterranean California naturalized annual and perennial grassland is usually dominated by annual grasses and herbs of various assortments that are in upland habitats. Specifically, red brome (*Bromus madritensis* ssp. *rubens*) or ripgut brome (*B. diandrus*) are abundant with other non-native and native species.

Non-native grassland occupies the western side of the study area, outside of the project site. This vegetation community is composed primarily of weedy species, including brome species (*Bromus* sp.), short-podded mustard (*Hirschfeldia incana*), common Mediterranean grass, dove weed (*Croton setiger*), prickly wild lettuce (*Lactuca serriola*), and common cryptantha (*Cryptantha intermedia*). A single blue elderberry (*Sambucus nigra* ssp. *caerulea*) is located on the southwestern side of the study area, and several Peruvian peppertrees (*Schinus molle*) are clustered at the northwestern edge of the study area; however, neither of these trees warrant their own vegetation community due to the small scale of their cover.

Developed Land

Although not recognized by the Vegetation Alliances of Western Riverside County (Klein and Evens 2006), “developed land” refers to areas that have been constructed on or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials.

The portions of the study area mapped as developed include active construction taking place in the southern portion of the study area directly south of the project site and associated roads within the study area. This area contains the southern off-site storm drain line. The construction south of the project site is not depicted on the most recent aerial photography; therefore, the aerial used for project figures does not display this development.

Disturbed Habitat

Although not recognized by the Vegetation Alliances of Western Riverside County (Klein and Evens 2006), the classification of disturbed habitat is due to the predominance of bare ground and compacted soils with a sparse covering of non-native plant species and other disturbance-tolerant plant species. Oberbauer et al. (2008) describes disturbed habitat as an area that has been physically disturbed by previous human activity and is no longer recognizable as a native or naturalized vegetation association but that continues to retain a soil substrate.

Disturbed habitat is located within the majority of the project site and off-site grading area in locations where mass grading operations previously occurred. Additionally, the northern off-site storm drain line is located within disturbed habitat. This land cover encompasses the majority of the mass grading operation activities and is primarily composed of bare ground; however, the northeastern side of the project site also contains a low cover of tree tobacco, deerweed, and short-podded mustard. In addition, there are two individual mulefat (*Baccharis salicifolia*) plants within the project site, but these individuals did not warrant their own vegetation community due to the small scale of their cover.

4.3.1.2 Plants and Wildlife

Floral Diversity

A total of 31 species of native or naturalized plants—17 native (55%) and 14 non-native (45%)—were recorded within the study area. This low plant diversity reflects the study area's disturbed environment and its proximity to adjacent developed areas. Plant species observed within the study area are listed in Appendix C.

Wildlife

Twelve bird species were detected within the study area, including house finch (*Haemorhous mexicanus*), Anna's hummingbird (*Calypte anna*), American kestrel (*Falco sparverius*), Say's phoebe (*Sayornis saya*), and California towhee (*Melozone crissalis*). No active bird nests were observed within the study area during the reconnaissance survey; however, the vegetated portions of the study area could support nesting birds. No amphibian species were observed, and none are expected to occur due to the lack of aquatic habitat. One reptile species was observed during the survey: western fence lizard (*Sceloporus occidentalis*). One mammal species was observed during the survey: coyote (*Canis latrans*). The low wildlife diversity reflects the relatively disturbed nature of the study area, and the lack of contiguous habitat. Wildlife species observed within the study area are listed in Appendix C.

4.3.1.3 Special-Status Plant Species

Based on the results of the literature review and database searches (see Appendix C), 59 special-status plant species have been documented within the region. All of these species were evaluated for potential to occur within the study area. Criteria used included soils, current disturbance levels, vegetation communities present, elevation ranges, and previous known locations based on the California Natural Diversity Database, California Native Plant Society, and Calflora records.

There are no federally or state-listed as endangered plant species with a potential to occur in the study area. Due to the disturbed nature of the project site, all non-listed special-status species were determined to either have low potential or were not expected to occur within the project site. Four non-listed special-status species have a moderate potential to occur outside of the project site, within the buffer portion of the study area: smooth tarplant (*Centromadia pungens* ssp. *laevis*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), intermediate Mariposa lily (*Calochortus weedii* var. *intermedius*), and white rabbit-tobacco (*Pseudognaphalium leucocephalum*). All species except for white rabbit-tobacco are fully covered under the MSHCP (County of Riverside 2003). A list and determination of potential to occur for these species can be found in Appendix C.

No plant species listed or proposed for listing as rare, threatened, or endangered by either CDFW or USFWS were detected within the study area. No plant species considered sensitive by the California Native Plant Society were observed. The study area is not within Critical Habitat for any special-status plant species (USFWS 2020).

4.3.1.4 Special-Status Wildlife Species

No wildlife species listed or proposed for listing as rare, threatened, or endangered by either CDFW or USFWS were detected within the study area. The study area is not within Critical Habitat for any special-status wildlife species (USFWS 2020).

Attachment F to Appendix C lists 43 special-status wildlife species that are known to occur in the U.S. Geological Survey 7.5-minute Murrieta quadrangle and the eight surrounding quadrangles (CDFW 2020). For each species listed, a determination was made regarding potential use of the study area by the species (known habitat preferences) based on information gathered during the field reconnaissance and knowledge of the species' relative distributions in the area.

The federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) has a low potential to occur on the project site because there is no remaining vegetation due to the former mass grading activities, and a moderate potential to occur in the study area outside the project site. Coastal California gnatcatcher is a fully covered species under the MSHCP (County of Riverside 2003). The federally listed endangered and state-listed threatened Stephens' kangaroo rat (*Dipodomys stephensi*) has a low potential to occur in both the project site and the study area; however, it is a fully covered species under the MSHCP (County of Riverside 2003). The project site is within the Stephens' Kangaroo Rat Habitat Conservation Plan area, which provides "take" authorization for Stephens' kangaroo rat within its boundaries (RCHCA 1996).

Due to the disturbed nature of the project site, all non-listed special-status wildlife species were determined to either have low potential or were not expected to occur within the project site. Seven non-listed, special-status species have a moderate potential to occur within the study area outside of the project site: California glossy snake (*Arizona elegans occidentalis*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), San Diego banded gecko (*Coleonyx variegatus abbotti*), red diamondback rattlesnake (*Crotalus ruber*), Blainville's horned lizard (*Phrynosoma blainvillii*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). All of these species except for California glossy snake and coast patch-nosed snake are fully covered under the MSCHP. None of these species were observed within the study area during the reconnaissance survey. A list and determination of potential to occur for these species can be found in Attachment F to Appendix C.

Burrowing Owl Habitat Assessment

The proposed project is located within the MSHCP Burrowing Owl Habitat Assessment Area. In accordance with the MSHCP, a habitat assessment was conducted for this species (County of Riverside 2003).

Burrowing owl is a California Species of Special Concern. With a relatively wide-ranging distribution throughout the west, burrowing owl is considered to be a habitat generalist (Lantz et al. 2004). In California, burrowing owl is a yearlong resident of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon–juniper and ponderosa pine habitats (Zeiner et al. 1990). Preferred habitat is generally typified by short, sparse vegetation with few shrubs; level to gently sloping topography; and well-drained soils (Haug et al. 1993).

The presence of burrows is the most essential component of burrowing owl habitat, since burrows are required for nesting, roosting, cover, and catching prey. In California, western burrowing owl most commonly lives in burrows created by California ground squirrels (*Spermophilus (Otospermophilus) beecheyi*). Burrowing owl may occur in human-altered landscapes such as agricultural areas, ruderal grassy fields, vacant lots, and pastures if the vegetation structure is suitable (i.e., open and sparse), useable burrows are available, and foraging habitat is close (Gervais et al. 2008). Debris piles, riprap, culverts, and pipes can also be used for nesting and roosting.

The nearest documented occurrence of burrowing owl is approximately 2.5 miles southeast of the study area. This occurrence was documented in 2003 (CDFW 2020).

The project site is primarily disturbed, as it has previously operated as an active mass-grading operation. This disturbed habitat is comprised of unvegetated, compacted soils that do not contain California ground squirrel activity or burrows. There is a section of open, disturbed fourwing saltbush scrub habitat (0.65 acres) on the eastern side of the project site. This area could provide potential low-quality potential foraging habitat for burrowing owl due to its small extent and lack of continuity with surrounding higher-quality habitat. No California ground squirrel burrows or other burrows 4 inches or greater in diameter that could provide nesting habitat for burrowing owl were observed within the study area. Currently, potential for this species to occur is low; however, should the project site continue to remain fallow prior to construction, suitability of the project site for this species could increase.

4.3.1.5 Nesting Birds

The project site is primarily disturbed as a previous mass-grading operation; however, the natural habitat on the eastern side of the site provides potential nesting habitat for commonly occurring birds such as Anna's hummingbird and house finch. In addition, ground-nesting birds such as killdeer (*Charadrius vociferus*) may use the developed portion of the project site. The project site does not contain large trees suitable for raptor nesting.

4.3.1.6 Jurisdictional Waters and Significant Drainage Courses

A concrete roadside ditch is located along the northwestern boundary of the study area, along Interstate (I) 215, outside of the project site. This feature lies in a topographic low point and appears to convey freeway runoff from the south, which then sheetflows into an area in the northwestern portion of the study area. There is no further evidence of ponding or surface flows, and runoff conveyed by this ditch is assumed to percolate or evaporate. Because this feature was artificially created in uplands and is not supported by a freshwater source, it is not considered jurisdictional by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, or CDFW. Figure 4.3-1 illustrates the location of this feature.

The southeastern corner of the study area contains a v-ditch leading to a storm drain within the residential communities to the east. This feature is not located within the proposed project site. This feature appears to originate south of the project site along the eastern edge of the study area. The v-ditch collects runoff and conveys it north to a storm drain located within the residential communities east of the project site. According to the Water Quality Management Plan, the storm drain system later connects with Warm Springs Creek (Smith 2019). Because this feature was artificially created in uplands and is not supported by a freshwater source, it would not be considered jurisdictional by the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and CDFW. Figure 4.3-1 illustrates the location of this feature.

No other potential jurisdictional features were observed within the study area.

4.3.1.7 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal. Wildlife movement through the project site is unlikely due to the developed nature of surrounding land uses. The remnants of a mass-grading operation occupy the majority of the project site; I-215 lies to the west and north, a small subdivision lies to the east, and a school exists to the south. Therefore, the study area has limited to no value as a potential wildlife corridor or habitat linkage.

4.3.1.8 Western Riverside County MSHCP Consistency Analysis

The project site is located in the MSHCP Southwest Area Plan area and must comply with the relevant section of the MSHCP (County of Riverside 2003). The project site is not within an MSHCP Criteria Cell or Cell Group (Figure 4.3-2, Western Riverside County MSHCP); therefore, no “reserve assembly” requirements would apply to the project site. Additionally, the project site is not within an MSHCP Amphibian, Mammal, or Criteria Area Species survey area; therefore, habitat assessments for species covered within these survey areas are not required.

Chapter 6 of the MSHCP outlines additional implementation measures with which permittees must comply. The relevant section of the MSHCP (County of Riverside 2003) and requirements are listed below. Project compliance with the requirements identified below is discussed in Section 4.3.4, Impacts Analysis.

- MSHCP Section 6.1.2, Riparian/Riverine and Vernal Pools Guidelines
- MSHCP Section 6.1.3, Narrow Endemic Plant Species
- MSHCP Section 6.3.2, Additional Survey Needs and Procedures

MSHCP Section 6.1.2, Riparian/Riverine Resources

The MSHCP defines riparian/riverine areas as “lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year” (County of Riverside 2003). The MSHCP further clarifies those areas “demonstrating characteristics as described above which are artificially created are not included in these definitions” (County of Riverside 2003).

The study area contains an unvegetated roadside ditch on the northwestern side of the project site that appears to manage road runoff associated with I-215. The majority of the ditch is concrete-lined, and runoff conveyed by the ditch sheetflows and dissipates into undeveloped areas within the study area. This feature is artificially created, does not rely on a freshwater source, and does not convey flows to downstream riverine resources; therefore, it is not a riverine resource as defined by the MSHCP (County of Riverside 2003).

The study area also contains an unvegetated v-ditch conveying street runoff to a storm drain located within the residential communities to the east. According to the Water Quality Management Plan, the storm drain system outlets in Warm Springs Creek. This feature is not located within the project site. Because this feature is artificially created and does not rely on a freshwater source, it would not be considered a riverine resource as defined by the MSHCP.

The project site contains an individual mulefat plant at two separate locations. These plants are not sufficient to support riparian bird species such as least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), or yellow-billed cuckoo (*Coccyzus americanus*). This is due to the small size of their extent, the lack of understory or closed-canopy features that give depth to the vegetation community, the lack of continuity with higher-quality habitat, and the project site surroundings (existing development).

Vernal Pool and Fairy Shrimp Habitat

No vernal pool indicator plants were identified within the study area. The study area does not contain clay soils, bedrock, or other poorly drained soils typically associated with vernal pools (USDA 2020). During the survey, no other topographic low points were observed within the study area, and none are present on historic aerials (Google Earth 2020). The project site contained evidence of ponding (damp soils, soil cracks) in several locations during the February 28, 2020, site visit; however, the area had experienced rain 6 days prior and much of the preceding weeks. Additionally, the soils mapped in the project site are Cajalco and Las Posas series, both of which are considered well draining and not known to retain water. Due to the lack of suitable soils and lack of standing water following rain events, the project site is not considered suitable for special-status fairy shrimp species.

MSHCP Section 6.1.3, Narrow Endemic Plant Species

The project site is located within the Narrow Endemic Plant Species Survey Area 4 of the MSHCP area. In accordance with the MSHCP, a habitat assessment must be conducted for the target species and focused surveys completed if suitable habitat is present (County of Riverside 2003). The target narrow endemic plants are San Diego ambrosia, many-stemmed dudleya, spreading navarretia, Wright's trichocoronis, California orcutt grass, and Munz's onion. Details regarding the habitat requirements for each of these species is provided in Attachment E of Appendix C.

San Diego ambrosia, spreading navarretia, California orcutt grass, and Wright's trichocoronis are not expected to occur within the study area. These species are commonly found in association with vernal pools, and an evaluation of the study area did not yield conditions suitable for vernal pools (see further discussion about vernal pools in Appendix C).

Munz's onion and many-stemmed dudleya are also not expected to occur within the study area, since the study area lacks clay soils within which these species are associated. Because the habitat assessment for narrow endemic plant species did not identify habitat characteristics associated with these species (see Appendix C), focused narrow endemic plant species surveys are not required.

MSHCP Section 6.3.2, Additional Survey Needs and Procedures

The MSHCP establishes habitat assessment requirements for certain species of plants, birds, mammals, and amphibians. The project site is in a required habitat assessment area for burrowing owl (County of Riverside 2003). As discussed in Section 3.7, Special-Status Wildlife Species, of Appendix C, the habitat assessment did not identify potential burrowing owl habitat or suitable burrows features; therefore, focused surveys are not required. Site conditions can change prior to development, and California ground squirrels have the potential to move in and create suitable burrows for burrowing owl. To avoid potential for significant impacts to burrowing owl during construction activities, a pre-construction burrowing owl survey should be conducted and avoidance measures implemented if burrowing owls are present.

Should the project site remain fallow for a long enough duration such that it acquires sparse shrub cover and California ground squirrels, the site would become suitable for burrowing owl, and focused burrowing owl surveys would be required.

MSHCP Section 6.1.4, Urban/Wildlands Interface Guidelines

According to the MSHCP, the Urban/Wildlands Interface Guidelines are intended to address indirect effects associated with locating development in proximity to the MSHCP Conservation Area (County of Riverside 2003, p. 6–42). The project site is not adjacent to any conserved areas; however, a component of the proposed project is the creation of two bio-retention basins that will collect, filter, and store runoff before discharging it into the existing City of Murrieta storm drain system through three existing off-site storm drain pipes. These storm drain pipes are undergrounded through existing residential development and eventually link with Warm Springs Creek 1.5 miles to the east, an area described for conservation by the MSHCP (Smith 2019) (Figure 4). As such, the Urban/Wildlands Interface Guidelines are applicable. The proposed project will implement the following Urban/Wildlands Interface Guidelines from the MSHCP (County of Riverside 2003) that are applicable to downstream resources. The lighting and noise portion of the Urban/Wildlands Interface Guidelines are not applicable as the land use is not adjacent to a Conservation Area.

Drainage

Proposed developments in proximity to the MSHCP Conservation Area shall incorporate measures, including measures required through the National Pollutant Discharge Elimination System requirements, to ensure that the quantity and quality of runoff discharged to the MSHCP Conservation Area is not altered in an adverse way when compared with existing conditions. In particular, measures shall be put in place to avoid discharge of untreated surface runoff from developed and paved areas into the MSHCP Conservation Area. Stormwater systems shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials, or other elements that might degrade or harm biological resources or ecosystem processes within the MSHCP Conservation Area. This can be accomplished using a variety of methods including natural detention basins, grass swales, or mechanical trapping devices. Regular maintenance shall occur to ensure effective operations of runoff control systems. As previously described, the proposed project includes two bio-filtration basins that will treat drainage associated with the proposed project and discharge it into existing storm drain systems at a rate equal or less than that of existing conditions.

Toxics

Land uses proposed in proximity to the MSHCP Conservation Area that use chemicals or generate bioproducts such as manure that are potentially toxic or may adversely affect wildlife species, habitat, or water quality shall incorporate measures to ensure that application of such chemicals does not result in discharge to the MSHCP Conservation Area. Measures such as those employed to address drainage issues shall be implemented.

Invasives

When approving landscape plans for development that is proposed adjacent to the MSHCP Conservation Area, Permittees shall consider the invasive, non-native plant species listed in Table 6-2 of the MSHCP and shall require revisions to landscape plans (subject to the limitations of their jurisdiction) to avoid the use of invasive species for the portions of development that are adjacent to the MSHCP Conservation Area. Considerations in reviewing the applicability of this list shall include proximity of planting areas to the MSHCP Conservation Areas, species considered in the planting plans, resources being protected within the MSHCP Conservation Area and their relative sensitivity to invasion, and barriers to plant and seed dispersal, such as walls, topography, and other features. As described in **Mitigation Measure (MM) BIO-1**, species listed in Table 6-2 of the MSCHP shall be avoided in the landscape plan.

4.3.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Endangered Species Act

As part of the United States Code (USC), the Federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by USFWS for most plant and animal species, and by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and to provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. FESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under FESA, it is unlawful to "take" any listed species, and "take" is defined as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1531 et seq.).

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on private property without any other federal agency involvement.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. The act protects more than 800 species of birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

State

State of California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code, Section 2050 et seq.) provides protection and prohibits the take of plant, fish, or wildlife species listed by the State of California. Unlike under FESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to FESA and is prohibited for both listed and candidate species. Take authorization may be obtained by project applicants from CDFW under CESA Section 2081, which allows take of a listed species for educational, scientific, or management purposes. In this case, private developers must consult with CDFW to develop a set of measures and standards for managing the listed species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

Other Sections from the California Fish and Game Code

Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code outline protections for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. Furthermore, it is the responsibility of CDFW to maintain viable populations of all native species. To that end, CDFW has designated certain vertebrate species as Species of Special Concern because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 directed CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare," and protect endangered and rare plants from take. CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the Fish and Game Code. To align with federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals to threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and project applicants.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. CEQA also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors." A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its

environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c).

Section IV, Appendix G (Environmental Checklist Form), of the CEQA Guidelines requires an evaluation of impacts to "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 the U.S. Fish and Wildlife Service."

Local

City of Murrieta General Plan

The Murrieta General Plan 2035 establishes a "blueprint" for the City to help guide land use decisions. Several elements within the General Plan were established to address potential impacts to biological resources. Specifically, the Land Use, Conservation, and Recreation and Open Space Elements each have goals and policies that address potential impacts to candidate, sensitive, or special-status species and their habitats.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside MSHCP is a comprehensive, multijurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Western Riverside County. The MSHCP is one of several large, multijurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region. The MSHCP allows Riverside County and its cities, including the City of Murrieta, to better control local land-use decisions and maintain a strong economic climate in the region while addressing the requirements of CESA and FESA (County of Riverside 2003).

The MSHCP serves as a habitat conservation plan pursuant to Section 10(a)(1)(B) of FESA (16 USC 1531 et seq.), and a Natural Communities Conservation Plan under the Natural Community Conservation Planning Act of 2001 (Fish and Game Code Section 2800 et seq.). The MSHCP allows the participating jurisdictions to authorize "take" of plant and wildlife species identified within the plan area. USFWS and CDFW have authority to regulate the take of threatened, endangered, and rare species. Under the MSHCP, the Wildlife Agencies have granted "take authorization" for otherwise lawful actions, such as public and private development that may incidentally take or harm individual species or their habitat outside of the MSHCP conservation area, in exchange for the assembly and management of a coordinated MSHCP conservation area.

The MSHCP is a "criteria-based plan" and does not rely on a hardline preserve map. Instead, within the MSHCP area, the MSHCP reserve is assembled over time from a smaller subset of the plan area referred to as the Criteria Area. The Criteria Area consists of Criteria Cells (Cells) and Cell Groupings, and flexible guidelines (Criteria) for the assembly of conservation within the Cells or Cell Groupings. Cells and Cell Groupings also may be included within larger units known as Cores, Linkages, or Non-Contiguous Habitat Blocks (County of Riverside 2003).

Western Riverside MSHCP Mitigation Fee

To implement the goals and objectives of the Western Riverside MSHCP and to mitigate the impacts caused by new development, lands supporting species covered by the MSHCP must be acquired and conserved. A standard fee, known as the Development Mitigation Fee, is paid to the City prior to construction to supplement the financing of the acquisition of lands supporting species covered by the MSHCP and to pay for a new

development's fair share of this cost. The Development Mitigation Fee assists in the maintenance of biological diversity and protects vegetation communities that are known to support threatened, endangered, or sensitive populations of plant and wildlife species (County of Riverside 2003).

Stephens' Kangaroo Rat Habitat Conservation Plan

The Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (SKR HCP) was prepared by the Riverside County Habitat Conservation Agency, and approved by USFWS in agreement with the California Department of Fish and Game (now CDFW) on May 6, 1996. The agreement creates a network of reserves within western Riverside County occupied by and to be managed for Stephens' kangaroo rat. A total of 30,000 acres included as reserves are occupied by Stephens' kangaroo rat. The SKR HCP authorizes incidental take of Stephens' kangaroo rat and describes the conservation, mitigation, and monitoring measures that are applied under the Section 10(a) permit issued by USFWS and Management Authorization issued by CDFW. The SKR HCP describes the proposed conservation, mitigation, and monitoring measures to be implemented for the preservation of the federally endangered Stephens' kangaroo rat. The SKR HCP establishes a regional system of Core Reserves throughout western Riverside County for the specific conservation of Stephens' kangaroo rat and the ecosystem upon which it depends. A standard fee, known as the Development Mitigation Fee, is paid to the City prior to construction, to supplement the financing of Core Reserve management for the SKR HCP and to pay for a new development's fair share of this cost.

Tree Ordinance

The City of Murrieta Development Code, Article III, Section 16.42, Tree Preservation, identifies the following as protected trees:

- Native oak with a diameter at standard height of 4 inches or greater (smaller trees may also be protected under special circumstances as determined by the director).
- Trees of historical or cultural significance as identified by council resolution.
- Significant groves or stands of trees.
- Mature trees located on a parcel of 1 acre or more (smaller trees may also be protected under special circumstances as determined by the director).
- Any tree required to be planted or preserved as environmental mitigation for a discretionary permit.

There are no resources on the project site that meet the above criteria; therefore, a tree removal permit in accordance with the City of Murrieta Development Code is not required. There are no other local ordinances applicable to the project.

4.3.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts to biological resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to biological resources would occur if the project 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 Game1 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 Game or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
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.

4.3.4 Impacts Analysis

This section addresses potential impacts to special-status biological resources that could result from implementation of the proposed project. This section follows the CEQA checklist for biological resources. For the purposes of this biological analysis, it is assumed that the entire project site and off-site grading area would be permanently impacted. The two off-site storm drain lines are considered temporary impacts because the storm drain pipes will be undergrounded (see Figure 4.3-3, Impacts).

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

Special-Status Vegetation Communities

No Impact. No special-status vegetation communities occur on the project site; therefore, no impacts to special-status vegetation communities would occur with project implementation. Table 4.3-2, below, lists impacts to the land covers found on the project site, off-site grading area, and off-site storm drain lines.

[1] The California Department of Fish and Game changed its name to California Department of Fish and Wildlife effective January 1, 2013, but this language is taken directly from Appendix G of the CEQA Guidelines and has not been modified.

Table 4.3-2. Impacts to Land Covers on the Project Site, Off-Site Grading Area, and Off-Site Storm Drain Lines

Vegetation Community/Land Cover	Acreage
Project Site	
California Buckwheat	—
Disturbed California Buckwheat	—
Fourwing Saltbush	0.65
Chamise–Black Sage	—
Chamise–California Buckwheat Association	—
Mediterranean California Naturalized Annual and Perennial Grassland	—
Disturbed Land	25.62
Developed Land	<0.01
Project Site Total	26.3
Off-Site Grading Area	
California Buckwheat	0.28
Disturbed Land	2.18
Developed Land	<0.01
Off-Site Grading Area Total	2.46
Disturbed Land	0.31
Developed Land	0.13
Off-Site Storm Drain Lines Total	0.43
Grand Total	29.17*

Source: Appendix C.

* Total impacts are larger than the 26.3-acre project site due to the inclusion of the 2.46-acre off-site grading area to the north and the 0.43-acre off-site storm drain lines to the north and south. Subtotals may not add due to rounding.

Special-Status Plant Species

Less-than-Significant Impact with Mitigation. There are no special-status plant species that have moderate or high potential to occur within the project site; therefore, there would be no direct impacts to special-status plant species with project implementation.

Four non-listed, special-status species have a moderate potential to occur within the buffer area of the study area. Indirect impacts could occur to these four special-status plants and their habitat. Potential indirect impacts to special-status plants include the generation of fugitive dust, the release of chemical pollutants, and the adverse effect of invasive plant species.

All species except for white rabbit-tobacco are fully covered under the MSHCP, and impacts to all species except for white rabbit-tobacco would be less than significant with payment of the MSHCP Development Mitigation Fee. Indirect impacts to non-covered special-status plants (white rabbit-tobacco) would be significant absent mitigation (Impact BIO-1). To avoid potential for significant impacts to white rabbit-tobacco during construction activities, general avoidance and minimization will be implemented that contain construction activities within the designated limits and prevent debris and toxins from spilling into the neighboring buffer area. Implementation of **MM-BIO-1** would reduce potential impacts to less than significant.

Special-Status Wildlife

Less-than-Significant Impact with Mitigation. Two federally listed threatened species—Stephens' kangaroo rat and coastal California gnatcatcher—have a low potential to occur within the project site. The project site is within the SKR HCP boundary (RCHCA 1996); therefore, impacts to Stephens' kangaroo rat would be less than significant with payment of the SKR HCP Development Mitigation Fee. Coastal California gnatcatcher is fully covered by the MSHCP; therefore, impacts to coastal California gnatcatcher would be less than significant with payment of the MSHCP Development Mitigation Fee.

Seven non-listed special-status wildlife species have the potential to occur adjacent to the project site, and the project could result in indirect impacts to these species. Indirect impacts could include noise, dust, pollution, and entrapment during construction activities. Five of these species are fully covered under the MSCHP, and impacts would be less than significant with payment of the MSHCP Development Mitigation Fee. Two species, California glossy snake and coast patch-nosed snake, are not covered by the MSHCP. Implementation of MM-BIO-1 would reduce potential indirect impacts to these species to less than significant.

Burrowing Owl

The burrowing owl habitat assessment determined that suitable burrowing owl habitat is not present on site due to the absence of suitable burrows and limited foraging habitat (see Appendix C); therefore, the project would not result in significant impacts to burrowing owl habitat. If burrowing owl should occupy the site prior to initiation of construction activities, direct impacts to burrowing owl would be significant. Additionally, if burrowing owls occupy surrounding habitat within 500 feet of construction activities, indirect impacts could be significant. To avoid potential for significant impacts to burrowing owl during construction activities, a pre-construction burrowing owl survey should be conducted and avoidance measures implemented if burrowing owl are present (MM-BIO-2). Implementation of MM-BIO-2 would reduce potential impacts to less than significant.

Nesting Birds

Project construction could result in direct and indirect impacts to nesting birds, including the loss of nests, eggs, and fledglings if vegetation clearing and ground-disturbing activities occur during the avian nesting season (typically March 1 through August 31). If the nesting bird season cannot be avoided, a nesting bird survey should be conducted and avoidance measures implemented if nests are documented within the project site or within 300 feet of the project site (MM-BIO-3). Implementation of MM-BIO-3 would reduce potential impacts to less than significant.

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

Less-than-Significant Impact. The MSHCP defines riparian/riverine areas as "lands which contain habitat dominated by trees, shrubs, persistent emergent, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year." The MSHCP further clarifies those areas "demonstrating characteristics as described above which are artificially created are not included in these definitions" (County of Riverside 2003).

As discussed in Section 4.3.1.8, Western Riverside County MSHCP Consistency Analysis, there are no areas that are a riverine resource as defined by the MSHCP.

Given that the project site does not support any MSHCP-defined riparian resources, MSHCP-riverine resources, or other sensitive natural communities, impacts associated with the project would be less than significant.

Would the project have a substantial adverse effect on state or 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?

No Impact. As discussed in Section 4.3.1.6, the project site does not contain jurisdictional waters; therefore, no impact to federal protected wetlands would occur.

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?

No Impact. As discussed in Section 4.3.1.7, Wildlife Corridors and Habitat Linkages, the project site does not function as a wildlife corridor and does not support any wildlife nursery sites. As a result, implementation of the proposed project would result in no impacts to these resources.

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

No Impact. Several elements within the City of Murrieta General Plan were established to address potential impacts to biological resources. Specifically, the Land Use, Conservation, and Recreation and Open Space Elements each have goals and policies that address potential impacts to candidate, sensitive, or special-status species and their habitats. As none of these species or habitats are present on the site, no further action is required.

The City of Murrieta Development Code, Article III, Section 16.42, Tree Preservation, identifies the following as protected trees:

- Native oak with a diameter at standard height of 4 inches or greater (smaller trees may also be protected under special circumstances as determined by the director).
- Trees of historical or cultural significance as identified by council resolution.
- Significant groves or stands of trees.
- Mature trees located on a parcel of 1 acre or more (smaller trees may also be protected under special circumstances as determined by the director).
- Any tree required to be planted or preserved as environmental mitigation for a discretionary permit.

There are no resources on the project site that meet the above criteria; therefore, a tree removal permit in accordance with the City of Murrieta Development Code is not required. There are no other local ordinances applicable to the project. As a result, implementation of the proposed project would result in no impacts to these resources.

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

Less-than-Significant Impact with Mitigation Incorporated. The project site is located within the MSHCP plan area (County of Riverside 2003) and within the Stephens' Kangaroo Rat Habitat Conservation Plan boundary (RCHCA

1996). As discussed below and within Table 4.3-3, MSHCP Consistency Analysis, the project is consistent with the MSHCP and Stephens' Kangaroo Rat Habitat Conservation Plan.

The project site is within the MSHCP plan area. As described in Section 4.3.1.8, Western Riverside County MSHCP Consistency Analysis, the project site does not support riparian/riverine resources, vernal pools or fairy shrimp habitat, narrow endemic plant habitat, or Criteria Area species habitat; therefore, there are no requirements under the MSHCP for these resources. The project site is also not adjacent to conservation areas; however, the bio-filtration systems will connect to downstream resources available for conservation. Therefore, the Urban/Wildlife Interface Guidelines are applicable, as described in Section 4.3.1.8 of this report. The project site does not support burrowing owl habitat; however, burrowing owls have the potential to occupy the site in the future. With implementation of burrowing owl pre-construction surveys and avoidance and minimization measures, if applicable, the project would be consistent with the MSHCP burrowing owl requirements. With implementation of **MM-BIO-2**, Burrowing Owl Pre-construction Surveys; **MM-BIO-1**, General Avoidance and Minimization Measures; and payment of the MSHCP Development Mitigation Fee, the proposed project would be consistent with the MSHCP.

The project site is within the Stephens' Kangaroo Rat Habitat Conservation Plan boundary (RCHCA 1996). With payment of the Stephens' Kangaroo Rat Habitat Conservation Plan Development Mitigation Fee, the proposed project would be consistent with the Stephens' Kangaroo Rat Habitat Conservation Plan.

Table 4.3-3. Habitat Conservation Plan Consistency Analysis Summary

Policy	Discussion	Consistency
MSHCP Section 6.1.2 Riparian/Riverine, Vernal Pool and Fairy Shrimp Requirements	*Riparian/Riverine Resources* • The study area contains an unvegetated roadside ditch on the northwestern side of the study area that appears to be used to manage road runoff associated with I-215. This feature is artificially created and does not rely on a freshwater source, and does not convey flows to downstream riverine resources, and thus is not a riverine resource. • The study area contains an unvegetated v-ditch that carries runoff and leads to a storm drain within the properties east of the project site. Because this feature is artificially created and does not rely on a freshwater source, it would not be considered a riverine resource as defined by the MSHCP. *Vernal Pool and Fairy Shrimp Habitat* • The project site does not contain evidence of vernal pools. Soils mapped in the region are well-drained and are not known to retain ponded water. In addition, no vernal pool indicator plant species were identified within the area (see Appendix C).	Consistent
MSHCP Section 6.1.3 Narrow Endemic Plant Species Survey Requirements	The project site is located within the Narrow Endemic Plant Species Survey Area 4 of the MSHCP area. Dudek conducted a habitat assessment for narrow endemic plant species and did not identify habitat characteristics associated with these species (see Appendix C). Focused narrow endemic plant species surveys are not required.	Consistent
MSHCP Section 6.1.4 Urban/Wildlands Interface Guidelines	The project is not adjacent to conservation areas; however, the bio-filtration systems will connect to downstream resources available for conservation. Therefore, several of the Urban/Wildlife Interface Guidelines related to drainage, toxicants, and invasive species are applicable. The bio-filtration systems included as project design	Consistent

Table 4.3-3. Habitat Conservation Plan Consistency Analysis Summary

Policy	Discussion	Consistency
	features will meet the drainage and toxicant requirements. To prevent the spread of invasive species, **MM-BIO-1** would be required. Guidelines related to noise and lighting are not applicable because the project is not adjacent to a Conservation Area.	
MSHCP Section 6.3.2 Criteria Area Species Survey Requirements	The project site is in a required habitat assessment area for burrowing owl. The habitat assessment did not identify potential burrowing owl habitat or suitable burrows features (see Appendix C); therefore, focused surveys are not required. Site conditions can change prior to development, creating suitable habitat for burrowing owl. To avoid potential for significant impacts to burrowing owl during construction activities, **MM-BIO-2** would be required.	Consistent with mitigation incorporated
MSHCP Development Mitigation Fee	The project site is within the Western Riverside MSHCP boundary. With payment of the MSHCP Development Mitigation Fee, the proposed project would be consistent with the Western Riverside MSHCP.	Consistent with payment of mitigation fee
SKR HCP	The project site is within the SKR HCP boundary. With payment of the SKR HCP Development Mitigation Fee, the proposed project would be consistent with the SKR HCP.	Consistent with payment of mitigation fee

4.3.5 Mitigation Measures

The following mitigation measures address the proposed project's significant impacts on special-status wildlife species, vegetation communities, jurisdictional resources, the tree preservation ordinance, and related to compliance with the MSHCP. With implementation of these mitigation measures, all significant impacts would be reduced to less than significant.

MM-BIO-1 General Avoidance and Minimization Measures

The following avoidance and minimization measures shall be implemented during project construction activities:

- Construction limits along the northern boundary of the off-site grading area and western side of the northern off-site storm drain line shall be clearly flagged so that adjacent native vegetation is avoided.
- Construction work and operations and maintenance areas shall be kept clean of debris, such as trash and construction materials. Fully covered trash receptacles that are animal-proof shall be installed and used during construction to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Trash contained within the receptacles shall be removed at least once a week from the project site.
- Nighttime construction shall be minimized to the extent possible. However, if nighttime activity (e.g., equipment maintenance) is necessary, the speed limit shall be 10 miles per hour.
- Staging and storage areas for spoils, equipment, materials, fuels, lubricants, and solvents shall be located within the project site or adjacent developed areas.
- To prevent inadvertent entrapment of wildlife during construction, all excavated steep-walled holes or trenches more than 2 feet deep shall be covered with plywood or similar materials at

the close of each working day, or be provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped wildlife. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape.

- All pipes, culverts, and similar structures with a diameter of 4 inches or more that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for wildlife and nesting birds before the pipe is buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by a qualified biologist.

The following avoidance and minimization measure shall be implemented as part of project operations:

- The project landscape plan shall avoid the use of any invasive, non-native plant species rated as "high" or "moderate" by the California Invasive Plant Council's Invasive Plant Inventory (Cal-IPC 2020).
- The project landscape plan shall avoid the use of any species listed in Table 6-2 of the MSHCP.

MM-BIO-2 Prior to initiation of construction activities, a burrowing owl pre-construction survey shall be conducted in accordance with the Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area (RCA 2006). In accordance with these instructions, the survey shall occur within 30 days prior to ground-disturbance activities. A minimum of one survey site visit within the described timeframe prior to disturbance is required to confirm presence or absence of burrowing owl on the site. Pre-construction surveys shall be conducted by a qualified biologist.

If surveys confirm occupied burrowing owl habitat is located within the project site or within 500 feet of the project site, avoidance measures shall be implemented consistent with the requirements of the Western Riverside County Multiple Species Habitat Conservation Plan.

MM-BIO-3 To maintain compliance with the Migratory Bird Treaty Act and California Fish and Game Code, if ground disturbance and/or vegetation clearance activities are scheduled to occur during the avian nesting season, a pre-construction nesting bird survey shall be conducted by a qualified biologist within the project site and a 300-foot buffer around the project site. Surveys shall be conducted within 3 days prior to initiation of activity and be conducted between dawn and noon.

If an active nest is detected during the nesting bird survey, avoidance buffers shall be implemented as determined by a qualified biologist. The buffer shall be of a distance to ensure avoidance of adverse effects to the nesting bird by accounting for topography, ambient conditions, species, nest location, and activity type. All nests shall be monitored as determined by the qualified biologist until nestlings have fledged and dispersed, or it is confirmed that the nest has been unsuccessful or abandoned.

4.3.6 Level of Significance After Mitigation

Compliance with **MM-BIO-1** through **MM-BIO-3** would reduce significant impacts to less than significant.

4.3.7 Cumulative Impacts

A significant adverse cumulative biological resources impact would occur when construction or operation of the cumulative projects would encroach into areas containing sensitive biological resources, affect the movement of wildlife species, or affect the functionality of a planned conservation area. The proposed project has the potential to result in significant impacts to special-status plants and special-status wildlife. Compliance with mitigation measures identified in Section 4.3.5 would reduce potentially significant impacts to less than significant.

If cumulative projects are located within a MSHCP or SKR HCP area, they would be required to comply with the policies and regulations therein, including all required protocol surveys, mitigation requirements, and fee payments used to fund conservation efforts. Consistency with the MSHCP and SKR HCP would result in the ability of a project to rely on the MSHCP and SKR HCP for mitigation related to cumulative biological impacts. Thus, impacts would not be cumulatively considerable.

Cumulative projects that would occur on previously undeveloped land would be required to identify and mitigate any potentially significant impacts to biological resources. Projects that would occur on previously developed land or in a highly urbanized area would have less potential to significantly impact biological resources; however, there is a potential for nesting birds to be present in vegetation. The combined construction of projects within the vicinity of the proposed project could deprive some species of a significant amount of habitable space. However, it is anticipated that species that are potentially affected by cumulative projects would be subject to the same requirements of CEQA as the proposed project. These determinations would be made on a case-by-case basis, and the effects of cumulative projects on nesting birds would be mitigated to the extent feasible in accordance with CEQA and other applicable legal requirements.

Therefore, for the reasons described above, cumulative effects on biological resources would be less than significant.

4.3.8 References Cited

Cal-IPC (California Invasive Plant Council). 2018. California Invasive Plant Inventory Database. http://www.cal-ipc.org/paf/.

Candee Family LLC. 2014. Storm Water Pollution Prevention Plan, Candee Grading Plan, Risk Level 1. March 5, 2014.

CDFW (California Department of Fish and Wildlife). 2020. California Natural Diversity Database. RareFind, Version 5 (Commercial Subscription). Sacramento, California: CDFW, Biogeographic Data Branch. Accessed March 2020. https://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

County of Riverside. 2003. *Western Riverside County Multiple Species Habitat Conservation Plan.* County of Riverside, Transportation and Land Management Agency, Riverside County Integrated Project. MSHCP adopted June 17, 2003. Accessed March 2020. http://www.rctlma.org/mshcp.

Dudek. 2020. *Biological Resources Letter Report and MSHCP Consistency for the Vineyards III Retail Development Project*. In preparation.

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing owl (*Athene cunicularia*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, edited by W.D. Shuford and T. Gardali, 218–226. Studies of Western Birds no. 1. California: Western Field Ornithologists (Camarillo), and California Department of Fish and Game (Sacramento). February 4, 2008. http://www.dfg.ca.gov/wildlife/nongame/ssc/birds.html.

Google Earth. 2020. Googleearth.com. Accessed February-March 2020.

Gray, J., and D. Bramlet. 1992. *Habitat Classification System Natural Resources Geographic Information System (GIS) Project*. May 1992. County of Orange Environmental Management Agency, Santa Ana, California.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. "The Burrowing Owl (*Speotyto cunicularia*)." In *The Birds of North America*, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Academy of Natural Sciences, and Washington, D.C.: The American Ornithologists' Union.

Klein, A., and J. Evens. 2006. *Vegetation Alliances of Western Riverside County, California*. Final report prepared for the California Department of Fish and Game Habitat Conservation Division. Sacramento, California: California Native Plant Society. Published August 2005; revised April 2006. Accessed May 2018. www.cnps.org/cnps/vegetion/pdf/wriv_vegetation_ cnpsfinalreport_April2006.pdf.

Lantz, S.J., H. Smith, and D.A. Keinath. 2004. *Species Assessment for Western Burrowing Owl* (Athene cunicularia hypugaea) *in Wyoming*. Prepared for the U.S. Department of Interior and Bureau of Land Management.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. *Draft Vegetation Communities of San Diego County*. March 2008. http://www.sdcanyonlands.org/canyon-groups/canyon-group-resources/canyonenhancement-guide/189-canyonenhancement-planning-guide-materials.

RCA (Resource Conservation Authority). 2006. *Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area*. March 29, 2006. Accessed August 9, 2018. http://rctlma.org/Portals/1/EPD/consultant/ burrowing_owl_ survey_instructions.pdf.

RCHCA (Riverside County Habitat Conservation Agency). 1996. *Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County, California*. March 1996.

Sawyer, J., T. Keeler-Wolf., and J.M. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. Sacramento, California: California Native Plant Society.

Smith, B.D. 2019. *Preliminary Project Specific Water Quality Management Plan – Costco Wholesale*. February 27, 2019.

USDA (U.S. Department of Agriculture). 2020. Web Soil Survey. USDA, Natural Resources Conservation Service, Soil Survey Staff. http://websoilsurvey.nrcs.usda.gov/.

USFWS (U.S. Fish and Wildlife Service). 2015. *Survey Guidelines for the Listed Large Branchiopods*.

USFWS. 2020. Critical Habitat and Occurrence Data. Accessed March 2020. http://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1990. *California's Wildlife: Volume III. Mammals*. Sacramento, California: California Department of Fish and Game.

SOURCE: DigitalGlobe 2018

DUDEK

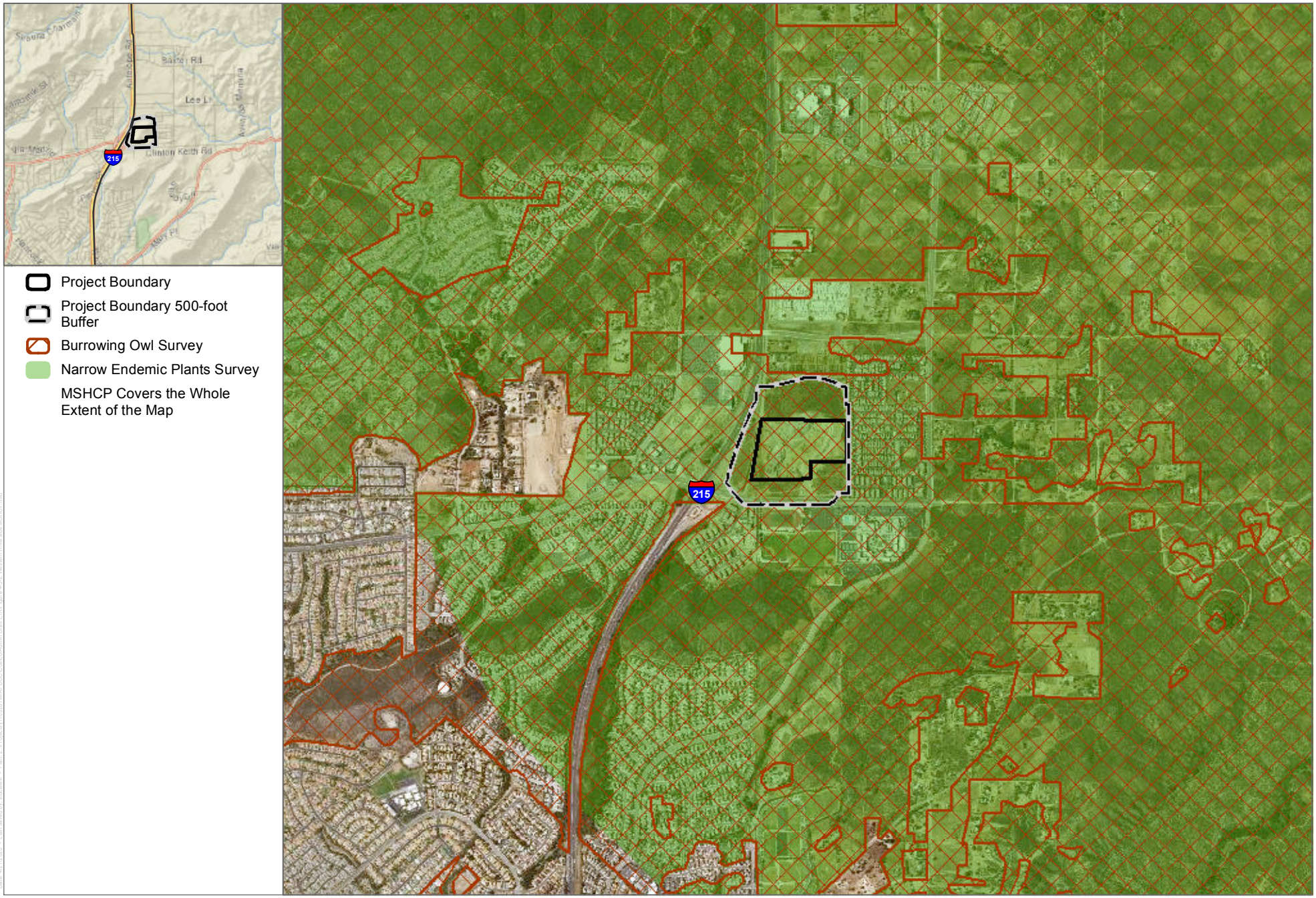
0 250 500 Feet

FIGURE 4.3-1

Biological Resources

Costco/Vineyard II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK



SOURCE: NAIP 2016; County of Riverside (Accessed in 2018)

DUDEK

0 750 1,500 Feet

FIGURE 4.3-2

Western Riverside MSHCP

Costco/Vineyard II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK

SOURCE: DigitalGlobe 2018

DUDEK

0 250 500 Feet

FIGURE 4.3-3

Impacts

Costco/Vineyard II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK

4.4 Cultural Resources

This section describes the existing cultural resources of the Costco/Vineyard II Retail Development Project (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the project. The following analysis is based, in part, on the Cultural Resources Inventory Report, included as Appendix D of this Environmental Impact Report (EIR).

4.4.1 Existing Conditions

Eastern Information Center Records Search

On June 4, 2018, a California Historical Resources Information System records search was conducted at the Eastern Information Center (EIC), located on the University of California, Riverside, campus, for the proposed project site and a 1.0-mile (1,608-meter) records search buffer (study area). This search included their collections of mapped prehistoric, historic, and built environment resources, Department of Parks and Recreation Site Records, technical reports, and ethnographic references. Additional consulted sources included historical maps of the study area, the National Register of Historic Places, the California Register of Historical Resources (CRHR), the California Historic Property Data File, the lists of California State Historical Landmarks, California Points of Historical Interest, and the Archaeological Determinations of Eligibility.

Previously Conducted Cultural Resources Studies

Records from the EIC indicate that 65 previous cultural resources technical investigations have been conducted within 1 mile (1,608 meters) of the project site between 1977 and 2017. Of these, two previous studies overlap with the project site, two are adjacent to the project site, and the remaining 61 studies are within the records search buffer. Table 4.4-1 summarizes all 65 previous cultural resource studies followed by a brief summary of each overlapping and adjacent study.

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
00232	Kenneth Daly	1977	Environmental Impact Evaluation: Archaeological Assessment of a Portion of the NW 1/4 of the SE 1/4 of Section 35, T6S, R3W, Murrieta 7.5' Quadrangle, Riverside County, California	Outside
00233	Kenneth Daly	1977	Environmental Impact Evaluation: Archaeological Assessment of the Hachten Property, Located in a Portion of the S 1/2 of Section 35, T6S, R3W, Murrieta 7.5' Quadrangle, Riverside County, California	Outside
00294	James Baldwin	1978	Environmental Impact Evaluation: Archaeological Assessment of Tentative Parcel Map 11830, Near Rancho California, Riverside County, California	Outside
00383	Christopher E. Dover	1978	Environmental Impact Evaluation: Archaeological Assessment of Tentative Parcel Map 12030, Near Murrieta, Riverside County, California	Outside

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
00445	James McManus	1978	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcel 13335, South of Keller Road, Riverside County, California	Outside
00447	Christopher E. Dover	1995	Cultural Resources Impact and Constraints Analysis of the 291-Acre Golden City Project, Murrieta USGS Quadrangle, Riverside County, California	Outside
00531	James P. Barker	1979	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcel 14725, Northwest of the Hogbacks, Southwestern Riverside County, California	Outside
00627	Renee Giansanti	1979	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcels 15142, 15203, 15096, and Tentative Tract 14851, Paloma Valley Area of Riverside County, California	Outside (Adjacent)
00638	Renee Giansanti	1979	Environmental Impact Evaluation: An Archaeological Assessment of 60 Acres of Land in the Paloma Valley Area of Riverside. The Exact Location Being the SW 1/4 of Section 35, T6S, R3W, SBBM, Murrieta 7.5' Series USGS Quadrangle.	Outside (Adjacent)
00664	Joan Oxendine	1979	A Report of an Archaeological Survey of 20 Acres in T 7S, R 3W, S 36, Murrieta Quadrangle, Riverside County, California	Outside
01105	Christopher E. Drover	1980	Environmental Impact Evaluation: Archaeological Assessment of Tentative Map 15285	Outside
01208	Alan Davis	1981	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcel 17467, Northeast of Murrieta in Riverside County, California	Outside
01243	Roger J. Desautels	1981	An Archaeological Assessment of TPM 17760	Outside
01258	Roger J. Desautels	1981	An Archaeological Assessment of TPM 17629	Outside
01322	Ken Kroesen	1981	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Parcel 18007, North of the Hogbacks in Western Riverside County, California	Outside
01360	Jean A. Salpas	1981	An Archaeological Assessment of Parcel 17419	Outside
02117	Victor DeMunck	1987	Archaeological Assessment of Tentative Parcel 22151 near Murrieta in Riverside County, California	Outside
02118	Bissell, Ronald M.	1992	Cultural Resources Reconnaissance of the Hamilton Property, Approximately 273 Acres in Riverside County, California	Outside
02119	Mary Robbins-Wade and Timothy G. Gross	1999	Archaeological Resources Inventory and Evaluation for the Murrieta Oaks Project, Murrieta, Riverside County, California.	Outside

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
02217	Drover, C.E.	1988	An Archaeological Assessment of Vesting Tentative Tract 23342, Near Murrieta Hot Springs, Riverside County, California	Outside
02506	Drover, C.E.	1989	Environmental Impact Evaluation: An Archaeological Assessment of the Greer Ranch Project Riverside County, California	Outside
02780	Christopher E. Drover	1990	A Cultural Resource Assessment: Adobe Springs II Vesting Tentative Tract 25135 near Murrieta Hot Springs, California	Outside
02865	Jean A. Keller	1990	An Archaeological Assessment of Tentative Parcel Map 25950 Riverside County, California	Outside
03117	Christopher E. Drover	1990	Environmental Impact Evaluation: An Archaeological Assessment of Tentative Tract 26262, Murrieta, California	Outside
03118	Jean A. Keller	1995	A Phase I Cultural Resources Assessment of the Western Half of Tentative Tract Map 26262, +/- 14.5 Acres of Land in Murrieta, Riverside County, California	Outside
03119	Jean A. Keller	1995	Phase IV Archaeological Monitoring of Demolition of the James Place Structures, Tentative Tract Map 26262, Murrieta, Riverside County, California	Outside
03584	Carolyn E. Kyle, Petei McHenry, and Dennis R. Gallegos	1993	Cultural Resource Survey Report for the California Oaks Reservoir Project Rancho California Water District, County of Riverside, California.	Outside
04121	Mason, Roger, Philippe Lapin, and Wayne H. Bonner	1998	Cultural Resources Records Search and Survey Report for a Pacific Bell Mobile Services Telecommunications Facility: CM122-01, City of Murrieta, California	Outside
04207	Jean A. Keller	1998	A Phase I Cultural Resources Assessment of Murrieta Crossing (Plot Plan 98-030) +57.0 Acres of Land in Murrieta, Riverside County, California	Outside
04626	Cotterman, Cary D.	2001	Cultural Resources Records Search and Field Survey Report for a Nextel Communications Telecommunications Facility: Number CA-7239 Located in Murrieta, Riverside County, California	Outside
04638	Jean A. Keller	2000	A Phase I Cultural Resources Assessment of Lincoln Ranch (TTM 29217), 245.0 Acres of Land in the City of Murrieta, Riverside County, California	Outside
04639	Jean A. Keller	2002	A Phase I Cultural Resources Assessment of United Church of The Valley (CUP 01-0235), 7.0 Acres of Land in The City of Murrieta, Riverside County, California	Outside
04640	Jean A. Keller	2001	A Phase I Cultural Resources Assessment of Vesting Tentative Tract Map 30280, 10.0 Acres of Land in the City of Murrieta, Riverside County, California	Outside

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
04702	Hogan, Michael, Bai "Tom" Tang, and Mariam Dahdul	2004	Historical/Archaeological Resources Survey Report, Tentative Tract Number 31998, City of Murrieta, Riverside County, California	Outside
05113	Horne, Melinda C.	2002	Negative Archaeological Survey Report Route 215, Post Mile 08-RIV-215-KP, Murrieta, Riverside County, California	Outside
05197	Riordan Goodwin and Robert E. Reynolds	2003	Cultural and Paleontological Resources Assessment: Lincoln Ranch Tract 29217-3, City of Murrieta, Riverside County, California	Outside
05362	Jean A. Keller	2003	A Phase I Cultural Resource Assessment of Development Plan 03-161 (The Orchard at Stone Creek) +/- 54.0 Acres of Land in the City of Murrieta, Riverside County, California	Outside
05669	Hogan, Michael, Bai Tang, and Mariam Dahduk	2004	Historical/Archaeological Resources Survey Report: Tentative Tract Number 31999, City of Murrieta, Riverside County, California	Outside
06049	David C. Hanna	2004	Archaeological Testing and Monitoring at Greer Ranch Within the City of Murrieta, Riverside County, California	Outside
06232	Bai Tang, Michael Hogan, and Josh Smallwood	2004	Historical/Archaeological Resources Survey Report: Assessor Parcel Number 359-240-038, 28175 Lee Lane, City of Murrieta, Riverside County, California	Outside
06444	Tang, Bai, Michael Hogan, Matthew Wetherbee, and John J. Eddy	2004	Historical/Archaeological Resources Survey Report: Antelope Industrial Park, City of Murrieta, Riverside County, California	Outside
06659	Hogan, Michael, Deirdre Encarnacion, and Josh Smallwood	2006	Archaeological Survey Report: Linnel Lane Overcrossing at I-215 and Meadowlark Lane Improvement, City of Murrieta, Riverside County, California, 08-RIV-215-PM 13.0-KP 20.9, EA 0H820	Outside
06733	Riordan Goodwin and Patricia Tuck	2004	Cultural Resource Monitoring Program: Lincoln Ranch Tract 29271-3, City of Murrieta, Riverside County, California	Outside
06825	Jeanette McKenna	2005	Environmental Phase I Report: Nextel Communications Facility IRENE (CA-8306-B), Project Number N-3007-04	Outside
06876	John Elliot Jones and Michael K. Lerch	2006	Archaeological Survey of the Auld Subsurvey Transmission Lines, Murrieta, Riverside County, California	Outside
07030	Jean A. Keller	2006	A Phase I Cultural Resources Assessment of NWC Linnel Lane and Mcelwain Road 10-Acre Site	Outside
07041	Jordan, Stacey	2007	Archaeological Survey Report for Southern California Edison Company Relocation of the Garboni 12 kV and Leon 12 KV Circuits Project Riverside County, California	Outside

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
07045	Anna M. Hoover	2006	An Archaeological Record Search and Survey Report on Murrieta 56, APN 392-290-002, 56.18 Acres in the City of Murrieta, Riverside County, California	Outside
07049	Robinson, Mark C.	2007	Historical Property Survey Report (08-RIV-215, PM 11.9-13.7, [KP19.30-21.03], EA 32780)	Inside (Overlapping)
07476	Richardson, Karma O.K. and Robin D. Turner	2007	A Cultural Resource Assessment of the Proposed Commercial Development for 15 +/- Acres at 35070 Antelope Road, Murrieta, Riverside County, California	Outside
08278	Lorna Billat	2009	Letter Report: Proposed Cellular Tower Project(s) in Riverside County, California, Site Number(s)/Name(s): LA-3439B/TCO Cool CA2639 Antelope TCNS# 54935	Outside
08283	Lorna Billat	2009	Letter Report: Proposed Cellular Tower Project(s) in Riverside County, California, Site Number(s)/Name(s): CA-2639/Antelope TCNS #57797	Outside
08302	Bai Tang	2009	Historical/Archaeological Resources Survey Report Meadowlark Lane Extension Project (South Segment)	Outside
08645	Jean A. Keller	2009	A Phase I Cultural Resources Assessment of DPO 2008-2749 +/- 4.45 Acres of Land in the City of Murrieta, Riverside County, California	Outside
08665	—	2011	Archaeological Monitoring Program For the Meadowlark Road form Clinton Keith Road to Baxter Road Project	Outside
08673	Jean A. Keller	2010	A Phase IV Cultural Resources Monitoring Report of CK-17, APN 392-290-038, Grading Permit Number 69235, +/- 2.5 Acres of Land Located at 28255 Clinton Keith Road, Murrieta, Riverside County, California	Inside (Overlapping)
08955	Stacie Wilson, Jill Gibson, and Theodore G. Cooley	2015	Cultural Resources Survey Report for the Proposed Southern California Edison Valley South 115 kV Sub transmission Project, Riverside County, California	Outside
09024	John J. Eddy	2013	Phase I Cultural Resources Assessment for the Clinton Keith Road Extension Project, Riverside County, California	Outside
09342	Dennis McDougall and Joan George	2015	Cultural Resource Monitoring Report for the Pacific Landing Project: Assessor's Parcel Number 900-040-021, City of Murrieta, Riverside County, California	Outside
09473	Jennifer M. Sanka, Barbara Loren-Webb, and Leslie Nay Irish	2015	Preliminary Identification of Historic Properties for a Portion of Golden City Specific Plan, Tracts 28532-4 and 28532-5, +/-109 Acres in the City of Murrieta, Riverside County, California	Outside

Table 4.4-1. Previously Conducted Cultural Resource Studies within the Record Search Area

EIC Report Number (RI-)	Authors	Year	Title	Proximity To Project Site
09477	Bai "Tom" Tang, Jesse Yorck, Ben Kerridge, and Nina Gallardo	2016	Historical/Archaeological Resources Survey Report: Assessor's Parcel Number 392-310-018, HealthSouth Rehabilitation Hospital Project, City of Murrieta, Riverside County, California	Outside
09610	—	2014	Archaeological Survey Report of the United Church of the Valley Project, AT&T Mobility Site Number RS0276, 35921 Green Road, Murrieta, Riverside County, California 92589	Outside
09716	Joan George	2015	Cultural Resource Constraints Analysis for the Fireman's Circle Project, in the City of Murrieta, Riverside County, California	Outside
09898	Bai "Tom" Tang, Deirdre Encarnacion, Daniel Ballester, and Nina Gallardo	2016	Historical/ Archaeological Resources Survey Report: Murrieta Skilled Nursing Facility Project, Assessor's Parcel Number 392-310-002, City of Murrieta, Riverside County, California	Outside
09965	Brian F. Smith, M.A. and Tracey A. Stropes, M.A.	2017	A Cultural Resources Monitoring Report for the Golden City Project	Outside

Notes: — = no data; APN = Assessor's Parcel Number; EIC = Eastern Information Center; I = Interstate; kV = kilovolt; NW = northwestern; S = southern; SE = southeastern; TPM: Tentative Parcel Map; USGS = U.S. Geological Survey.

RI-00627

Archaeological Resource Institute was contracted by Cape Aire Company to conduct an archaeological resource assessment in support of the proposed development of residential subdivisions on 91.47 acres of land in the City of Murrieta (City). The assessment included a records search, a survey, and the preparation of a technical report. No archaeological or historic cultural remains were identified during the survey and the project was determined to have no potential adverse impacts to cultural resources.

RI-00638

LGS & Associates was contracted by Action Surveys to conduct an archaeological resource assessment in support of the proposed development of residential subdivisions on 60 acres of land in the City. The assessment included a record search, a survey, and the preparation of a technical report. No cultural resources were identified during the survey. The project was determined to have no potential adverse impacts to cultural resources.

RI-07049

Jones & Stokes was contracted by the California Department of Transportation to prepare an archaeological survey report in support of the proposed Clinton Keith Road/Interstate 215 Interchange Improvement Project. An archaeological survey of the area did not identify any archaeological resources and the potential for undiscovered archaeological resources was determined to be low. The project was determined to have no potential adverse impacts to cultural resources.

RI-08673

Jean A. Keller was contracted by CK-17 LP to provide cultural resource services in support of the proposed commercial development on approximately 2.5 acres of land in the City. The proposed development would require grading activities, removal of material, and Clinton Keith Road and Interstate (I) 215 interchange work. Services included archaeological monitoring and the preparation of a Phase IV Monitoring Report. No cultural resources were observed within the boundaries of the subject property during construction activities, and no further mitigation or research was recommended at the culmination of the project.

Previously Recorded Cultural Resources

The EIC records indicate that 57 previously recorded cultural resources have been recorded within 1.0 mile (1,608 meters) of the project site, none of which intersect or overlap with the project site. Of the 57 resources within the surrounding records search area, nine are historical and include five historic refuse scatter, two historic built resources, one historic homestead site, and one historical isolate. The remaining 48 resources are prehistoric in age and include 14 prehistoric isolates and 34 prehistoric lithic scatters or bedrock milling features. Table 4.4-2 summarizes all 57 cultural resources identified.

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
000629	000629	Prehistoric	Not evaluated	J. Humbert, S. Hammond (1973)	Lithic scatter with associated bedrock mortars	Outside
000637	000637	Prehistoric	Not evaluated	J. Humbert, S. Hammond (1973)	Lithic scatter with associated bedrock mortars	Outside
000638	000638	Prehistoric	Not evaluated	J. Humbert, S. Hammond (1973)	Processing site; dense lithic scatter and 15 bedrock mortars; possible habitation site	Outside
001364	001364	Prehistoric	Not evaluated	Hildebrand, Morin, and Waldron, ARU (1976); Jean A. Salpas, ARU (1981)	Milling station with three milling surfaces	Outside
001375	001375	Prehistoric	Not evaluated	Morin, Waldron, Pettus, Hildebrand, ARU (1976); Jean A. Salpas, ARU (1981)	Milling station with two milling surfaces	Outside

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
001376	001376	Prehistoric	Not evaluated	Morin, Waldron, Pettus, and Hildebrand, ARU (1976); Jean A. Salpas, ARU (1981)	Milling station with two milling surfaces	Outside
001377	001377	Prehistoric	Not evaluated	Morin, Waldron, Pettus, and Hildebrand, ARU (1976); Jean A. Salpas, ARU (1981); Koji Tsunoda, Jones, and Stokes (2007)	Milling station; was not relocated in most recent site visit	Outside
002190	002190	Prehistoric	Not evaluated	T. Banks, Scientific Resource Surveys Inc., Santa Ana, CA (1981); David C. Hanna, Jr., SWCA Environmental Consultants, Mission Viejo, CA (2001)	Temporary habitation site consisting of dense lithic scatter and food processing stations	Outside
003056	003056	Prehistoric	Found ineligible through survey process	Victor C. de Munk, Archaeological Research Unit, University of California, Riverside, CA (1987); Ron Bissell and Ken Becker, RMW Paleo Associates Inc., Mission Viejo, CA (1992); Robbins-Wade, Affinis, El Cajon, CA (1999)	Food processing station with milling surfaces, ground stone, and lithic scatter	Outside
003684	003684	Prehistoric	Not evaluated	C.E. Drover and Andy Jackson (1989)	Lithic scatter	Outside
004104	004104	Prehistoric	Not evaluated	C.E. Drover and D.M. Smith(1990)	Lithic scatter with groundstone	Outside
004905	004905	Historic	Ineligible	Robbins-Wade, Gross, Van Wormer, Affinis (1999)	Historic refuse scatter dating to the 1920s	Outside

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
009703	006469	Prehistoric	Not evaluated	Jean A. Keller, Cultural Resources Consultant (2000)	Bedrock milling feature consisting of two mortars and one milling slick on a single granitic bedrock outcrop	Outside
009704	006470	Prehistoric	Not evaluated	Jean A. Keller, Cultural Resources Consultant (2000)	Bedrock milling feature consisting of one milling slick on a granitic bedrock outcrop	Outside
009705	006471	Prehistoric	Not evaluated	Jean Keller (2000)	Bedrock milling feature consisting of two milling slick on adjacent granitic bedrock outcrops	Outside
011238	—	Prehistoric	Not evaluated	CW Bouscaren, MG Espinoza, and KA Hintzman, LSA Associates Inc. (2001)	Bedrock milling feature consisting of three milling slicks on a cluster of bedrock outcrops	Outside
011239	—	Prehistoric	Not evaluated	—	Sparse lithic scatter	Outside
011240	—	Historic	Not evaluated	C.W. Bouscaren, M.G. Espinoza, and K.A. Hintzman, LSA Associates Inc. (2001)	Fallen wooden structure with a concrete foundation and an associated can scatter	Outside
011241	—	Prehistoric	Not evaluated	C.W. Bouscaren, M.G. Espinoza, and K.A. Hintzman, LSA Associates Inc. (2001)	Lithic Scatter	Outside
012772	—	Prehistoric	Isolate: Ineligible	C.E. Drover (1980)	Isolated quartzite chopper	Outside

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
013304	007405	Prehistoric	Not evaluated	Sal Boites (2005)	Two bedrock milling features with associated lithic and groundstone	Outside
013332	007424	Prehistoric	Not evaluated	Robert Porter, CRM TECH (2004); John J. Eddy (2004)	Bedrock milling slick	Outside
013334	007426	Prehistoric	Not evaluated	Robert Porter, CRM TECH (2004); John J. Eddy (2004)	Two bedrock milling features	Outside
013335	007427	Prehistoric	Not evaluated	Michael Lozano, CRM TECH (2004)	One bedrock milling feature consisting of two milling slicks; the site was not relocated during its most recent update	Outside
013363	—	Prehistoric	Isolate: Ineligible	Robert Porter, CRM TECH (2004)	Two bedrock milling features, each containing one milling slick	Outside
013397	—	Prehistoric	Isolate: Ineligible	Claire Fritz and Patricia Tuck, LSA Associates (2013)	Isolated quartz mano fragment	Outside
013398	—	Prehistoric	Isolate: Ineligible	Claire Fritz and Patricia Tuck, LSA Associates (2004)	Isolated quartz mano	Outside
013976	—	Prehistoric	Isolate: Ineligible	Daniel Ballester (2005)	Isolated milky quartz biface blade	Outside
014358	—	Prehistoric	Isolate: Ineligible	John J. Eddy, CRM Tech (2004)	Isolated metate fragment	Outside
015146	008055	Prehistoric	Not evaluated	William R. Gillean, Author (2006)	Two bedrock mortars	Outside
015315	008084	Historic	Not evaluated	J.E. Jones, M. Knypstra, and J. Meliska, Statistical Research Inc. (2006)	Historic period refuse scatter	Outside
015330	—	Historic	Determined ineligible through Section 106 process	Josh Smallwood, CRM Tech (2006)	Wood-framed residence at 35530 Antelope Road	Outside

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
015331	—	Historic	Isolate: Ineligible	Josh Smallwood, CRM Tech (2006)	Wood-framed residence at 35500 Antelope Road	Outside
016709	008749	Prehistoric	Not evaluated	M. Gonzalez, C. Powell, PCR Services Corporation (2007); Stacie Wilson and Jill Gibson, AECOM (2012)	Bedrock Milling features and associated lithic scatter	Outside
017366	009024	Prehistoric	Not evaluated	Michael Dice, Michael Brandman Associates (2008)	Lithic scatter	Outside
019791	010075	Prehistoric	Not evaluated	R. Porter, CRM TECH 2011)	Three granite boulders each with a single milling slick, associated lithic scatter, and three groundstone artifacts	Outside
019849	010098	Prehistoric	Not evaluated	R. Porter, CRM TECH 2011)	Four quartz flakes and one piece of quartz shatter; site has been destroyed since recordation	Outside
021025	010890H	Historic	Ineligible for NR	AECOM (2012); B. Lichtenstein and K. Moslak, Applied Earthworks Inc. (2013)	Historic refuse scatter	Outside
021027	010892	Prehistoric	Not evaluated	AECOM (2012)	Sparse lithic scatter	Outside
021031	—	Historic	Isolate: Ineligible	AECOM (2012); B. Lichtenstein and K. Moslak, Applied Earthworks Inc. (2013)	Rectangular metal gas can	Outside
023904	011739	Prehistoric	Not evaluated	K. Moslak, C. Yearyean, Applied EarthWorks Inc. (2014)	Lithic Scatter with one groundstone metate fragment	Outside

Table 4.4-2. Previously Recorded Cultural Resources within the Record Search Area

Primary Number (P-33-)	Trinomial (CA-RIV-)	Period	National Register of Historic Places Eligibility	Record By and Year	Descriptions	Proximity To Project Site
023971	011777	Historic	Not evaluated	Andrew R. Pigniolo, Laguna Mountain Environmental Inc. (2014)	Historic refuse scatter	Outside
023972	011778	Prehistoric	Not evaluated	Andrew R. Pigniolo, Laguna Mountain Environmental Inc. (2014)	Sparse lithic scatter	Outside
023973	—	Prehistoric	Isolate: Ineligible	Andrew R. Pigniolo, Laguna Mountain Environmental Inc. (2014)	Isolated scraper	Outside
024132	011871	Historic	Not evaluated	Riordan Goodwin, LSA Associates Inc. (2015)	Historic refuse scatter	Outside
024619	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz chopper	Outside
024620	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated milling slick	Outside
024622	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz chopper	Outside
024624	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz projectile point tip	Outside
024632	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz flake	Outside
024634	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz utilized flake	Outside
024638	—	Prehistoric	Isolate: Ineligible	Max Jewett, Atkins (2014)	Isolated quartz pressure flake	Outside
024646	012195	Prehistoric	Not evaluated	Max Jewett, Atkins, Plute/BP Murrieta Hills, LLC (2014)	Bedrock milling slicks with associated lithic and groundstone fragments	Outside
024647	012196	Prehistoric	Not evaluated	Max Jewett, Atkins, Plute/BP Murrieta Hills, LLC (2014)	Lithic scatter	Outside
024648	012197	Prehistoric	Not evaluated	Max Jewett, Atkins, Plute/BP Murrieta Hills, LLC (2014)	Lithic scatter	Outside
024649	012198	Prehistoric	Not evaluated	Max Jewett, Atkins, Plute/BP Murrieta Hills, LLC (2014)	Lithic scatter	Outside
026601	012509	Prehistoric	Not evaluated	AECOM (2015)	Bedrock milling features	Outside

Notes: — = no data

Native American Heritage Commission and Tribal Correspondence

Dudek contacted the Native American Heritage Commission (NAHC) on June 5, 2018, and requested a review of the Sacred Lands File. The NAHC replied via email on June 6, 2018, stating that the Sacred Lands File search was completed with positive results and indicated that sites have been located in the 1.0-mile record search area. The NAHC suggested contacting 37 Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the proposed project (Table 3 in Appendix D). Dudek contacted all groups and/or individuals identified by the NAHC. To date, five responses have been received. This outreach was conducted for informational purposes only and does not constitute formal government-to-government consultation as specified by Assembly Bill 52. Further details related to Native American consultation and an analysis of potential impacts to tribal cultural resources are provided in Section 4.14, Tribal Cultural Resources.

4.4.2 Relevant Plans, Policies, and Ordinances

Federal

There are no federal plans or policies related to cultural or historical resources that are applicable to the project.

State

The California Register of Historical Resources

In California, the term "historical resource" includes, but is not limited to, "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (PRC Section 5020.1[j]). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the National Register of Historic Places, enumerated below. A resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria (PRC Section 5024.1[c][1–4]):

(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 order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852[d][2]).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. Prehistoric resources are those that pre-date written records, while historic resources reflect written

records or recorded events of the past. The criteria for the CRHR are nearly identical to those for the National Register of Historic Places, and properties listed or formally designated as eligible for listing in the National Register of Historic Places are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Health and Safety Code Section 7050.5

California law protects human remains, Native American burials, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the county coroner has examined the remains and determined that the remains are not subject to the provisions of Section 27491 of the California Government Code or any other related provisions of law concerning investigation of the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the California Public Resources Code (Section 7050.5[b]). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact NAHC within 24 hours (Section 7050.5[c]). NAHC will notify the "most likely descendant." With the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the most likely descendant by NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Local

County of Riverside General Plan

The County of Riverside (County) General Plan (2013) Land Use Element specifies preservation of cultural resources. The policies laid out in this element that pertain to cultural resources include:

Policy LU 9.1	[Development should] Provide for permanent preservation of open space lands that contain important natural resources, cultural resources, hazards, water features, watercourses including arroyos and canyons, and scenic and recreational values.
Policy LU 9.4	Allow development clustering and/or density transfers in order to preserve open space, natural resources, cultural resources, and biologically sensitive resources.

County of Riverside Cultural Resource Review Process

If deemed necessary by the County's Planning Department, a Phase I Cultural Resource Review is required to be conducted for proposed private development projects within unincorporated Riverside County. These reports should be submitted directly to the office of the County Archaeologist.

City of Murrieta General Plan

The City's 2035 General Plan (City of Murrieta 2011) Conservation Element specifies preservation of historical and cultural resources. The goals and policies laid out in this element that pertain to historical and cultural resources include the following:

Policy CSV-9.1 Identify and protect native trees, trees of historic or cultural significance, and mature trees, consistent with the Tree Preservation Ordinance.

Goal CSV-11 Murrieta protects, enhances, and celebrates archaeological, cultural, and historic resources as a way to foster community identity.

Policy CSV-11.1 Promote the protection and preservation of archaeological, cultural, historical, and architecturally significant sites, structures, districts, Native American resources, and natural features throughout the community, consistent with the Cultural Resource Preservation Ordinance. Preferred methods of protection include avoidance of impacts, placing resources in designated open space and allocation of local resources and/or tax credits as feasible.

Policy CSV-11.2 Encourage appropriate adaptive reuse of historic structures and sites.

Policy CSV-11.3 Promote the designation of eligible resources to the City Register of Cultural Resources, the County Landmarks Program, or other regional, state, or federal programs.

Policy CSV-11.4 Encourage the development of programs to educate the community about Murrieta's historic resources and involve the community in historic preservation.

Policy CSV-11.5 Comply with state and federal law regarding the identification and protection of archaeological and Native American resources, and consult early with the appropriate tribal governments.

Policy CSV-11.6 Investigate the feasibility of establishing a museum or other repository to archive and display Murrieta's archaeological resources.

Policy CSV-11.7 Maintain the position of archivist/historian at the Murrieta Public Library, and promote the Library's Heritage Room as a repository for historical information about the Murrieta area.

Policy CSV-11.8 Promote the use of historic elements in City parks and public places.

Policy CSV-11.9 Exercise sensitivity and respect for all human remains, including cremations, and comply with all applicable state and federal laws regulating human remains.

City of Murrieta Historic Preservation Advisory Commission

The City's Historic Preservation Advisory Commission acts in an advisory capacity to the City Council with regard to the preservation of cultural and archaeological resources within the City's boundaries. Through the City Planner or Community Development Director, the Historic Preservation Advisory Commission makes recommendations to the

City Council regarding the designation of cultural resources. Such resources may include individual properties, archaeological districts, or Historic Murrieta Specific Plan within the City. In addition, the Historic Preservation Advisory Commission is responsible for maintaining the register of designated cultural resources within the City; reviewing land use, redevelopment, municipal improvement and other planning matters and programs undertaken by the City with regard to cultural resources; providing recommendations to the City Council on the use of available federal, state, local, and private funding sources for protection of the City's cultural resources; and, reviewing applications for certificates of appropriateness related to demolition permits and development plan approval, in compliance with the City's Development Code for designated cultural resources (City of Murrieta 2011).

City of Murrieta Development Code

The City's Municipal Code Chapter 16 (Development Code) includes Subchapter 16.26.050, which defines the City's designation criteria for cultural resources as follows:

16.26.050. Designation Criteria for Cultural Resources Archaeological Districts and Historic Districts

For the purposes of the ordinance codified in this section, an improvement or natural feature may be designated a cultural resource by the city council and any area within the city may be designated as an archaeological district or historic preservation district by the city council if it meets any of the following criteria:

A. Individual Resource Designation.
   1. It exemplifies or reflects special elements of the city's cultural, architectural, aesthetic, social, economic, political, artistic and/or engineering heritage;
   2. It is identified with persons, a business use or events significant in local, state or national history;
   3. It embodies distinctive characteristics of style. type, period or method of construction or is a valuable example of the use of indigenous materials or craftsmanship;
   4. It is representative of the notable work of a builder, designer or architect; or
   5. Its unique location or singular physical characteristic represents an established and familiar visual feature of a neighborhood, community or the city:

B. Local District Designation.

A geographic area may be designated as a local archaeological district or historic preservation district if the city council, after hearing(s) finds that all of the requirements set forth below are met. Concurrent with the designation of a historic preservation district, design guidelines shall be developed and shall apply to all properties within the historic preservation district.

1. Archaeological District.
   a. The area is a geographically definable area:
   b. The area possesses either:
      1. A significant concentration or continuity of archaeological resources; or
      2. The area is associated with the prehistory of Murrieta.
   c. The designation of the geographic area as an archaeological district is reasonable, appropriate, and necessary to protect, promote and further the goals and purposes of the ordinance codified in this chapter and is not inconsistent with other goals and policies of the city.
2. Historic Preservation District.
   a. The area is a geographically definable area:

b. The area possesses either:
   1. A significant concentration or continuity of buildings unified by past events or aesthetically by plan or physical development; or
   2. The area is associated with an event, person, or period significant or important to Murrieta history.
c. The designation of the geographic area as a historic preservation district is reasonable, appropriate, and necessary to protect, promote and further the goals and purposes of the ordinance codified in this chapter and is not inconsistent with other goals and policies of the city.
d. Determining Factors. In determining whether to designate a historic preservation district, the following factors shall be considered:
   1. District should have integrity of design, setting, materials, workmanship, and association.
   2. The collective value of the buildings and structures in a district taken together may be greater than the value of each individual building or structure.

3. Contributing Resources.

   Contributing resources may be included in a historic preservation district if the city council finds, after a hearing(s) that all of the following requirements are satisfied:
   a. The nominated resource is within a historic preservation district;
   b. The nominated resource either embodies the significant features and characteristics of the district or adds to the historical associations, architectural qualities or archaeological values identified for the district;
   c. The nominated resource was present during the period of historical significance of the district and relates to the documented historical significance of the district;
   d. The nominated resource possesses historic integrity or is capable of yielding important information about the period of historical significance or the district; and
   e. The nominated resource has important historic or architectural worth, and its designation as a contributing resource is reasonable, appropriate and necessary to protect, promote and further the goals and purposes of the ordinance codified in this chapter.

4.4.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to cultural resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to cultural resources would occur if the project would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
3. Disturb any human remains, including those interred outside of dedicated cemeteries.

As determined in the Initial Study, the project would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. Thus, the project would have no impact on Threshold 1. Thresholds 2 and 3 are addressed in this EIR.

4.4.4 Impacts Analysis

Methodology

Field Survey

A qualified Dudek archaeologist conducted a survey of the project site on June 13, 2018. The survey was conducted to identify and record any unknown cultural resources within the project site. The survey was conducted using standard archaeological procedures and techniques that meet the Secretary of Interior's standards and guidelines for cultural resources inventory. Survey transects were spaced no more than 15 meters wide and oriented south–north across accessible areas of the project site. Where transects were not feasible, a mixed approach (opportunistic survey) was utilized, selectively examining open ground surface where possible. The archaeologist examined the ground surface for the presence of prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools), historical artifacts (e.g., metal, glass, ceramics), sediment discolorations that might indicate the presence of a cultural midden, and depressions and other features that might indicate the former presence of structures or buildings.

Historic Aerial Review

Historic maps and aerial photographs were consulted to understand development of the project site and surrounding properties. Topographic maps are available for the years 1943, 1955, 1962, 1971, 1975, 1979, 1986, 2012, and 2015 (NETR 2018a). Historic aerials are available for the years 1938, 1967, 1978, 1996, 2002, 2005, 2009, 2010, 2012, 2014, and 2016 (NETR 2018b).

The topographic map of the project site from 1943 shows that there was a road where I-215 now runs, just west of the project site. By 1955, I-215 had been built; however, no significant development within the area is apparent based on this map. Topographic maps from 1962 to present show an increase in roads throughout the area though general development history is difficult to gauge from these maps.

Aerial images depicting the project site show that in 1938 the only development within the area was a north–south running road, which became I-215 sometime in the 1950s. Aerial images from 1967 show no development within the project site. There are a few roads to the east of I-215 at this time and some possible residential development to the north; however, overall the project site and general vicinity is completely undeveloped. The aerial images from 1978 show the apparent construction of the Clinton Keith Road on ramp and off ramp. By 1996, there are several small developments to the north and east of the project site; however, there is no development within the project site. Clinton Keith Road, which runs south of the project site, appears to be a dirt road at this time; though it appears to be paved west of the freeway. Between 2002 and 2005, a large amount of development took place directly to the east of the project site, where a large residential subdivision and a high school were built. There were also several residential subdivisions built to the southwest and northwest of the project site and a minor increase in residential development to the east and south of the project site since 2005. Presently, the project site remains undeveloped and the only changes appear to be a significant amount of grading within the site.

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

Less than Significant with Mitigation Incorporated. As part of the cultural resources inventory prepared for the project (Appendix D), a California Historical Resources Information System records search was conducted at the EIC

on June 4, 2018. The records search indicated that 57 previously recorded cultural resources have been recorded within 1.0-mile of the proposed project site, however, none of these intersect or overlap with the project site. A qualified archaeologist conducted an intensive-level pedestrian survey of the project site on June 13, 2018. The survey concluded that the project site is within an area that has been extensively impacted by grading activities. Aside from the grading operation, evidence of disturbances throughout the project site include equipment tracks, human-made berms, and makeshift roads. No archaeological resources were identified within the project site or immediate vicinity as a result of the pedestrian survey or the California Historical Resources Information System records search.

Any archaeological resources that may have been located within the project site have likely been disturbed, displaced, and/or destroyed by the grading activities that have occurred on site. Although several prehistoric archaeological sites have been recorded within the record search area (an area comprised of the project site and a 1-mile buffer), neither the records search nor the pedestrian survey identified any cultural resources within the project site.

Considering these factors, the likelihood of the unanticipated discovery of prehistoric or historical archaeological deposits within the proposed project site is considered to be low. In addition, through Assembly Bill 52 consultation with local tribes, additional mitigation measures addressing the potential to discover tribal cultural resources are also included (**Mitigation Measure [MM] TCR-1** through **MM-TCR-5**). With implementation of **MM-TCR-1** through **MM-TCR-5**, the proposed project would have a **less-than-significant** impact on archaeological resources.

Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant with Mitigation Incorporated. As previously discussed, the project site has been extensively disturbed over time and has been subject to a mass grading operation. The project would be required to comply with Section 7050.5 of the California Health and Safety Code, which states that if human remains are found within the project site, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has determined, within 2 working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant of the deceased Native American. The most likely descendant shall complete his/her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains. In the event that unanticipated human remains are discovered, adherence to **MM-TCR-5** would ensure that impacts associated with human remains would be **less than significant**.

4.4.5 Mitigation Measures

The project would be required to comply with the following mitigation measures:

MM-TCR-1 The project permittee/owner shall retain a Riverside County-certified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown cultural resources. Prior to grading, the project permittee/owner shall provide to the City of Murrieta verification that a certified archaeological monitor has been retained. Any newly discovered cultural resource deposits shall be subject to a cultural resources evaluation.

MM-TCR-2 *Archaeological Monitoring:* At least 30 days prior to grading permit issuance and before any grading, excavation, and/or ground-disturbing activities on the site take place, the project permittee/owner shall retain a Riverside County-certified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources.

The Project Archaeologist, in consultation with consulting tribes, the permittee/owner, and the City of Murrieta, shall develop an Archaeological Monitoring Plan to address the details, timing, and responsibility of all archaeological and cultural monitoring activities that will occur on the project site during construction. Details in the plan shall include:

a. Project grading and development scheduling;
b. The development of a schedule in coordination with the permittee/owner 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; and,
c. The protocols and stipulations that the permittee/owner, City of Murrieta, tribes, and Project Archaeologist will follow in the event of inadvertent cultural resources discoveries, including any newly discovered cultural resource deposits that shall be subject to a cultural resources evaluation.

A final report documenting the monitoring activity and disposition of any recovered cultural resources shall be submitted to the City of Murrieta, Eastern Information Center and the consulting tribe within 60 days of completion of monitoring.

MM-TCR-3 *Native American Monitoring:* Native American Tribal monitors shall also participate in monitoring of ground-disturbing activity. At least 30 days prior to issuance of grading permits, agreement(s) between the permittee/owner and the consulting tribe(s) shall be developed regarding tribal monitoring requirements and treatment of tribal cultural resources so as to meet the requirements of the California Environmental Quality Act. The monitoring agreement shall address the treatment of known tribal cultural resources; the designation, responsibilities, and participation of designated Tribal monitors during grading, excavation, and ground-disturbing activities; project grading and development scheduling.

MM-TCR-4 *Disposition of Cultural Resources:* In the event that tribal cultural resources are discovered during the course of grading for this project, one or more of the following treatments, in order of preference, shall be employed with the tribes. Evidence of such shall be submitted to the City of Murrieta Planning Department:

1) Preservation in place means avoiding the resources, leaving them in the place where they were found with no development affecting the integrity of the resource.
2) On-site reburial of the discovered items as detailed in the Monitoring Plan required pursuant to MM-TCR-2. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments.

3) The permittee/owner 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, and adhere to the following:
   a. A curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per Title 36 Code of Federal Regulations 800 Part 79 and therefore would be curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County, to be accompanied by payment of the fees necessary for permanent curation.
   b. At the completion of grading, excavation, and ground-disturbing activities on site, a Phase IV Monitoring Report shall be submitted to the City of Murrieta documenting monitoring activities conducted by the Project Archaeologist and Native American Tribal Monitors 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 will be submitted to the City of Murrieta, Eastern Information Center, and Consulting Tribes.

MM-TCR-5 *Human remains:* If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code, Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendants(s)" for purposes of receiving notification of discovery. The most likely descendant(s) shall then make recommendations within 48 hours and engage in consultation concerning the treatment of the remains as provided in California Public Resources Code, Section 5097.98.

4.4.6 Level of Significance After Mitigation

MM-TCR-1 through MM-TCR-5 listed in Section 4.4.5, Mitigation Measures, would reduce potential impacts to cultural resources to a less-than-significant level.

4.4.7 Cumulative Impacts

Cumulative impacts on cultural resources evaluate whether impacts of the project and related projects, when taken as a whole, substantially diminish the number of historical or archaeological resources within the same or similar context or property type. As discussed throughout this section, the project could have potentially significant impacts to unknown archaeological resources, and mitigation would be required to reduce adverse impacts to less than significant. It is anticipated that cultural resources that are potentially affected by related projects would be subject to the same requirements of CEQA as the project, and that the project applicants would mitigate for their impacts, if applicable. These determinations would be made on a case-by-case basis,

and the effects of cumulative development on cultural resources would be mitigated to the extent feasible in accordance with CEQA and other applicable legal requirements. Therefore, the proposed project would not contribute to a cumulatively considerable impact associated with cultural resources and cumulative impacts would be **less than significant**.

4.4.8 References Cited

City of Murrieta. 2011. *Murrieta General Plan 2035*. Accessed August 2018. https://www.murrietaca.gov/departments/planning/general.asp.

NETR (Nationwide Environmental Title Research LLC). 2018a. Historic Topographical Maps of Los Angeles. Accessed June 2018. https://www.historicaerials.com/viewer.

NETR. 2018b. Historic Aerial Photographs of Los Angeles. Accessed June 2018. https://www.historicaerials.com/viewer.

4.5 Geology and Soils

This section describes the existing geological setting of the proposed Costco/Vineyard II Retail Development Project (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project. This analysis was completed, in part, based on the Murrieta General Plan 2035 Environmental Impact Report (EIR) (City of Murrieta 2011a), the Murrieta General Plan 2035 (City of Murrieta 2011b), and the following technical reports, which are included as appendices to this EIR:

- Geotechnical Review Proposed Costco Wholesale Warehouse Northeast of Interstate 215 and Clinton Keith Road Murrieta, California CW# 17-0237, prepared by Kleinfelder Inc. in October 2017, updated February 4, 2020 (Appendix E-1)
- Preliminary Geotechnical Investigation Proposed Vineyard/Val Vista Center NEC Clinton Keith Road and 215 Freeway Murrieta, California, prepared by Geotechnical Professionals Inc. in September 2017 (Appendix E-2)
- Project Specific Water Quality Management Plan Costco Wholesale, Murrieta CA, prepared by Fuscoe Engineering Inc. in October 2019 (Appendix G-3)
- Project Specific Water Quality Management Plan Candee, prepared by Excel Engineering Inc. in September 2018 (Appendix G-4)

4.5.1 Existing Conditions

Site Description

The project site is approximately 26.3 acres within an undeveloped parcel located northeast of the intersection of vacated Antelope Road and Clinton Keith Road in the northern part of the City of Murrieta (City), California. As discussed in Chapter 3, Project Description, of this EIR, a substantial portion of the project site's ground surface has now been disturbed by mass grading that took place over an 18.7-acre portion of the project site upon which the Costco is proposed to be located (Antelope and Cape Aire Mass Grading Plan, EA 2005-1763). As a result, the existing conditions of the project site consist of graded expanses of bare soil and stockpiles of rock, gravel, and soil. Erosional control fencing appears to be present around the perimeter of the site. Some portions of the project site have not been graded and contain areas of disturbed vegetation. In order to construct the project, additional excavation, fill, and precise grading will be required.

Soil and Geologic Conditions

The project site is located within the northern portion of the Peninsular Ranges Geomorphic province, which is characterized by steep, elongated valleys and ranges that generally trend northwestward from the tip of Baja California to the Los Angeles Basin, subparallel to faults branching off the San Andreas Fault. The geology is characterized as granitic rock intruding older metamorphic rock. The Murrieta quadrangle is diagonally crossed by the Elsinore Fault zone, which separates the Santa Ana Mountain block to the west and the Perris block to the east. The project site is within the Perris block, which consists of the south half of the Paloma Valley ring complex (part of the Peninsular Ranges batholith). The project site is underlain by Cretaceous-age gabbro, known as San Marcos gabbro (Appendices E-1 and E-2).

While the exact composition of the on-site soils varies by location, the near-surface soil materials generally consist of silty sands, sands, and sandy silts interspersed with varying amounts of gravel. The soils exhibit varying densities ranging from very loose to very dense (Appendix E-2).

Geologic Hazards

Geologic hazards are those that may pose serious problems to development and include unstable slopes, slide-prone areas, and liquefiable soils. The most common geologic hazards that may be encountered within the City are expansive soils, collapsed soils, loading settlement, subsidence, and hazardous minerals/radon. There have been reported cases of expansive clay layers within the Pauba formation and Alluvial-Valley deposits (City of Murrieta 2011a).

The project site, like the rest of Southern California, is located within a seismically active region. Based on published data, the most significant known active fault zones that are capable of seismic ground shaking and can impact the site are the Elsinore Fault zone to the southwest and the San Jacinto Fault zone to the east. The Wildomar Fault splay of the Elsinore Fault zone is closest to the site at approximately 3.5 miles to the southwest (CDMG 1988; CGS 2018). The Elsinore Fault zone has a probable moment magnitude of 6.5 to 7.5 (SCEDC 2019). No faults are known to exist on the project site, and no known faults are mapped trending toward the site (Kennedy et al. 2003; CGS 2018).

The site is expected to experience strong ground shaking within the life of the project. The project site is not within areas mapped as susceptible to subsidence, landslides, or liquefaction, and is not in an earthquake fault zone, as depicted in Exhibit 5.8-2, Subsidence Susceptibility Map; Exhibit 5.8-3, Alquist-Priolo Earthquake Fault Zone Map; Exhibit 5.8-4, Riverside County Fault Hazard Map; and Exhibit 5.8-5, Liquefaction Susceptibility Map, of the Murrieta General Plan 2035 Final EIR (City of Murrieta 2011a). Groundwater was not encountered in geotechnical borings drilled on site, to a maximum depth of 38 feet. Historical high groundwater data is not available in the vicinity of the site (Appendix E-1). Groundwater is reportedly not present on site, as the underlying San Marcos gabbro is composed of interlocking minerals with little to no permeability (Appendix E-1).

4.5.2 Relevant Plans, Policies, and Ordinances

Federal

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction activities. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations, Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations where employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 (SHMA) (California Public Resources Code, Section 2690 et seq.) directs the California Department of Conservation, California Geological Survey, to identify and map areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the SHMA is to minimize loss of life and property through the identification, evaluation, and mitigation of seismic hazards.

The SHMA provides a statewide seismic hazard mapping and technical advisory program to assist cities and counties in fulfilling their responsibilities for protecting public health and safety from the effects of strong ground shaking, liquefaction, landslides, other ground failure, and other seismic hazards caused by earthquakes. Mapping and other information generated pursuant to the SHMA is made available to local governments for planning and development purposes. The state requires local governments to incorporate site-specific geotechnical hazard investigations and associated hazard mitigation as part of the local construction permit approval process, and requires the agent for a property seller, or the seller if acting without an agent, to disclose to any prospective buyer if the property is located within a seismic hazard zone. The state geologist is responsible for compiling seismic hazard zone maps. The SHMA specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Code

State regulations protecting structures from geo-seismic hazards are contained in the California Code of Regulations, Title 24, Part 2 (the California Building Code (CBC)). 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 regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The CBC is based on the International Building Code published by the International Code Conference. The CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads and other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

State Earthquake Protection Law

The State Earthquake Protection Law (California Health and Safety Code 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in the CBC. The CBC requires a site-specific geotechnical study to address seismic issues and identify seismic factors that must be considered in structural design. Because the project site is not located within an Alquist–Priolo Earthquake Fault Zone (Exhibit 5.8-3, Alquist-Priolo Earthquake Fault Zone Map, in City of Murrieta 2011a), no special provisions would be required for project development related to fault rupture.

Construction General Permit

The State Water Resources Control Board (SWRCB) permits all regulated construction activities under Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ. The order requires that, prior to beginning any construction activity, the permit applicant obtain coverage under the Construction General Permit by preparing and submitting to the SWRCB a Permit Registration Document that includes a Notice of Intent and appropriate fee. The SWRCB may issue a Construction General Permit or an Individual Construction Permit that would contain more specific permit provisions. Individual Construction Permits replace Construction General Permit regulations and provisions, if issued. Additionally, coverage would not occur until an adequate stormwater pollution prevention plan (SWPPP) has been prepared. A separate Notice of Intent is submitted to the SWRCB for each construction site. See Section 4.8, Hydrology and Water Quality, for additional details.

Local

Murrieta General Plan 2035

The Murrieta General Plan 2035 provides the framework for development within the City. The Safety Element of the General Plan describes hazards that exist in Murrieta and policies and goals for addressing them. This includes geologic and soils conditions and the associated potential hazards. The following policies may be applicable to the proposed project (City of Murrieta 2011b):

Policy SAF-1.1 Encourage that areas be dedicated as open space when necessary and appropriate to protect property, public health, and safety from hazards such as earthquake fault zones or flood plains.

Policy SAF-2.1 Prior to site development, projects located in areas where liquefaction, subsidence, landslide and fissuring are considered hazards shall be required to prepare geologic reports addressing site conditions, potential risk, and mitigation, to the satisfaction of the City Engineer.

Policy SAF-2.2 Require that all new development comply with the Alquist-Priolo Earthquake Fault Zoning Act.

Policy SAF-2.3 Seek to maintain emergency access in the event of an earthquake by engineering roadways to reduce damage to them.

4.5.3 Thresholds of Significance

The significance criteria used to evaluate project impacts related to geology and soils are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to geology and soils would occur if the project would:

1. Directly or indirectly cause 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 based on other substantial evidence of as known fault. Refer to Division of Mines and Geology Special Publication 42.
   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 direct or indirect 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.
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

In 2015, the California Supreme Court, in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (CBIA v. BAAQMD), held that CEQA generally does not require a lead agency to consider the impacts of the existing environment on the future residents or users of the project. The above thresholds need to take into account this decision. Specifically, the decision held that an impact from the existing environment to the project, including future users and/or residents, is not an impact for purposes of CEQA. However, if the project, including future users and residents, exacerbates conditions that already exist, that impact must be assessed, including how it might affect future users and/or residents of the project. Thus, in accordance with Appendix G of the State CEQA Guidelines and the CBIA v. BAAQMD decision, the project would have a significant impact related to geology and soils if it would exacerbate the thresholds set forth in Thresholds 1, 3, or 4.

As determined in the Initial Study (Appendix A of this EIR), the project would result in less-than-significant impacts associated with Threshold 1 (a–d), and no impacts associated with Threshold 3, 4, or 5. Therefore, Thresholds 1 (a–d), 3, 4, and 5 will not be further discussed in this section, and this EIR only analyzes impacts associated with Threshold 2 and Threshold 6 related to soil erosion, the loss of topsoil, and paleontological resources.

4.5.4 Impacts Analysis

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

Less-than-Significant Impact. The project would involve construction of a commercial retail center on previously undeveloped land. Prior grading activities have disturbed 18.7 acres of the project site's ground surface (comprising most of the Costco portion of the project) (see Chapter 3 for additional detail); these disturbed acres consist of loose dirt, gravel, and rocks. Existing slopes on site are highly variable due to these prior activities. Existing drainage patterns carry stormwater runoff toward three locations (further discussed in Section 4.8 of this EIR). Under current conditions, substantial soil erosion and loss of topsoil is highly likely due to the disturbed, undeveloped ground surface. Project construction and operation are analyzed below for potential impacts associated with soil erosion.

Construction

The project site currently has exposed soil/bedrock and very limited vegetation. Project construction would involve the use of heavy machinery on site, including bulldozers, front loaders, track hoes, trenchers, semi-trucks, and various other large equipment, which would be used for site preparation and construction activities. The project would require the removal of excess substrate off site. Excavation and ground-disturbing activities during construction of the proposed project could potentially leave loose soil exposed to the erosive forces of rainfall and high winds, which would increase the potential for soil erosion and loss of topsoil.

Because the project would involve construction within an area that is larger than 1 acre, the project applicant would be required to apply for and receive coverage under the current General Construction Permit. Coverage under the General Construction Permit would require adherence to a variety of conditions designed to protect receiving water quality from degradation that could otherwise result from construction activities, as specified in a project-specific SWPPP. Conditions would include adherence to sediment and stormwater pollutant control best management practices (BMPs), effluent monitoring and compliance, post-construction-period requirements, worker training, and various other measures designed to minimize potential for soil erosion and loss of top soil.

In addition to requirements of the General Construction Permit, the project would be required to adhere to relevant construction practices required under the City Municipal Code, including the Jurisdictional Runoff Management Program and Erosion/Sediment Control requirements. Stormwater BMPs would include those recommended by the California Stormwater Quality Association (further discussed in Section 4.8 of this EIR). With adherence to these regulations and implementation of the SWPPP and BMPs, project construction would have a less-than-significant impact associated with soil erosion and loss of top soil.

Operation

Upon project implementation, the site would be graded and paved, greatly reducing the possibility for soil erosion or loss of topsoil compared to current conditions. Project specific-water quality management plans (Appendices G-3 and G-4) have been prepared for the project to ensure that soil erosion and the loss of top-soil are minimized. See Section 4.8 of this EIR with respect to water quality impacts not related to geology and soils. As discussed in Section 4.8 of this EIR, project operation would have a less-than-significant impact associated with soil erosion and loss of top soil.

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

Less-Than-Significant Impact. The project site is located within the northernmost Peninsular Ranges geomorphic province (CGS 2002; Norris and Webb 1990). This geomorphic province is characterized by northwest-trending mountain ranges and valleys that extend more than 900 miles from the tip of the Baja Peninsula to the Transverse Ranges (i.e., the San Bernardino and San Gabriel Mountains in Southern California). Regionally, the Peninsular Ranges are bounded to the east by the Colorado Desert and the west by the continental shelf and offshore islands (i.e., Santa Catalina, Santa Barbara, San Nicholas, and San Clemente) (CGS 2002; Norris and Webb 1990). Regional mountain ranges in the Peninsular Ranges geomorphic province include the Santa Ana, San Jacinto, and Santa Rosa Mountains. Geologically, these mountains are dominated by Mesozoic, plutonic igneous, and metamorphic rocks that are part of the Peninsular Ranges batholith (Southern California batholith) (Jahns 1954).

More specifically, the project site is located within the Perris Structural Block, along the Elsinore fault zone (Kennedy 1977). The Elsinore fault zone is part of the greater San Andreas Fault system, which is characterized by numerous strike-slip faults (Biehler et al. 1964). The Elsinore fault zone extends from the City of Corona in Riverside County, southeast approximately 124 miles to just beyond the international border with Mexico (Kennedy 1977). According to surficial geological mapping by Kennedy et al. (2003) at a scale of 1:24,000, the project site is underlain by Cretaceous (approximately 145 million years ago to 66 million years ago) plutonic igneous rocks that include gabbro (map unit Kgb) and monzogranites to granodiorites (map unit Kpvg).

A qualified Dudek crossed-trained archaeologist/paleontologist conducted a paleontological survey of the project site on June 13, 2018, using standard paleontological procedures and techniques. The survey methods consisted of a pedestrian survey conducted in 15-meter-wide transects across the project site. Where transects were not feasible, they were not used. Instead, a mixed approach (opportunistic survey) was used, selectively examining open ground surface where possible. The project site is within an area that has been extensively impacted by grading activities; there are several spoils piles throughout the site, and large areas that have been graded.

In addition to the field survey of the project site, a paleontological records search request was sent to the Natural History Museum of Los Angeles County on September 17, 2018 (McLeod 2018), and the results were received on October 1, 2018. According to the records search, no paleontological localities are documented within a 1-mile radius of the proposed project boundaries (McLeod 2018), and the project site is underlain by Mesozoic (approximately 252 million years ago to 66 million years ago), intrusive igneous rocks that have no paleontological sensitivity. Therefore, the Natural History Museum of Los Angeles County did not recommend a paleontological mitigation program (McLeod 2018).

Several classification schemes exist to determine the paleontological sensitivity of geological units. According to the Society of Vertebrate Paleontology's guidelines for assessment of paleontological resources (SVP 2010), plutonic igneous rocks have no paleontological potential to yield significant paleontological resources. A review of the Riverside County Land Information System database indicates that the project site is underlain by geological units of low paleontological potential (County of Riverside 2018). Note that the Riverside County Land Information System database is a coarse-scale planning-level tool used by Riverside County that is based on geological data available at the time of its creation.

No paleontological resources were identified within the project site as a result of the field survey, institutional records search, and desktop geological and paleontological review, and the project site is not anticipated to be underlain by unique geologic features. The project site is mapped as being underlain by Cretaceous plutonic igneous rocks that have no potential to yield significant paleontological resources. As such, no mitigation for paleontological resources is necessary, and impacts would be less than significant.

4.5.5 Mitigation Measures

The project would not result in significant impacts, and no mitigation measures are necessary.

4.5.6 Level of Significance After Mitigation

The project would not result in significant impacts, and no mitigation measures are necessary.

4.5.7 Cumulative Impacts

Potential cumulative impacts on geology and soils result from projects that combine to create geologic hazards, including unstable geologic conditions, or substantially contribute to erosion. Most geology and soil hazards associated with development would be site-specific and can be mitigated on a project-by-project basis. Such hazards include exposure of people or structures to rupture of an earthquake fault, liquefaction, landslides, unstable geologic units, and expansive soils. Individual project mitigation for these hazards would ensure that there are no residual cumulative impacts. Proper engineering design, use of standard construction practices, adherence to erosion control standards, implementation of BMPs required by the SWPPP, and implementation of the recommendations found in their respective geotechnical reports would ensure that the potential for cumulatively considerable geological impacts would be less than significant. Since geologic hazards are site-specific and not necessarily cumulative, the proposed project would not have a cumulatively considerable impact. Also, as noted above, in 2015, the California Supreme Court held that CEQA generally does not require a lead agency to consider the impacts of the existing environment on the future residents or users of the project unless such projects exacerbate existing conditions, further limiting the likelihood that environmental impacts on related projects would occur.

Excavation and ground-disturbing activities during construction of the proposed project and cumulative projects could potentially leave loose soil exposed to the erosive forces of rainfall and high winds, which would increase the potential for soil erosion and loss of topsoil. Earth-disturbing activities associated with construction on the proposed project site and cumulative project sites would be temporary, and with compliance with the General Construction Permit and BMPs outlined in the SWPPP, cumulative impacts related to soil erosion and the loss of topsoil would be less than significant.

The project could have a cumulative impact with respect to paleontological resources if the project, in conjunction with other cumulative and related projects, were to result in impacts to paleontological resources. Because the project site, as well as related projects, is located in an area known to have little to no potential to yield fossils due to the characteristics of the underlying geologic formations, the project does not have the potential to combine with other projects to result in cumulatively considerable impacts to paleontological resources. Therefore, cumulative impacts with respect to paleontological resources would be less than significant.

4.5.8 References Cited

Biehler, S., R.L. Kovach, and C.R. Allen. 1964. "Geophysical Framework of Northern End of Gulf California Structural Province." In *Marine Geology of the Gulf of California* edited by T.H. van Andel and G.G. Shor, Jr. 126–143. Tulsa, Oklahoma: American Association of Petroleum Geologists.

CDMG (California Division of Mines and Geology). 1988. *Ground Cracks in Wolf and Temecula Valleys, Riverside County.* Prepared by C.J. Wills, June 30, 1988. Online version: http://gmw.conservation.ca.gov/shp/EZRIM/Reports/FER/195/FER_195_Report_19880630.pdf.

CGS (California Geological Survey). 2002. "California Geomorphic Provinces: Note 36." December 2002.

CGS. 2018. *Earthquake Zones of Required Investigation, Murrieta Quadrangle*. Released January 1, 1990, Revised January 11, 2018. http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/MURRIETA_EZRIM.pdf.

City of Murrieta. 2011a. *Murrieta General Plan 2035 Final Environmental Impact Report*, Section 5.8: Geology and Seismic Hazards. SCH No. 2010111084. Prepared by RBF Consulting. Irvine, California: RBF Consulting. July 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5213.

City of Murrieta. 2011b. *Murrieta General Plan 2035 – Chapter 12: Safety Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5173.

Jahns, R.H., ed. 1954. Geology of Southern California. California Division Mines Bulletin 170.

Kennedy, M.P. 1977. Recency and Character of Faulting along the Elsinore Fault Zone in Southern Riverside County, California. California Division of Mines and Geology, Special Report 131

Kennedy, M.P., D.M. Morton, R.M. Alvarez, and G. Morton. 2003. "Preliminary Geologic Map of the Murrieta 7.5-Minute Quadrangle, Riverside County, California [map]." 1:24,000: Open-File Report OF-2003-189. Reston, Virginia: U.S. Geological Survey.

McLeod, S.A. 2018. "Paleontological Resources for the Proposed Costco Murrieta Project, Dudek Project # 11092, in the City of Murrieta, Riverside County, project area." Unpublished records search results letter from S.A. McLeod (Natural History Museum of Los Angeles County) to M. Williams (Dudek).

Norris, R.M., and R.W. Webb. 1990. *Geology of California*. New York, New York: John Wiley & Sons Inc.

SCEDC (Southern California Earthquake Data Center). 2019. "Significant Earthquakes and Faults, Elsinore Fault Zone". http://scedc.caltech.edu/significant/elsinore.html#wildomar.

SVP (Society of Vertebrate Paleontology). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Accessed October 2018. http://vertpaleo.org/Membership/Member-Ethics/SVP_Impact_Mitigation_Guidelines.aspx.

4.6 Greenhouse Gas Emissions

This section describes the existing setting of the project site related to greenhouse gas (GHG) emissions and climate change, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco/Vineyard II Retail Development Project (project). The GHG emissions analysis is based on the Air Quality and Greenhouse Gas Emissions Analysis Technical Report prepared for the proposed project (Appendix B).

4.6.1 Existing Conditions

Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period of time (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017a).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and is the most significant driver of observed climate change (EPA 2017a; IPCC 2013). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013).

Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and

nitrogen trifluoride (NF_3). (See also California Environmental Quality Act (CEQA) Guidelines Section 15364.5.)[1] Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[2]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 are from the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

Methane. CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide. N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N_2O as a propellant (e.g., rockets, racecars, and aerosol sprays).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the ozone depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.

[1] Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in California Health and Safety Code Section 38505 as impacts associated with other climate-forcing substances are not evaluated herein.

[2] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's (IPCC) Second Assessment Report (1995), IPCC's Fourth Assessment Report (2007), CARB's "Glossary of Climate Change Terms" (2016), and EPA's "Glossary of Climate Change Terms" (2016).

- **Sulfur Hexafluoride:** SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons. CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons. HCFCs are a large group of compounds whose structure is very close to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon. Black carbon is a component of fine particulate matter, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived species that varies spatially, which makes it difficult to quantify the global warming potential. DPM emissions are a major source of black carbon and are TACs that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter from the CARB's regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

Water Vapor. The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone. Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen (O_2), plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols. Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA

2016). The Intergovernmental Panel on Climate Change developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e).

The current version of the California Emissions Estimator Model (CalEEMod) (Version 2016.3.2) assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the proposed project.

Sources of Greenhouse Gas Emissions

Anthropogenic GHG emissions worldwide in 2017 (the most recent year for which data is available) totaled approximately 50,860 million metric tons (MMT) of CO_2e, excluding land use change and forestry (PBL 2018). Six countries—China, the United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65% of the total global emissions, or approximately 33,290 MMT CO_2e (PBL 2018).

Per the U.S. Environmental Protection Agency's (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2016 (EPA 2018), total United States GHG emissions were approximately 6,511.3 MMT CO_2e in 2016. The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 81.6% of total GHG emissions (5,310.9 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93.5% of CO_2 emissions in 2016 (4,966.0 MMT CO_2e). Relative to 1990, gross United States GHG emissions in 2016 are higher by 2.4%; down from a high of 15.7% above 1990 levels in 2007. GHG emissions decreased from 2015 to 2016 by 1.9% (126.8 MMT CO_2e) and overall, net emissions in 2016 were 11.1% below 2005 levels (EPA 2018).

According to California's 2000–2016 GHG emissions inventory (2018 edition), California emitted 429.4 MMT CO_2e in 2016, including emissions resulting from out-of-state electrical generation (CARB 2018). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high GWP substances, and recycling and waste. The California GHG emission source categories (as defined in California Air Resources Board's (CARB) 2018 GHG emissions inventory) and their relative contributions in 2016 are presented in Table 4.6-1.

Table 4.6-1. Greenhouse Gas Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO_2e)	Percent of Total[a]
Transportation	169.38	39%
Industrial	89.61	21%
Electricity generation[b]	68.58	16%
Residential and commercial uses	39.36	9%
Agriculture	33.84	8%
High GWP substances	19.78	5%
Recycling and waste	8.81	2%
Totals	**429.40**	**100%**

Source: CARB 2018.

Notes: GHG = greenhouse gas; MMT CO_2e = million metric tons of carbon dioxide equivalent; GWP = global warming potential. Emissions reflect 2016 California GHG inventory.
[a] Percentage of total has been rounded and total may not sum due to rounding.
[b] Includes emissions associated with imported electricity, which account for 26.28 MMT CO_2e.

Between 2000 and 2016, per-capita GHG emissions in California have dropped from a peak of 14.0 MT per person in 2001 to 10.8 MT per person in 2016, representing a 23% decrease. In addition, total GHG emissions in 2016 were approximately 12 MMT CO_2e less than 2015 emissions. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 MT CO_2e (CARB 2018).

The City of Murrieta (City) community-wide GHG emissions inventory is summarized in Table 4.6-2. Transportation-related activities account for the majority of the City's GHG emissions (48%). Approximately 24% of the City's community-wide GHG emissions are attributed to residential uses. Commercial uses account for approximately 15%. Office, business park, civic/institutional, industrial, and waste disposal uses account for the remaining 13% of community-wide GHG emissions.

Table 4.6-2. Greenhouse Gas Emissions Sources in City of Murrieta

Source Category	Annual GHG Emissions (MT CO_2e)[a]	Percent of Total[a]
Residential	91,492	23.5%
Commercial	60,153	15.4%
Office	12,711	3.3%
Business Park	8,332	2.1%
Civic/Institutional	9,333	2.4%
Industrial	3,463	0.9%
Transportation	188,138	48.3%
Waste	14,795	3.8%
Total	**389,717**	**100.0%**

Source: City of Murrieta 2011b.
Notes: GHG = greenhouse gas; MT CO_2e = metric tons of carbon dioxide equivalent.
Emissions reflect the 2009 City of Murrieta GHG inventory.
[a] Total may not sum due to rounding.

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, and rising sea levels (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed mean surface temperature for the decade 2006–2015 was 0.87°C (likely between 0.75°C and 0.99°C) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes

during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health, as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has been increasing.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments need for information to support action in their communities, the Fourth Assessment (CNRA 2018a) includes reports for nine regions of the state, including the Inland Deserts Region, where the project is located. Key projected climate changes for the Inland Deserts Region include the following (CNRA 2018a):

- Extremely high maximum temperatures are expected to occur in the Inland Deserts.
- The fate of the Salton Sea is a critical determinant of future environmental quality.
- Renewable energy development will have big impacts on the economy and infrastructure.

- Continuing current land use/development patterns (i.e., housing development in the region to compensate for lack of development on the coast) will require increased energy for cooling to compensate for a rise in extreme high temperatures.
- Higher temperatures will exacerbate water stress in an already very water-limited region.
- Changing water availability is a key determinant of the future for ecological and agricultural systems.
- Population in the Inland Deserts is highly vulnerable to the effects of climate change.
- Tourism is a major economic driver that is likely to be threatened by a changing climate.

Agriculture. Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availably and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

Biodiversity and Habitat. Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift and novel combinations of species; pathogens, parasites and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; threshold effects (i.e., a change in the ecosystem that results in a "tipping point" beyond which irreversible damage or loss has occurred).

Energy. Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events, and sea-level rise.

Forestry. The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and combined with increasing temperatures have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

Ocean and Coastal Ecosystems and Resources. Sea-level rise, changing ocean conditions, and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea-level rise, in addition to more frequent and severe coastal storms and erosion, are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities, as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands.

Public Health. Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness, as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness, such as asthma and allergies.

Transportation. Although the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand, which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of peoples and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

Water. Climate change could seriously impact the timing, form, amount of precipitation, runoff patterns, and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the winter time. Increased risk of flooding has a variety of public health concerns, including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively groundwater reserves and result in increased overdraft and subsidence. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

4.6.2 Relevant Plans, Policies, and Ordinances

Federal

Massachusetts v. EPA. In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions (EPA 2007):

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.

- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling previously discussed, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Barack Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks (EPA 2017b).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines.

On September 27, 2019, EPA and NHTSA published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program (84 FR 51310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. The Part One Rule impacts some of the underlying assumptions in the CARB EMFAC2014 and EMFAC2017 models for criteria air pollutant emissions from gasoline light-duty vehicles, which CARB released off-model adjustment factors for on November 20, 2019, primarily for use in federal Clean Air Act conformity demonstration analyses. EPA and NHTSA delayed promulgating final federal GHG and fuel economy standards (SAFE Rule Part Two) for the "near future." Because CARB does not know the full impacts of these rules until Part Two is released, no off-model adjustments factors are available for GHG emissions at this time. In addition, the EMFAC off-model adjustments have not yet been incorporated into CalEEMod. This issue is evolving as California and 22 other states, as well as the District of Columbia and two cities, filed suit against the EPA over the vehicle waiver revocation on November 15, 2019, and a petition for reconsideration of the rule was filed on November 26, 2019, by California and 22 other states, the District of Columbia, and four cities

Clean Power Plan and New Source Performance Standards for Electric Generating Units. On October 23, 2015, the EPA published a final rule (effective December 22, 2015) establishing the Carbon Pollution Emission

Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 FR 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO_2 emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units, and (2) stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO_2 emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. The U.S. Supreme Court stayed implementation of the Clean Power Plan pending resolution of several lawsuits.

State

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

The state has taken a number of actions to address climate change. These include EOs, legislation, and CARB plans and requirements. These are summarized below.

EO S-3-05. EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010 (CAT 2016).

Assembly Bill 32. In furtherance of the goals established in EO S-3-05, the Legislature enacted Assembly Bill (AB) 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state's long-range climate objectives.

Senate Bill 32 and AB 197. Senate Bill (SB) 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to CARB as nonvoting members; requires CARB to make available and update (at

least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's 2007 Statewide Limit. In 2007, in accordance with California Health and Safety Code Section 38550, CARB approved a statewide limit on the GHG emissions level for 2020, consistent with the determined 1990 baseline (427 MMT CO_2e).

CARB's Climate Change Scoping Plan. One specific requirement of AB 32 is for CARB to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561(a)), and to update the plan at least once every 5 years. In 2008, CARB approved the first Scoping Plan. The Climate Change Scoping Plan: A Framework for Change (Scoping Plan) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
2. Achieving a statewide renewable energy mix of 33%
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.)
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012. The First Update concluded that California is on track to meet the 2020 target, but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market

penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO_2e to 431 MMT CO_2e (CARB 2014).

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In January 2017, CARB released the 2017 Climate Change Scoping Plan Update (2030 Scoping Plan) for public review and comment (CARB 2017). The 2030 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the 2030 Scoping Plan replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which are consistent with the state's long-term goals. These goals are also consistent with the Global Climate Leadership Memorandum of Understanding (Under 2 MOU) (Under 2 2016) and the Paris Agreement, which were developed around the scientifically based levels necessary to limit global warming below 2°C. The 2030 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans (CAPs)) and provide more information regarding tools CARB is working on to support those efforts. It also recognizes the CEQA streamlining provisions for project-level review where there is a legally adequate CAP.[3] The Second Update was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs, and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it meets the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goals to be consistent. A project would be consistent if it will further the objectives and not obstruct their attainment.

CARB's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions. CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40,

[3] *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. V. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

CFR, Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that the EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 MT CO_2e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emissions report verified by a CARB-accredited third party.

EO B-18-12. EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

EO B-30-15. EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

SB 605 and SB 1383. SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state, and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of short-lived climate pollutants (40% below 2013 levels by 2030 for methane and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy in March 2017. The Short-Lived Climate Pollutant Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases.

EO B-55-18. EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality no later than 2045, and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

Building Energy

Title 24, Part 6. Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Although not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code (PRC) Section 25402(b)(1)). The regulations receive input from members of industry and the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (PRC Section 25402). These regulations are scrutinized and analyzed for technological and economic feasibility (PRC Section 25402(d)) and

cost effectiveness (PRC Sections 25402(b)(2) and (b)(3)). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2016 Title 24 building energy efficiency standards became effective January 1, 2017. The 2019 Title 24 Building Energy Efficiency Standards became effective January 1, 2020, which will further reduce energy used and associated GHG emissions compared to the 2016 Title 24 building energy standards. Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018).

Title 24, Part 11. In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as California's Green Building Standards (CALGreen), and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals.

The 2019 Title 24 Building Energy Efficiency Standards, which became effective January 1, 2020, will further reduce energy used and associated GHG emissions compared to current standards. Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018).

The 2019 Title 24 standards focus on building energy efficiency and ensuring solar electricity generated on site is used on site. "Looking beyond the 2019 standards, the most important energy characteristic for a building will be that it produces and consumes energy at times that are appropriate and responds to the needs of the grid, which reduces the building's emissions" (CEC 2018).

The California Public Utilities Commission, CEC, and CARB also have a shared, established goal of achieving zero net energy performance for new construction in California. The key policy timelines are all new residential construction in California will be zero net energy by 2020, and all new commercial construction in California will be zero net energy by 2030.[4]

Title 20. Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance and water design. Title 20 contains

[4] See for example, California Public Utilities Commission's California's Zero Net Energy Policies and Initiatives, September 18, 2013; http://annualmeeting.naseo.org/Data/Sites/2/presentations/Fogel-Getting-to-ZNE-CA-Experience.pdf. It is expected that achievement of the zero net energy goal will occur via revisions to the Title 24 standards.

three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

Senate Bill 1. SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

California AB 1470 (Solar Water Heating). This bill established the Solar Water Heating and Efficiency Act of 2007. The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. AB 1470 defines several terms for purposes of the act. The bill required implementing a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

Renewable Energy and Energy Procurement

SB 1078. SB 1078 (Sher) (September 2002) established the Renewable Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and S-21-09).

SB 1368. SB 1368 (September 2006), required the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission.

AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting, to reduce electricity consumption by 50% for indoor residential lighting and 25% for indoor commercial lighting.

EO S-14-08. EO S-14-08 (November 2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The CNRA, through collaboration with the CEC and California Department of Fish and Wildlife, was directed to lead this effort.

EO S-21-09 and SB X1-2. EO S-21-09 (September 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with the California Public Utilities Commission and CEC to ensure that the regulation builds on the Renewable Portfolio Standard program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved

regulations to implement a Renewable Electricity Standard. However, this regulation was not finalized because of subsequent legislation (SB X1-2, Simitian, statutes of 2011) signed by Governor Brown in April 2011.

SB X1 2 expanded the Renewables Portfolio Standard by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals previously listed.

SB 350. SB 350 (October 2015) further expanded the Renewable Portfolio Standard by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (e.g., heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the California Public Utilities Commission, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

SB 100. SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid, and that the achievement not be achieved through resource shuffling.

Mobile Sources

AB 1493. AB 1493 (Pavley) (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. The near-term (2009–2012) standards resulted in a reduction of approximately 22% in GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards resulted in a reduction of approximately 30%.

Heavy Duty Diesel. CARB adopted the final Heavy Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce particulate matter and nitrogen oxides emissions from heavy-duty diesel vehicles. The rule requires particulate matter filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12,

2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

EO S-1-07. EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375. SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP) that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise an SCS to achieve the GHG reduction target, the metropolitan planning organization must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to Government Code, Section 65080(b)(2)(K), an SCS does not (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In September 2010, CARB adopted the first SB 375 targets for the regional metropolitan planning organizations. The targets for the Southern California Association of Governments (SCAG) are an 8% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of an SCS is the responsibility of the metropolitan planning organizations. SCAG adopted its first RTP/SCS in April 2012. The plan quantified a 9% reduction by 2020 and a 16% reduction by 2035 (SCAG 2012). In June 2012, CARB accepted SCAG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve SCAG targets. On April 4, 2016, the SCAG Regional Council adopted the 2016 RTP/SCS, which builds on the progress made in the 2012 RTP/SCS. The 2016 RTP/SCS quantified an 8% reduction by 2020 and an 18% reduction by 2030 (SCAG 2016). In June 2016, CARB accepted SCAG's quantification of GHG reductions and its determination that the SCS would achieve SCAG targets.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program. The Advanced Clean Cars program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that, by 2025, cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero-emission vehicle program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

EO B-16-12. EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emission vehicles. It ordered CARB, CEC, the California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

AB 1236. AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the planning commission, as specified. The bill provided that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is a matter of statewide concern. The bill required electric vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric vehicle charging stations, as specified. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

Water

EO B-29-15. In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

Solid Waste

AB 939 and AB 341. In 1989, AB 939, known as the Integrated Waste Management Act (PRC Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by 2000.

AB 341 (Chapter 476, Statutes of 2011 (Chesbro)) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general stakeholder workshops and several focused workshops, and in August 2015 published a discussion document titled AB 341 Report to the Legislature, which

identifies five priority strategies that CalRecycle believes would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations, and an evaluation of program effectiveness (CalRecycle 2012).

Other State Actions

Senate Bill 97. SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4(a)). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

With respect to GHG emissions, the CEQA Guidelines state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4(a)). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

EO S-13-08. EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016 (CNRA 2016). In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018b).

2015 State of the State Address. In January 2015, Governor Brown in his inaugural address and annual report to the Legislature established supplementary goals, which would further reduce GHG emissions over the next 15 years. These goals include an increase in California's renewable energy portfolio from 33% to 50%, a reduction in vehicle petroleum use for cars and trucks by up to 50%, measures to double the efficiency of existing buildings, and decreasing emissions associated with heating fuels.

2016 State of the State Address. In his January 2016 address, Governor Brown established a statewide goal to bring per-capita GHG emission down to 2 tons per person, which reflects the goal of the Under 2 MOU to limit global warming to less than 2°C by 2050. The Under 2 MOU agreement pursues emission reductions of 80% to 95% below 1990 levels by 2050 and/or reaching a per-capita annual emissions goal of less than 2 MT by 2050. A total of 135 jurisdictions representing 32 countries and 6 continents, including California, have signed or endorsed the Under 2 MOU (Under 2 2016).

Local

South Coast Air Quality Management District. Air districts typically act in an advisory capacity to local governments in establishing the framework for environmental review of air pollution impacts under CEQA. This may include recommendations regarding significance thresholds, analytical tools to estimate emissions and assess impacts, and mitigation for potentially significant impacts. Although air districts will also address some of these issues on a project-specific basis as responsible agencies, they may provide general guidance to local governments on these issues (SCAQMD 2008). As discussed in Section 4.6.3, Thresholds of Significance, the South Coast Air Quality Management District (SCAQMD) has recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects; however, these thresholds were not adopted.

City of Murrieta General Plan 2035. The Air Quality Element of the Murrieta General Plan includes the goals and policies that result in co-benefits with reducing GHG emissions (see Section 4.2, Air Quality, of this Environmental Impact Report). The Conservation Element includes goals and policies that would result in co-benefits of reducing GHG emissions. These applicable goals and policies are as follows (City of Murrieta 2011a):

GOAL CSV-2 Murrieta promotes compliance with requirements from the State and appropriate agencies regarding comprehensive water conservation measures in buildings and landscaping.

- **Policy CSV-2.1** Ensure that all developments comply with water efficiency requirements, as mandated by the applicable Building Code.

GOAL CSV-12 Energy conservation and the generation of energy from renewable sources is prioritized as part of an overall strategy to reduce GHG emissions.

- **Policy CSV-12.1** Ensure that all developments comply with energy efficiency requirements as mandated by the applicable Building Code.
- **Policy CSV-12.3** Support the on-site installation and use of renewable energy generation systems for residential, commercial, institutional, and industrial uses.

GOAL CSV-13 Solid waste is diverted from landfills through waste reduction, re-use, and recycling.

Policy CSV-13.1 Continue to comply with the landfill diversion requirements of the Integrated Waste Management Program.

Policy CSV-13.2 Ensure that non-residential and multi-family developments provide readily accessible areas for recycling (at a minimum) paper, corrugated cardboard, glass, plastics and metals, as required by California law.

GOAL CSV-14 A community that encourages and incentivizes the sustainable development of buildings and neighborhoods, particularly with respect to durability, energy and water use, and transportation impacts.

Policy CSV-14.1 Ensure all applicable construction projects comply with the California State Green Building Standards Code.

Policy CSV-14.2 Encourage the integration of other principles of green building into development standards and guidelines, looking for opportunities to realize other benefits such as improved health and increased bicycle transportation.

City of Murrieta Climate Action Plan. Adopted as part of the Murrieta General Plan in July 2011, the City's CAP (City of Murrieta 2011b), which was prepared following CEQA Guidelines Section 15183.5, provides a framework for reducing GHG emissions and managing resources to best prepare for a changing climate. With respect to evaluation of projects under CEQA, the CAP states, "Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the CAP would have a less than significant impacts on climate change" (City of Murrieta 2011b). The City's CAP also suggests best practices for implementation, and makes recommendations for measuring progress.

The City's CAP is intended to address the main sources of the emissions that cause climate change, which include emissions from the energy consumed in buildings and for transportation, as well as the solid waste sent to landfills. The purpose of the City's CAP is to guide the development, enhancement, and implementation of actions that would reduce the City's GHG emissions by 15% below existing (2009) levels by 2020.

4.6.3 Thresholds of Significance

The significance criteria used to evaluate the project's GHG emissions impacts is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this GHG emissions analysis, the project would have a significant environmental impact if it would (14 CCR 15000 et seq.):

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

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the proposed project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, although GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated on a project level under CEQA.

The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009). California has not adopted emission-based thresholds for GHG emissions under CEQA. The Governor's Office of Planning and Research's Technical Advisory, titled "Discussion Draft CEQA and Climate Change Advisory," states the following (OPR 2018):

> neither the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. Even in the absence of clearly defined thresholds for GHG emissions, such emissions must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.

Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice" (OPR 2018). Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

In October 2008, the SCAQMD proposed recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects, as presented in its Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold (SCAQMD 2008). This guidance document, which builds on the previous guidance prepared by the California Air Pollution Control Officers Association, explored various approaches for establishing a significance threshold for GHG emissions. The draft interim CEQA thresholds guidance document was not adopted or approved by the Governing Board. However, in December 2008, the SCAQMD adopted an interim 10,000 MT CO_2e per-year screening level threshold for stationary source/industrial projects for which the SCAQMD is the lead agency (see SCAQMD Resolution No. 08-35, December 5, 2008). However, SCAQMD has not adopted a GHG significance threshold for land use development projects such as commercial projects; the proposed commercial/residential thresholds were never formally adopted. Thus, the SCAQMD interim GHG significance threshold is not applicable to the project as the project is a commercial project.

In absence of any applicable numeric threshold, this analysis assesses compliance with applicable plans, policies, regulations, and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. As a land use development project, the most directly applicable adopted regulatory plan to reduce GHG emissions is the 2016 RTP/SCS, which is designed to achieve regional GHG reductions from the land use and transportation sectors as required by SB 375 and the state's long-term climate goals. This analysis also considers consistency with regulations and requirements adopted pursuant to the Scoping Plan and the City's CAP.

The City's CAP, which was prepared following CEQA Guidelines Section 15183.5, provides a framework for reducing GHG emissions and managing resources to best prepare for a changing climate. With respect to evaluation of projects under CEQA, the CAP states, "Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the CAP would have a less than significant impacts on climate change" (City of Murrieta 2011b). The purpose of the City's CAP is to guide the development,

enhancement, and implementation of actions that would reduce the City's GHG emissions by 15% below existing (2009) levels by 2020. However, the proposed project's buildout would be post-2020; thus, consistency with the City's CAP is included for informational purposes.

4.6.4 Impacts Analysis

Project Design Feature

To reduce construction and operational emissions to the extent feasible, Costco would incorporate the following project design features (PDFs) into the new facility (**PDF-AQ/GHG-1**):

a. New and renewable building materials shall be extracted and manufactured within the region whenever possible, reducing transportation emissions.
b. The project shall use pre-manufactured building components, including structural framing and metal panels, to help minimize waste during construction.
c. The main building structure shall be constructed with a pre-engineered system that uses 100% recycled steel materials and is designed to minimize the amount of material utilized.
d. Roof material shall be 100% recycled standing seam metal panel, designed to maximum efficiency for spanning the structure.
e. Exterior skin metal shall be 100% recycled.
f. Construction waste shall be recycled whenever possible.
g. Floor sealant contains no volatile organic compounds (VOCs) and represents over 80% of the floor area.
h. LED lamps shall be installed in the parking lots.
i. Parking lot and exterior lights are controlled by the building's automated energy management system.
j. Pre-manufactured metal wall panels with insulation carry a higher Resistance Value (more commonly known as R-Value), and greater solar reflectivity shall be installed to help conserve energy. Building heat absorption is further reduced by a decrease in the thermal mass of the metal wall when compared to a typical masonry block wall.
k. Costco would design the roofing structure to accommodate the additional structural load of the solar panels to allow for the flexibility for possible future installation.
l. The project shall plant native, drought-tolerant vegetation that would use less water than other common species.
m. The project shall install an irrigation system that uses deep-root watering bubblers for parking lot trees to minimize usage and ensure that water goes directly to the intended planting areas.
n. High-efficiency restroom fixtures shall be installed
o. Building envelopes shall be insulated to meet or exceed current energy code requirements.
p. Heating, ventilation, and air conditioning (HVAC) comfort systems shall be controlled by a computerized building management system to maximize efficiency.
q. HVAC units shall be high-efficiency, direct-ducted units.
r. HVAC units shall not use hydrochlorofluorocarbons.
s. Interior lighting shall be controlled by the overall project energy management system.

t. Gas water heaters shall be direct vent and high efficiency.
u. Extensive recycling/reuse program shall be implemented for warehouse and office space including tires, cardboard, grease, plastics, and electronic waste.
v. All Costco trucks shall be equipped with an engine idle shut off timer.
w. Three electric vehicle (EV) charging stations shall be installed in the parking lot.
x. Within 2 years of opening the Costco Warehouse, a 708-kilowatt photovoltaic system shall be installed, which would generate a system output of 1,128,400 kilowatt-hours per year.
y. Stalls designated as Clean Air Vehicle/Van Pool would encourage use of such vehicles by employees and customers.

Vineyard II Retail Development would incorporate the following PDFs into the new facilities (**PDF-AQ/GHG-2**):

a. Design the roofing structure to accommodate the additional structural load of the solar panels to allow for the flexibility for possible future installation.
b. LED lamps shall be installed in the parking lots and outdoor lighting fixtures.
c. Parking lot and exterior lights shall be controlled by a time clock and photo cell device to turn lights off at dawn.
d. Fourteen EV [electric vehicle] charging stations shall be installed in the parking lot, four of which shall be tied to a solar source from the roofs of two buildings at the time of opening.
e. Electrical outlets on site shall allow recharging of battery-operated landscape maintenance equipment by landscape maintenance staff.
f. Each trash enclosure in the retail center shall have a recycling bin slot for each tenant.
g. Non-potable irrigation lines shall be installed in preparation for future recycled water.

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

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

Less-than-Significant Impact. Analysis of the project's GHG emissions impact is presented below.

Construction Emissions

Construction of the proposed project would result in GHG emissions, primarily associated with the use of off-road construction equipment, haul trucks, on-road vendor trucks, and worker vehicles. SCAQMD's Final Localized Significance Threshold Methodology (SCAQMD 2009) recommends that "construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies." Thus, the total construction GHG emissions were calculated, amortized over 30 years, and added to the total operational emissions.

Construction of the project is anticipated to commence in September 2020 and reach completion in November 2021, lasting a total of 14 months. On-site sources of GHG emissions would include rock crushing; diesel-engine generators; rock popping; off-road equipment; and off-site sources, including haul trucks, vendor trucks, and worker vehicles. GHG emission reductions from PDF-AQ/GHG-1 related to construction were not quantified

because life-cycle GHG emissions from manufacturing of construction materials are not included in project emissions. Table 4.6-3 presents construction emissions for the project in 2019 and 2021 from on-site and off-site emission sources. Details of the construction GHG emission calculations are provided in Appendix B.

Table 4.6-3. Estimated Annual Construction Greenhouse Gas Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Vineyard II				
2020	137.10	0.03	0.00	137.96
2021	1,247.26	0.18	0.00	1,251.79
Costco				
2020	411.72	0.07	0.00	413.54
2021	460.91	0.07	0.00	462.59
Costco Rock Crushing and Rock Popping				
2020	184.90	0.01	0.00	185.06
Warm Springs Parkway				
2020	157.08	0.04	0.00	157.98
Sub Total				
2020	*890.80*	*0.15*	*0.00*	*894.54*
2021	*1,708.18*	*0.25*	*0.00*	*1,714.38*
Total	2,598.98	0.40	0.00	2,608.92

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Appendix B for complete results.
The values shown are the annual emissions reflect California Emissions Estimator Model "mitigated" output.
Totals may not add due to rounding.

As shown in Table 4.6-3, the estimated total GHG emissions during construction would be approximately 895 MT CO_2e in 2020 and 1,714 MT CO_2e in 2021, for a total of 2,609 MT CO_2e over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 87 MT CO_2e per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would be short-term, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operational Emissions

Operation of the project would generate GHG emissions through motor vehicle and delivery truck trips to and from the project site; fuel dispensing operations; landscape maintenance equipment operation; energy use (natural gas and generation of electricity consumed by the project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment.

The estimated operational (year 2021) project-generated GHG emissions from area sources, energy usage, motor vehicles, off-road equipment (compressed natural gas forklifts), solid waste generation, and water usage and wastewater generation are shown in Table 4.6-4. The project would implement PDF-AQ/GHG-1, which includes the following strategies, which are quantified in Table 4.6-4: reductions from installing low-flow bathroom faucets and

toilets, installing water efficient irrigation systems, installing LED lamps in the parking lots, and installing EV charging stations. Details of the operational GHG emission calculations are provided in Appendix B.

Table 4.6-4. Estimated Annual Operational Greenhouse Gas Emissions (2021)

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Area	0.04	<0.01	0.00	0.04
Energy	810.92	0.03	0.01	814.21
Mobile	17,571.96	0.77	0.65	17,599.57
Solid waste	97.65	5.77	0.00	241.93
Water supply and wastewater	65.86	0.02	0.01	69.76
Off-Road	73.52	0.02	0.00	74.12
Amortized 30-Year Construction Emissions				*86.96*
Operation plus Amortized Construction Total				**18,812.47**

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; PDF = project design feature.
See Appendix B for complete results.
The values shown reflect CalEEMod "mitigated" output and operational year 2021, which accounts for implementation of the project's PDF-AQ/GHG-1, including installing low-flow bathroom faucets and toilets, installing water-efficient irrigation systems, installing LED lamps in the parking lots, and installing EV charging stations.
Totals may not add due to rounding.

Estimated annual project-generated GHG emissions would be approximately 18,726 MT CO_2e per year as a result of project operations only. Estimated annual project-generated operational emissions in 2021 plus amortized project construction emissions would be approximately 18,812 MT CO_2e per year.

The estimated operational (year 2023) project-generated GHG emissions with the additional implementation of the 708-kilowatt solar photovoltaic system are shown in Table 4.6-5. Details of the operational GHG emissions calculations are provided in Appendix B.

Table 4.6-5. Estimated Annual Operational Greenhouse Gas Emissions (2023) With Solar

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Area	0.04	<0.01	0.00	0.04
Energy	506.81	0.02	0.01	512.04
Mobile	17,571.96	0.77	0.65	17,599.57
Solid waste	97.65	5.77	0.00	241.93
Water supply and wastewater	65.86	0.02	0.01	69.76
Off-Road	73.52	0.02	0.00	74.12
Amortized 30-Year Construction Emissions				*86.96*
Operation plus Amortized Construction Total				**18,510.30**

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; PDF = project design feature.
See Appendix B for complete results.
The values shown reflect CalEEMod "mitigated" output and operational year 2021, which accounts for implementation of project's PDF-AQ/GHG-1 and PDF-AQ/GHG-2, including installing low flow bathroom faucets and toilets, installing water efficient irrigation systems, installing LED lamps in the parking lots, installing EV charging stations, and installing a 708-kilowatt solar photovoltaic system within 2 years of operation of the Costco Warehouse.
Totals may not add due to rounding.

Estimated annual project-generated GHG emissions would be approximately 18,423 MT CO_2e per year as a result of project operations with implementation of the 708-kilowatt solar photovoltaic system. Estimated annual project-generated operational emissions starting in 2023 plus amortized project construction emissions would be approximately 18,510 MT CO_2e per year.

The project's consistency with statewide GHG reduction strategies is summarized in detail in Table 4.6-6.

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Building Components/Facility Operations		
Roofs/Ceilings/Insulation	CALGreen Code (Title 24, Part 11) California Energy Code (Title 24, Part 6)	The project must comply with efficiency standards regarding roofing, ceilings, and insulation. For example: **Roofs/Ceilings:** New construction must reduce roof heat island effects per CALGreen Code Section 106.11.2, which requires use of roofing materials having a minimum aged solar reflectance, thermal emittance complying with Section A5.106.11.2.2 and A5.106.11.2.3 or a minimum aged Solar Reflectance Index as specified in Tables A5.106.11.2.2, or A5.106.11.2.3. Roofing materials must also meet solar reflectance and thermal emittance standards contained in Title 20 Standards. **Roof/Ceiling Insulation:** There are also requirements for the installation of roofing and ceiling insulation. (See Title 24, Part 6 Compliance Manual at Section 3.2.2.)
Flooring	CALGreen Code	The project must comply with efficiency standards regarding flooring materials. For example, for 80% of floor area receiving "resilient flooring," the flooring must meet applicable installation and material requirements contained in CALGreen Code Section 5.504.4.6.
Window and Doors (Fenestration)	California Energy Code	The project must comply with fenestration efficiency requirements. For example, the choice of windows, glazed doors, and any skylights for the project must conform to energy consumption requirements affecting size, orientation, and types of fenestration products used. (See Title 24, Part 6 Compliance Manual, Section 3.3.)

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Building Walls/Insulation	CALGreen Code California Energy Code	The project must comply with efficiency requirements for building walls and insulation. **Exterior Walls:** Must meet requirements in current edition of California Energy Code and comply with Sections A5.106.7.1 or A5.106.7.2 of CALGreen Code for wall surfaces, as well as Section 5.407.1, which required weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2. Construction must also meet requirements contained in Title 24, Part 6, which vary by material of the exterior walls. (See Title 24, Part 6 Compliance Manual, Part 3.2.3.) **Demising (Interior) Walls:** Mandatory insulation requirements for demising walls (which separate conditioned from non-conditions space) differ by the type of wall material used. (*Id*. at 3.2.4.) **Door Insulation:** There are mandatory requirements for air infiltration rates to improve insulation efficiency; they differ according to the type of door. (*Id*. at 3.2.5.) **Flooring Insulation:** There are mandatory requirements for insulation that depend on the material and location of the flooring. (*Id*. at 3.2.6.)
Finish Materials	CALGreen Code	The project must comply with pollutant control requirements for finish materials. For example, materials including adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products must meet requirements in CALGreen Code to ensure pollutant control. (CALGreen Code Section 5.504.4.)
Wet Appliances (Toilets/Faucets/Urinals, Dishwasher/Clothes Washer, Spa and Pool/Water Heater)	CALGreen Code California Energy Code Appliance Efficiency Regulations (Title 20 Standards)	Wet appliances associated with the project must meet various efficiency requirements. For example: **Spa and Pool:** Use associated with the project is subject to appliance efficiency requirements for service water heating systems and equipment, spa and pool heating systems and equipment. (Title 24, Part 6, Sections 110.3, 110.4, 110.5; Title 20 Standards, Sections 1605.1(g), 1605.3(g); see also California Energy Code.) **Toilets/Faucets/Urinals:** Use associated with the project is subject to new maximum rates for toilets, urinals, and faucets effective January 1, 2016: • Showerheads maximum flow rate 2.5 gpm at 80 psi • Wash fountains 2.2 x (rim space in inches/20)

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		gpm at 60 psi • Metering faucets 0.25 gallons/cycle • Lavatory faucets and aerators 1.2 gpm at 60 psi • Kitchen faucets and aerators 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi • Public lavatory faucets 0.5 gpm at 60 psi • Trough-type urinals 16 inches length • Wall mounted urinals 0.125 gallons per flush • Other urinals 0.5 gallons per flush (Title 20 Standards, Sections 1605.1(h),(i) 1065.3(h),(i).) **Water Heaters:** Use associated with the project is subject to appliance efficiency requirements for water heaters. (Title 20 Standards, Sections 1605.1(f), 1605.3(f).) **Dishwasher/Clothes Washer:** Use associated with the project is subject to appliance efficiency requirements for dishwashers and clothes washers. (Title 20 Standards, Sections 1605.1(o),(p),(q), 1605.3(o),(p),(q).)
Dry Appliances (Refrigerator/Freezer, Heater/Air Conditioner, Clothes Dryer)	Title 20 Standards CALGreen Code	Dry appliances associated with the project must meet various efficiency requirements. For example: **Refrigerator/Freezer:** Use associated with the project is subject to appliance efficiency requirements for refrigerators and freezers. (Title 20 Standards, Sections 1605.1(a), 1605.3(a).) **Heater/Air Conditioner:** Use associated with the project is subject to appliance efficiency requirements for heaters and air conditioners. (Title 20 Standards, Sections 1605.1(b),(c),(d),(e), 1605.3(b),(c),(d),(e) as applicable.) **Clothes Dryer:** Use associated with the project is subject to appliance efficiency requirements for clothes dryers. (Title 20 Standards, Section 1605.1(q).)
	CALGreen Code	Installations of HVAC, refrigeration and fire suppression equipment must comply with CALGreen Code Sections 5.508.1.1 and 508.1.2, which prohibits CFCs, halons, and certain HCFCs and HFCs.

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Lighting	Title 20 Standards	Lighting associated with the project will be subject to energy efficiency requirements contained in Title 20 Standards. General Lighting: Indoor and outdoor lighting associated with the project must comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(j),(k),(n), 1605.3(j),(k),(n).) Emergency lighting and self-contained lighting: the project must also comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(l), 1605.3(l).) Traffic Signal Lighting: For any necessary project improvements involving traffic lighting, traffic signal modules and traffic signal lamps will need to comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(m), 1605.3(m).)
	California Energy Code	Lighting associated with the project will also be subject to energy efficiency requirements contained in Title 24, Part 6, which contains energy standards for non-residential indoor lighting and outdoor lighting. (See Title 24 Part 6 Compliance Manual, at Sections 5, 6.) Mandatory lighting controls for indoor lighting include, for example, regulations for automatic shut-off, automatic daytime controls, demand responsive controls, and certificates of installation. (Id. at Section 5.) Regulations for outdoor lighting include, for example, creation of lighting zones, lighting power requirements, a hardscape lighting power allowance, requirements for outdoor incandescent and luminaire lighting, and lighting control functionality. (Id. at Section 6.)
	AB 1109	Lighting associated with the project will be subject to energy efficiency requirements adopted pursuant to AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general purpose lighting, to reduce electricity consumption 50% for indoor residential lighting and 25% for indoor commercial lighting.
Bicycle and Vehicle Parking	CALGreen Code	The project will be required to provide compliant bicycle parking, fuel-efficient vehicle parking, and electric vehicle charging spaces (CALGreen Code Sections 5.106.4, 5.106.5.1, 5.106.5.3)

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
	California Energy Code	The project is also subject to parking requirements contained in Title 24, Party 6. For example, parking capacity is to meet but not exceed minimum local zoning requirements, and the project should employ approved strategies to reduce parking capacity (Title 24, Part 6, section 106.6)
Landscaping	CALGreen Code	The CALGreen Code requires and has further voluntary provisions for: • A water budget for landscape irrigation use; • For new water service, separate meters or submeters must be installed for indoor and outdoor potable water use for landscaped areas of 1,000-5,000 square feet; • Provide water-efficient landscape design that reduces use of potable water beyond initial requirements for plant installation and establishment
	Model Water Efficient Landscaping Ordinance	The model ordinance promotes efficient landscaping in new developments and establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger. (CCR, Title 23, Division 2, Chapter 2.7.)
	Cap-and-Trade Program	Transportation fuels used in landscape maintenance equipment (e.g., gasoline) would be subject to the Cap-and-Trade Program. (See "Energy Use," below.)
Refrigerants	CARB Management of High GWP Refrigerants for Stationary Sources	Any refrigerants associated with the project will be subject to CARB standards. CARB's Regulation for the Management of High GWP Refrigerants for Stationary Sources 1) reduces emissions of high-GWP refrigerants from leaky stationary, non-residential refrigeration equipment; 2) reduces emissions resulting from the installation and servicing of stationary refrigeration and air conditioning appliances using high-GWP refrigerants; and 3) requires verification GHG emission reductions. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5.1, Section 95380 et seq.)
Consumer Products	CARB High GWP GHGs in Consumer Products	All consumer products associated with the project will be subject to CARB standards. CARB's consumer products regulations set VOC limits for numerous categories of consumer products, and limits the reactivity of the ingredients used in numerous categories of aerosol coating products (CCR, Title 17, Division 3, Chapter 1, Subchapter 8.5.)

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Construction		
Use of Off-Road Diesel Engines, Vehicles, and Equipment	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in equipment operation would be subject to the Cap-and-Trade Program. (See "Energy Use," below.)
Greening New Construction	CALGreen Code	All new construction, including the project, must comply with CALGreen Code, as discussed in more detail throughout this table. Adoption of the mandatory CALGreen Code standards for construction has been essential for improving the overall environmental performance of new buildings; it also sets voluntary targets for builders to exceed the mandatory requirements.
Construction Waste	CALGreen Code	The project will be subject to CALGreen Code requirements for construction waste reduction, disposal, and recycling, such as a requirement to recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
Worker, vendor and truck vehicle trips (on-road vehicles)	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in worker, vendor and truck vehicle trips would be subject to the Cap-and-Trade Program.

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Solid Waste		
Solid Waste Management	Landfill Methane Control Measure	Waste associated with the project will be disposed per state requirements for landfills, material recovery facilities, and transfer stations. Per the statewide GHG emissions inventory, the largest emissions from waste management sectors come from landfills, and are in the form of CH_4. In 2010, CARB adopted a regulation that reduces emissions from methane in landfills, primarily by requiring owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and requires existing and newly installed gas and control systems to operate in an optimal manner. The regulation allows local air districts to voluntarily enter into a memorandum of understanding with CARB to implement and enforce the regulation and to assess fees to cover costs of implementation.
	Mandatory Commercial Recycling (AB 341)	AB 341 will require the project, if it generates four cubic yards or more of commercial solid waste per week, to arrange for recycling services, using one of the following: self-haul; subscribe to a hauler(s); arranging for pickup of recyclable materials; subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation. The project will also be subject to local commercial solid waste recycling program required to be implemented by each jurisdiction under AB 341.
	CALGreen Code	The project will be subject to CALGreen Code requirement to provide areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (CALGreen Code Section 5.410.1)
Energy Use		
Electricity/Natural Gas Generation	Cap-and-Trade Program	Electricity and natural gas usage associated with the project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		suppliers of natural gas, reformulated gasoline blendstock for oxygenate blending (RBOB), distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 metric tons or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Renewable Energy	California RPS (SB X1-2, SB 350, and SB 100)	Energy providers associated with the project will be required to comply with RPS set by SB X1 2, SB 350, and SB 100. SB X1 2 requires investor-owned utilities, publicly-owned utilities, and electric service providers to increase purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. In the interim, each entity was required to procure an average of 20% of renewable energy for the period of January 1, 2011 through December 31, 2013; and will be required to procure an average of 25% by December 31, 2016, and 33% by 2020. SB 350 requires retail sellers and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030. SB 100 increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045.
	Million Solar Roofs Program (SB 1)	The project will participate in California's energy market, which is affected by implementation of the Million Solar Roofs Program. As part of Governor Schwarzenegger's Million Solar Roofs Program, California has set a goal to install 3,000 megawatts of new, solar capacity through 2016. The Million Solar Roofs Program is a ratepayer-financed incentive program aimed at

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		transforming the market for rooftop solar systems by driving down costs over time. The project will install rooftop solar on the Costco within 2 years of Costco opening.
	California Solar Initiative-Thermal Program	The project will participate in California's energy market, which is affected by implementation of the California Solar Initiative -Thermal Program. The program offers cash rebates of up to $4,366 on solar water heating systems for single-family residential customers. Multifamily and Commercial properties qualify for rebates of up to $800,000 on solar water heating systems and eligible solar pool heating systems qualify for rebates of up to $500,000. Funding for the California Solar Initiative-Thermal program comes from ratepayers of Pacific Gas & Electric, SCE, Southern California Gas Company, and San Diego Gas & Electric. The rebate program is overseen by the CPUC as part of the California Solar Initiative.
	Waste Heat and Carbon Emissions Reduction Act (AB 1613, AB 2791)	The project will participate in California's energy market, which is affected by implementation of the Waste Heat and Carbon Emissions Reduction Act. Originally enacted in 2007 and amended in 2008, this act directed the CEC, CPUC, and CARB to implement a program that would encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 megawatts, to increase combined heat and power use by 30,000 gigawatt-hour. The CPUC publicly owned electric utilities, and CEC duly established policies and procedures for the purchase of electricity from eligible combined heat and power systems. CEC guidelines require combined heat and power systems to be designed to reduce waste energy; have a minimum efficiency of 60%; have NO_x emissions of no more than 0.07 pounds per megawatt-hour; be sized to meet eligible customer generation thermal load; operate continuously in a manner that meets expected thermal load and optimizes efficient use of waste heat; and be cost effective, technologically feasible, and environmentally beneficial.
Vehicular/Mobile Sources		
General	SB 375 and SCAG RTP/SCS	As set forth below, the project complies with the applicable policies of, and is subject to, the SCAG adopted RTP/SCS, which CARB approved as meeting its regional GHG targets in 2016, and

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		which is designed to achieve regional GHG reductions from the land use and transportation sectors as required by SB 375 and the state's long-term climate goals.
Fuel	Low Carbon Fuel Standard (LCFS)/ EO S-01-07	Vehicle trips associated with the project will be subject to LCFS (EO S-01-07), which requires a 10% or greater reduction in the average fuel carbon intensity by 2020 with a 2010 baseline for transportation fuels in California regulated by CARB. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG goals.
	Cap-and-Trade Program	Use of gasoline associated with the project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, RBOB, distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 MT or more of CO2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Automotive Refrigerants	CARB Regulation for Small Containers of Automotive Refrigerant	Vehicles associated with the project will be subject to CARB's Regulation for Small Containers of Automotive Refrigerant. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5, Section 95360 et seq.) The regulation applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. The regulation achieves emission reductions through implementation of four requirements: 1) use of a self-sealing valve on the container, 2) improved labeling instructions, 3) a deposit and recycling program for small containers, and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90%, and rises to 95% beginning January 1, 2012.
Light-Duty Vehicles	AB 1493 (or the Pavley Standard)	Cars that drive to and from the project will be subject to AB 1493, which directed CARB to adopt a regulation requiring the maximum feasible and cost effective reduction of GHG emissions from new passenger vehicles. Pursuant to AB 1493, CARB adopted regulations that establish a declining fleet average standard for CO_2, CH_4, N_2O, and HFCs (air conditioner refrigerants) in new passenger vehicles and light-duty trucks beginning with the 2009 model year and phased-in through the 2016 model year. These standards are divided into those applicable to lighter and those applicable to heavier portions of the passenger vehicle fleet. The regulations will reduce "upstream" smog-forming emissions from refining, marketing, and distribution of fuel.
	Advanced Clean Car and ZEV Programs	Cars that drive to and from the project will be subject to the Advanced Clean Car and ZEV Programs. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. By 2025, new automobiles will emit 34% fewer global warming gases and 75% fewer smog-forming emissions. The ZEV program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018-2025 model years.
	Tire Inflation Regulation	Cars that drive to and from the project will be subject to the CARB Tire Inflation Regulation, which took effect on September 1, 2010, and applies to vehicles with a gross vehicle weight rating of 10,000 pounds or less. Under this regulation, automotive service providers must, inter alia, check and inflate each vehicle's tires to the recommended tire pressure rating, with

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service, and to keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the CARB, or its authorized representative upon request.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the project would be subject to EPA and NHTSA GHG and CAFE standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles. (75 FR 25324–25728 and 77 FR 62624–63200.)
Medium- and Heavy-Duty Vehicles	CARB In-Use On-Road Heavy-Duty Diesel Vehicles Regulation (Truck and Bus Regulation)	Any heavy-duty trucks associated with the project will be subject to CARB standards. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.
	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulations: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
	Heavy-Duty Vehicle GHG Emission Reduction Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB Heavy-Duty Vehicle GHG Emission Reduction Regulation applies to heavy-duty tractors that pull 53-foot or longer box-type trailers. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 1, Section 95300 et seq.) Fuel efficiency is improved through improvements in tractor and trailer aerodynamics and the use of low rolling resistance tires.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the project would be subject to EPA and NHTSA GHG and CAFE standards for medium- and heavy-duty vehicles. (76 FR 57106–57513.)
Water Use		
Water Use Efficiency	Emergency State Water Board Regulations	Water use associated with the project will be subject to emergency regulations. On May 18, 2016, partially in response to EO B-27-16, the State Water Board adopted emergency water use regulations (CCR, title 23, Section 864.5 and amended and re-adopted Sections 863, 864, 865, and 866). The regulation directs the State Water Board, Department of Water Resources, and CPUC to implement rates and pricing structures to incentivize water conservation, and calls upon water suppliers, homeowners' associations, California businesses, landlords and tenants, and wholesale water agencies to take stronger conservation measures.
	EO B-37-16	Water use associated with the project will be subject to Emergency EO B-37-16, issued May 9, 2016, which directs the State Water Resources Control Board to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The Water Board and Department of Water Resources will develop new, permanent water use targets to which the project will be subject. The Water Board will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.
	EO B-40-17	EO B-40-17 lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the State Water Resources Control Board to continue development of permanent prohibitions on wasteful water use to which the project will be subject.
	SB X7-7	Water provided to the project will be affected by SB X7-7's requirements for water suppliers. SB X7-7, or the Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. It also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.
	CALGreen Code	The project is subject to CALGreen Code's water efficiency standards, including a required 20% mandatory reduction in indoor water use. (CALGreen Code, Division 4.3.)
	California Water Code, Division 6, Part 2.10, Sections 10910–10915.	Development and approval of the project requires the development of a project-specific Water Supply Assessment.
	Cap-and-Trade Program	Electricity usage associated with water and wastewater supply, treatment and distribution would be subject to the Cap-and-Trade Program.
	California RPS (SB X1-2, SB 350, SB 100)	Electricity usage associated with water and wastewater supply, treatment and distribution associated with the project will be required to comply with RPS set by SB X1-2, SB 350, and SB 100.
Water Recycling	Water Reclamation Requirements for Recycled Water Use. State Water Resources Control Board Order WQ 2016-0068-DDW	These requirements replace 2014-0090-DWQ General Waste Discharge Requirements for Recycled Water Use, and establish standard conditions for recycled water use and conditionally delegates authority to an Administrator to manage a Water Recycling Program and issue Water Recycling Permits to recycled water users. Only treated municipal wastewater for non-potable uses can be permitted, such as landscape

Table 4.6-6. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		irrigation, crop irrigation, dust control, industrial/commercial cooling, decorative fountains, etc. Potable reuse is not covered.
	Regulations for Groundwater Replenishment Using Recycled Water	This emergency rulemaking by the California Department of Public Health (California Title of Regulations, Title 22, Sections 60301.050 et seq.), effective June 18, 2014, applied to Groundwater Replenishment Reuse projects utilizing surface application, which received initial permits from the Regional Board. The regulations address permitting and plan approval, sampling requirements, operation requirements, and ongoing reporting requirements.
	Policy for Water Quality Control for Recycled Water. State Water Resources Control Board Resolution No. 2009-0011, as amended by Resolution No. 2013-0003	The project would be subject to the State Water Resources Control Board statewide mandate to increase recycled water usage by 0.2 million acre-feet per year by 2020. However, recycled water is not currently available at the project site.

Notes: AB = Assembly Bill; CARB = California Air Resources Board; CEC = California Energy Commission; CFC = chlorofluorocarbon; CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; CPUC = California Public Utilities Commission; EO = Executive Order; EPA = Environmental Protection Agency; GHG = greenhouse gas; GWP = global warming potential; HCFC = hydrochlorofluorocarbon; HFC = hydrofluorocarbon; gpm = gallons per minute; MT = metric tons; N_2O = nitrous oxide; NHTSA = National Highway Traffic Safety Administration; PM = particulate matter; RPS = Renewable Portfolio Standard; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SB = Senate Bill; SCAG = Southern California Association of Governments; VOC = volatile organic compound; ZEV = zero emission vehicle

As shown, the project would be consistent with and would not conflict with the applicable GHG-reducing strategies of the state.

As part of the City's General Plan 2035, the City adopted a CAP in July 2011, which was prepared pursuant to CEQA Guidelines Section 15183.5. The City's CAP cannot be relied on for the analysis because the project buildout would be post-2020; thus, consistency with the City's CAP is included for informational purposes. Table 4.6-7 describes the project's consistency with those strategies, included for informational purposes.

Table 4.6-7. Consistency with City of Murrieta's Climate Action Plan Strategies

Climate Action Plan Strategies*	Project Consistency
Community Involvement Strategy. The community involvement strategy is intended to foster a sense of ownership of the ideas and actions to be carried out within the City. To create a successful plan that is supported by the community, who will ultimately make these changes.	*Not applicable.* This strategy does not apply to the project.

Table 4.6-7. Consistency with City of Murrieta's Climate Action Plan Strategies

Climate Action Plan Strategies*	Project Consistency
Land Use and Community Vision Strategy. The land use and community vision strategy encourages changes in the land use pattern to enable residents to reduce dependence on their cars to get around town.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City of Murrieta (City) and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location.
Transportation and Mobility Strategy. The transportation and mobility strategy identifies opportunities to improve mobility such as walking, bicycling, and transit use, and to decrease the need to drive.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location. Bicycle racks would be provided at each building on the retail portion of the project site east of Warm Springs Parkway. Preferred van pool parking would be provided to encourage use of carpooling by employees and customers.
Energy Use and Conservation Strategy. The energy use and efficiency strategy recommends ways to increase energy efficiency in existing buildings, enhance energy performance for new construction, and increase use of renewable energy.	*Consistent.* The project would include PDF-AQ/GHG-1 and PDF-AQ/GHG-2, which would reduce energy use and increase energy efficiency, including the installation of LED lamps, using recycled and renewable building materials, installation of cool roofs and building materials, installation of high-efficiency HVAC systems, installation of high-efficiency water heaters, recycling of construction waste, installation of electric vehicle (EV) charging stations (four initially tied to solar source power at the time of opening), installation of a 708-kilowatt solar photovoltaic system on the Costco warehouse roof within 2 years of opening, and solar ready roofs for the other roofs.
Water Use and Efficiency Strategy. The intent of this strategy is to conserve water through efficient use and conservation.	*Consistent.* The project would include PDF-AQ/GHG-1, which would conserve water, including planting drought-tolerant vegetation, installing water-efficient irrigation system, and installing high-efficiency restroom fixtures.
Waste Reduction and Recycling Strategy. The strategy builds on past City successes by increasing waste diversion, reducing consumption of materials that otherwise end up in landfills, and increasing recycling.	*Consistent.* Implemented under PDF-AQ/GHG-1 and PDF-AQ/GHG-2, all non-hazardous solid waste generated from the project site once operational (e.g., plastic and glass bottles, jars, paper, newspaper, metal containers, and cardboard) would be recycled to the greatest extent possible. Extensive recycling/reuse program would be implemented for warehouse and office space, including tires, cardboard, grease, plastics, and electronic waste. Furthermore, the project would use renewable building materials whenever possible, exterior skin metal would be 100% recycled, roof material would be 100% recycled, main building structure would be 100% recycled, and construction waste would be recycled whenever possible.

Table 4.6-7. Consistency with City of Murrieta's Climate Action Plan Strategies

Climate Action Plan Strategies*	Project Consistency
	Each trash enclosure facility would provide a recycling bin slot with each landfill trash bin slot for each tenant on the retail east of Warm Springs Parkway.
Open Space Strategy. This strategy expands the utilization of open space areas for habitat, storm water management, soil retention, air filtration, and cooling, aesthetic and economic value, local food security, increased and improved parks, preservation, and to create new open spaces.	*Not applicable.* Per the City's General Plan, the project area was not zoned as an open space land use type (e.g., park), and the project area does not include elements (e.g., creek, designated trail) that would require open space designation. The project includes outdoor eating and seating areas for customers and employees.

* **Source:** City of Murrieta 2011b.
Note: HVAC = heating, ventilation, and air conditioning.

Each of the City's CAP strategies described above includes goals to identify ways to reduce GHG emissions. For informational purposes, the project is shown to be consistent with the applicable strategies in the CAP.

Table 4.6-8 describes the project's consistency with applicable goals, included for informational purposes.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Community Involvement Strategy	
Increase Public Education Goal CIR-6: Alternative travel modes and facilities are available to serve residents and employers/employees and reduce vehicle miles traveled.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City of Murrieta (City) and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location.
Green the City Operations Goal CSV-15. A community taking a leadership role in resource conservation and reduction of GHG by implementing programs to improve municipal operations.	*Not applicable.* This goal does not apply to the project.
Green the City Fleet Goal HC-1: Application of innovative and model best practices in the community health field.	*Not applicable.* This goal does not apply to the project.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Land Use and Community Vision Strategy	
Balance of Land Uses to Reduce Vehicles Miles Traveled Goal LU-1: A complementary balance of land uses throughout the community that meets the needs of existing residents and businesses as well as anticipated growth, and achieves the community's vision.	*Consistent.* The project site is designated Commercial in the General Plan and the zoning is Regional Commercial, so the proposed project is consistent with the General Plan land use and zoning designation for the site. By locating a regional retail center at the site, it would reduce vehicle miles traveled in the community and in the region, since residents currently travel greater distances to the Costco in Temecula or Lake Elsinore. The project would also provide additional employment opportunities in the City, which would reduce vehicle miles traveled for residents who may otherwise be traveling outside the City for these retail jobs. Furthermore, under MM-AQ-2, the project would offer transit subsidies for 100% of employees of the project for 3 to 6 months.
Improve Jobs/Housing Balance Goal LU-4: A housing stock that meets the diverse needs of Murrieta's existing and future residents.	*Consistent* .By providing additional employment opportunities within the City, this project would improve the jobs/housing imbalance.
Improve Jobs/Housing Balance Goal LU-5: Promotion of quality industrial development that provides local employment opportunities.	*Not applicable.* This goal does not apply to the project.
Improve Jobs/Housing Balance Goal LU-6: Land use policy that encourages job retention and attraction.	*Consistent.* The project would generate approximately 285 jobs for residents in the City and surrounding communities.
Transit Oriented Development Goal LU-7: Economically viable, vital, and attractive commercial centers throughout the City that serve the needs of the community.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than commuting elsewhere.
Transit Oriented Development Goal LU-8: A community that provides opportunities for mixed use and/or transit-oriented development.	*Not applicable.* This goal does not apply to the project.
Pedestrian-Friendly Environment Goal LU-9: Land use patterns and urban design that support healthy and sustainable lifestyles and businesses.	*Consistent.* The project would include PDF-AQ/GHG-1 and PDF-AQ/GHG-2, which would reduce energy use, increase energy efficiency, and conserve water, which would help reduce environmental impacts.
Pedestrian-Friendly Environment Goal LU-10: A community that provides pedestrian-friendly environments for residential, commercial, business, and recreation uses.	*Consistent.* The project site would be accessible for bicycles and pedestrians. A pedestrian pathway would be constructed to ensure connectivity throughout the site and easy access from adjacent streets and neighboring properties. Bicycle racks would be provided on site.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Sustainable Economy Goal ED-3: A sound, stable, and diversified economic base.	*Consistent.* The project would generate approximately 285 jobs for residents in the City and surrounding communities, consistent with the City's economic development strategy.
Sustainable Economy Goal ED-4: Positive balance between the supply of retail opportunities and demand for goods and services will reduce the need to travel outside the City.	*Consistent.* Residents in the City and surrounding communities would be provided a nearer commercial/retail center rather than driving to another location.
Improve Jobs/Housing Balance Goal ED-5: An improved jobs/housing balance.	*Consistent.* The project would generate approximately 285 jobs for residents in the City and surrounding communities.
Improve Jobs/Housing Balance Goal ED-6: An educated and highly-skilled labor force.	*Consistent.* The project would generate 285 jobs for residents in the City and surrounding communities. The project would provide highly skilled employment opportunities, including for managerial staff.
Improve Jobs/Housing Balance Goal ED-8: Strategic approach to economic growth.	*Consistent.* The project would generate 285 jobs for residents in the City and surrounding communities. The project would increase sales tax generated by the goods sold at the project site.
Sustainable Economy Goal ED-10: A revitalized and economically stable Historic Downtown Murrieta.	*Not applicable.* This goal does not apply to the project.
Green Economy Goal AQ-6: Stationary source pollution (point source and area source) are minimized through existing and future regulations and new technology.	*Consistent.* The gasoline dispensing facility is a stationary source that would be required to be permitted through SCAQMD and comply with all applicable rules and regulations to reduce emissions.
Transportation and Mobility Strategy	
Increase Trail Connectivity Goal LU-22: Natural and visual resources are valued resources to maintain the rural character of the Los Alamos Hills.	*Not applicable.* This goal does not apply to the project.
Reduce Driving Goal LU-24: Historic Murrieta as the City's cultural, civic, and community center.	*Not applicable.* This goal does not apply to the project.
Support High Speed Rail Goal LU-25: Collaboration with Federal, State, County, and other regional agencies and authorities to ensure compliance with existing and future legislation that affects the City of Murrieta.	*Not applicable.* This goal does not apply to the project.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Support Multi-Modal Transportation Goal CIR-1: A circulation system that serves the internal circulation needs of the City, while also addressing the inter-community or through travel needs.	*Consistent.* The project would include construction of an extension of Warm Springs Parkway, including a signalized intersection, from where it ends at the southern end of the project site. Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site could walk to the project site. Residents in the City and surrounding communities would also be provided a closer commercial/retail center rather than driving to another location. The project site would be accessible for bicycles and pedestrians. Bike racks would be provided at each building east of Warm Springs Parkway. A pedestrian pathway would be constructed to ensure connectivity throughout the site and easy access from adjacent streets and neighboring properties.
Promote Pedestrian Safety Goal CIR-2: A comprehensive circulation system that promotes safety.	*Consistent.* Proposed project driveways and internal circulation elements have been designed to reflect the specific opportunities and constraints within the project site with safety in mind. All intersections, circulation improvements, and access to the site would be designed consistent with City roadway standards and would not create a hazard for vehicles, bicycles, or pedestrians entering or exiting the site. A pedestrian pathway would be constructed to ensure connectivity throughout the site and easy access from adjacent streets and neighboring properties.
Improve Public Transportation Goal CIR-5: A supported regional transportation system that serves existing and future travel between Murrieta and other population and employment centers within southwest Riverside County and the larger region, and that accommodates the regional travel needs of developing areas outside the City.	*Consistent.* The project would include construction of an extension of Warm Springs Parkway, including a signalized intersection, from where it ends at the southern end of the project site. Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center.
Reduce Driving Goal CIR-6: Alternative travel modes and facilities are available to serve residents and employers/employees and reduce vehicle miles traveled.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location. Furthermore, under PDF-AQ/GHG-1 and PDF-AQ/GHG-2, the project would install electric vehicle (EV) charging stations, four of which would be tied to solar facilities on the roofs in the retail east of Warm Springs Parkway upon opening.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Increase Walking Goal CIR-7: Residential areas and activity centers are accessible to all pedestrians, including persons with disabilities or having special accessibility needs.	*Not applicable.* This goal does not apply to the project.
Increase Trail Connectivity Goal CIR-8: Development, expansion, and maintenance of a network of bicycle, pedestrian, and multi-use trails that allows residents to travel between parks, schools, neighborhoods, and other major destinations without driving.	*Not applicable.* This goal does not apply to the project.
Goal AQ-4: Mobile source emissions are reduced by providing a balance of jobs and housing that serve the needs of the community.	*Consistent.* Implementation of the project would generate approximately 285 jobs that could be available for residents of the City and surrounding communities. Residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location.
Improve Air Quality by Reducing Driving Goal AQ-5: Air quality is improved through an efficient circulation system, reduced traffic congestion, and reduced vehicle miles traveled.	*Consistent.* Bus Route 61 serviced by the Riverside Transit Agency would provide residents and employers/employees an alternate mode of transportation to the future commercial/retail center. Adjacent residents east of the project site would be able to walk to the project site. Residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than driving to another location. The project site would be accessible for bicycles and pedestrians. A pedestrian pathway would be constructed to ensure connectivity throughout the site and easy access from adjacent streets and neighboring properties.
Energy Use and Conservation Strategy	
Renewable Energy and Efficiency Goal CSV-12: Energy conservation and the generation of energy from renewable sources is prioritized as part of an overall strategy to reduce greenhouse gas emissions.	*Consistent.* The project would include PDF-AQ/GHG-1 and PDF-AQ/GHG-2, which would reduce energy use and increase energy efficiency, including the installation of LED lamps, using recycled and renewable building materials, installation of cool roofs and building materials, installation of high-efficiency HVAC systems, installation of high-efficiency water heaters, recycling of construction waste, installation of a 708-kilowatt solar photovoltaic system on the roof of the Costco within 2 years of opening, and construction of solar-ready roofs on the remaining roof tops.
Green Building Goal CSV-14: A community that encourages and incentivizes the sustainable development of buildings and neighborhoods, particularly with respect to durability, energy and water use, and transportation impacts.	*Consistent.* The project would include PDF-AQ/GHG-1 and PDF-AQ/GHG-2, which would reduce energy use, increase energy efficiency, and conserve water that would help reduce environmental impacts.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Energy Efficient Design Goal 2: Conserve and enhance the quality of existing housing and residential neighborhoods in Murrieta.	*Not applicable.* This goal does not apply to the project.
Water Use and Efficiency Strategy	
Increase Use of Recycled Water Goal INF-2: Infrastructure for recycled water is expanded throughout Murrieta for irrigation and other non-potable uses.	*Not applicable*. Recycled water is not available to the site; however, under **PDF-AQ/GHG-2**, the project would install non-potable irrigation lines in preparation for recycled water becoming available in the future.
Increase Water Conservation Goal CSV-1: A community that conserves, protects, and manages water resources to meet long-term community needs, including surface waters, groundwater, imported water supplies, storm water, and waste water.	*Consistent.* The project would include **PDF-AQ/GHG-1**, which would conserve water, including planting drought-tolerant vegetation; installing water-efficient irrigation system; and installing high-efficiency restroom fixtures. The project has been designed to include landscape throughout the project site that would help with runoff and stormwater management. A system of bio-filtration planters at the perimeter of the parcel and within the parking area would provide an ecologically responsible method of on-site stormwater treatment.
Reduce Water for Landscaping Goal CSV-2: Murrieta promotes compliance with requirements from the State and appropriate agencies regarding comprehensive water conservation measures in buildings and landscaping.	*Consistent.* The project would include **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, which would conserve water, including planting drought-tolerant vegetation and installing a water-efficient irrigation system. The project has been designed to include landscape throughout the project site that would help with runoff and stormwater management. A system of bio-filtration planters at the perimeter of the parcel and within the parking area would provide an ecologically responsible method of on-site stormwater treatment. Recycled water would be used for irrigation and landscape where feasible.
Waste Reduction and Recycling Strategy	
Reduce Waste through Education Goal INF-1: New development and redevelopment is coordinated with the provision of adequate infrastructure for water, sewer, storm water, and energy.	*Consistent.* Upon project approval, all infrastructure systems would be adequate to serve the project.

Table 4.6-8. Consistency with City of Murrieta's Climate Action Plan Strategy Goals

Climate Action Plan Strategy Goals*	Project Consistency
Increase Waste Diversion Goal CSV-13: Solid waste is diverted from landfills through waste reduction, re-use, and recycling.	*Consistent.* The project would incorporate recycling to divert waste from landfills. Under **PDF-AQ/GHG-1**, extensive recycling/reuse program would be implemented for warehouse and office space, including tires, cardboard, grease, plastics, and electronic waste. Furthermore, the project would use renewable building materials whenever possible, exterior skin metal would be 100% recycled, roof material would be 100% recycled, main building structure would be 100% recycled, and construction waste would be recycled whenever possible. Each trash enclosure in the retail east of Warm Springs Parkway would have a recycling bin slot for each landfill bin slot for each tenant.
Open Space Strategy	
Goal CSV-9: A community that promotes the growth of an urban forest and water-efficient landscaping, recognizing that plants provide natural services such as habitat, storm water management, soil retention, air filtration, and cooling, and also have aesthetic and economic value.	*Consistent.* The project has been designed to include landscape throughout the project site that will help with runoff and stormwater management. A system of bio-filtration planters at the perimeter of the parcel and within the parking area would provide an ecologically responsible method of on-site stormwater treatment.
Improve Local Food Security Goal CSV-10: Fresh food is grown locally and made available through multiple venues that maintain a link to the City's agricultural heritage and promote healthy eating.	*Not applicable.* This goal does not apply to the project.
Preserve Open Space Goal ROS-7: Open space areas are planned to protect, conserve, and utilize resources of unique character and value of the community.	*Not applicable.* Per the City's General Plan, the project area was not zoned as an open space land use type (e.g., park), and the project area does not include elements (e.g., creek, designated trail) that would require open space designation. The project also includes outdoor eating and seating areas for customers and employees.
Integrate New Development and Open Space Goal ROS-8: New development is part of a coordinated system of open space, parkland, recreation facilities, and trails.	*Not applicable.* Per the City's General Plan, the project area was not zoned as an open space land use type (e.g., park), and the project area does not include elements (e.g., creek, designated trail) that would require open space designation. The project also includes outdoor eating and seating areas for customers and employees.
Create New Open Spaces Goal ROS-9: Public plazas or green spaces provide additional open space opportunities for existing and future residents and employees.	*Not applicable.* Per the City's General Plan, the project area was not zoned as an open space land use type (e.g., park), and the project area does not include elements (e.g., creek, designated trail) that would require open space designation. The project also includes outdoor eating and seating areas for customers and employees.

* **Source:** City of Murrieta 2011b.
Notes: GHG = greenhouse gas; SCAQMD = South Coast Air Quality Management District; HVAC = heating, ventilation, and air conditioning.

As shown in Table 4.6-8, the project demonstrates consistency with the City's Climate Action Plan Strategy Goals, included for informational purposes.

The City's General Plan includes various goals and policies that promote the use of clean and renewable energy sources, facilitate alternative modes of transportation and reduce vehicle miles travelled, reduce waste, conserve water, and promote the efficient and sustainable use of energy. The Conservation Element includes goals and policies that result in co-benefits of reducing GHG emissions. Table 4.6-9 summarizes the project's consistency with these policies.

Table 4.6-9. Consistency with City of Murrieta's General Plan Policies

General Plan Policies*	Project Consistency
Policy CSV-2.1. Ensure that all developments comply with water efficiency requirements, as mandated by the applicable Building Code.	*Consistent.* The project would include **PDF-AQ/GHG-2**, which would conserve water, including planting drought-tolerant vegetation, installing water-efficient irrigation system, and installing high-efficiency restroom fixtures.
Policy CSV-12.1. Ensure that all developments comply with energy efficiency requirements as mandated by the applicable Building Code.	*Consistent.* The project would comply with energy efficiency requirements as mandated by the applicable building code. Additionally, the project would include **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, which would reduce energy use and increase energy efficiency, including the installation of LED lamps, using recycled and renewable building materials, installation of cool roofs and building materials, installation of high-efficiency HVAC systems, installation of high-efficiency water heaters, recycling of construction waste, installation of a 708-kilowatt solar photovoltaic system on the roof of the Costco within 2 years of opening, and construction of solar-ready roofs on the remaining roof space.
Policy CSV-12.3. Support the on-site installation and use of renewable energy generation systems for residential, commercial, institutional, and industrial uses.	*Consistent.* Under **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, the project would install a 708-kilowatt solar photovoltaic system on the roof of the Costco within 2 years of opening and design the remaining roofing structure to accommodate the additional structural load of solar panels to allow for the flexibility for possible future installation. The project would install a 708-kilowatt photovoltaic system on the roof of the Costco within 2 years of opening. The retail east of Warm Springs Parkway would have four of the EV stations tied to a solar source on two buildings upon opening.
Policy CSV-13.1. Continue to comply with the landfill diversion requirements of the Integrated Waste Management Program.	*Consistent.* Under **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, the project would incorporate recycling to divert waste from landfills. Extensive recycling/reuse program would be implemented for warehouse and office space, including tires, cardboard, grease, plastics, and electronic waste. Furthermore, the project would use renewable building materials whenever possible, exterior skin metal would be 100% recycled, roof material would be 100% recycled, the main building structure would be 100% recycled, and construction waste would be recycled whenever possible. Each trash enclosure in the retail east of Warm Springs Parkway would have a recycling bin slot for each landfill bin slot for each tenant.
Policy CSV-13.2. Ensure that non-residential and	*Consistent.* Under **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, the

Table 4.6-9. Consistency with City of Murrieta's General Plan Policies

General Plan Policies*	Project Consistency
multi-family developments provide readily accessible areas for recycling (at a minimum) paper, corrugated cardboard, glass, plastics and metals, as required by California law.	project would incorporate recycling as applicable to divert waste from landfills. Extensive recycling/reuse program would be implemented for warehouse and office space, including tires, cardboard, grease, plastics, and electronic waste. Each trash enclosure in the retail east of Warm Springs Parkway would have a recycling bin slot for each landfill bin slot for each tenant.
Policy CSV-14.1. Ensure all applicable construction projects comply with the California State Green Building Standards Code.	*Consistent.* The project would include **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, which would reduce energy use, increase energy efficiency, and conserve water that would help reduce environmental impacts.
Policy CSV-14.2. Encourage the integration of other principles of green building into development standards and guidelines, looking for opportunities to realize other benefits such as improved health and increased bicycle transportation.	*Consistent.* The project would include **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, which would reduce energy use, increase energy efficiency, and conserve water that would help reduce environmental impacts.

* **Source:** City of Murrieta 2011a.
Note: HVAC = heating, ventilation, and air conditioning.

As discussed in Table 4.6-9, the project would be consistent with the City's General Plan Policies.

The Scoping Plan (approved by CARB in 2008 and updated in 2014 and 2017) provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific projects, nor is it intended to be used for project-level evaluations.[5] Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area-source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., LCFS), among others.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. Table 4.6-10 highlights measures that have been, or will be, developed under the Scoping Plan, and the project's consistency with these Scoping Plan measures. To the extent that these regulations are applicable to the proposed project, its inhabitants, or uses, the project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law.

Table 4.6-10. Project Consistency with Scoping Plan Greenhouse Gas Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency

[5] The Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009).

Table 4.6-10. Project Consistency with Scoping Plan Greenhouse Gas Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	*Consistent.* The project's customers and employees would purchase vehicles in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.
Low Carbon Fuel Standard	T-2	*Consistent.* Motor vehicles driven by the project's customers and employees would use compliant fuels.
Regional Transportation-Related GHG Targets	T-3	*Consistent.* The project location would be convenient for customers and employees to travel to shopping and work.
Vehicle Efficiency Measures 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	*Consistent.* The project's tire center would purchase tires in compliance with EPA and NHTSA standards that are in effect at the time of tire purchase.
Ship Electrification at Ports (Shore Power)	T-5	*Not applicable.*
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency 6. Clean Ships 7. Vessel Speed Reduction	T-6	*Not applicable.*
Heavy-Duty Vehicle GHG Emission Reduction 1. Tractor-Trailer GHG Regulation 2. Heavy-Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I)	T-7	*Consistent.* The project's delivery trucks would comply with EPA and NHTSA federal Phase 2 Standards that are in effect at the time of vehicle purchase.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Project	T-8	*Consistent.* The project's delivery trucks would comply with EPA and NHTSA federal Phase 2 Standards that are in effect at the time of vehicle purchase.
High-Speed Rail	T-9	*Not applicable.*
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	*Consistent.* The project would comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction. The project would implement **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, which include the use of high-efficiency HVAC units,

Table 4.6-10. Project Consistency with Scoping Plan Greenhouse Gas Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
		installation of reflective roof material to lower heat absorption in the hot summer months, and indoor and outdoor lighting fixtures to be controlled by an overall energy management system. In addition, the project would install a 708-kilowatt solar photovoltaic system on the roof of the Costco within 2 years of opening and include solar-ready roofs on the remaining roof tops to accommodate the solar equipment that may be installed at a future date.
Energy Efficiency (Natural Gas)	CR-1	*Consistent.* The project would comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for natural gas appliances and other devices at the time of building construction. The project would implement **PDF-AQ/GHG-1**, which includes installing high-efficiency bathroom faucets and toilets.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	*Consistent.* The project would implement **PDF-AQ/GHG-1**, which includes installing direct vented gas water heaters that are highly efficient.
Combined Heat and Power	E-2	*Not applicable.*
Renewable Portfolios Standard (33% by 2020)	E-3	*Consistent.* The electricity used by the project would benefit from reduced GHG emissions resulting from increased use of renewable energy sources with implementation of **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**.
SB 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	*Consistent.* Under **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**, the project would install a 708-kilowatt solar photovoltaic system on the roof of the Costco within 2 years of opening and the remaining roofs would be solar-ready roofs. The retail east of Warm Springs Parkway would open with four EV stations tied to solar source on two roofs.
Water Sector		
Water Use Efficiency	W-1	*Consistent.* The project would implement **PDF-AQ/GHG-1**, which includes installation of low-flow bathroom faucets and low-flow toilets. In regard to outdoor water, the project would install water-efficient devices and landscaping in accordance with applicable ordinances, including use of drought-tolerant species appropriate to the climate and region.
Water Recycling	W-2	*Not feasible.* Recycled water is not available to the site; however, the project would install non-potable irrigation lines in preparation for recycled water becoming available in the future, as implemented under **PDF-AQ/GHG-1** and **PDF-AQ/GHG-2**.
Water System Energy Efficiency	W-3	*Not applicable.* This is applicable for the transmission and treatment of water, but it is not applicable for the project.
Reuse Urban Runoff	W-4	*Not feasible.* Per the applicant, reuse of urban water on

Table 4.6-10. Project Consistency with Scoping Plan Greenhouse Gas Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
		site was determined to not be feasible.
Renewable Energy Production	W-5	*Not applicable.* Applicable for wastewater treatment systems.
Green Buildings		
State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	*Consistent.* The project would be required to be constructed in compliance with state or local green building standards in effect at the time of building construction, which currently includes the 2019 Title 24 and 2019 CALGreen standards.
Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	*Consistent.* The project's buildings would meet green building standards that are in effect at the time of design and construction.
Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	*Consistent.* The project would be required to be constructed in compliance with local green building standards in effect at the time of building construction, which currently includes the 2019 Title 24 and 2019 CALGreen standards.
Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-1	*Not applicable.* This is applicable for existing buildings only. It is not applicable for the project except as future standards may become applicable to existing buildings.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	*Not applicable.*
Oil and Gas Extraction GHG Emission Reduction	I-2	*Not applicable.*
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	*Not applicable.*
Refinery Flare Recovery Process Improvements	I-4	*Not applicable.*
Work with the local air districts to evaluate amendments to their existing leak detection and repair rules for industrial facilities to include methane leaks	I-5	*Not applicable.*
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	*Not applicable.*
Increasing the Efficiency of Landfill Methane Capture	RW-2	*Not applicable.*
Mandatory Commercial Recycling	RW-3	*Consistent.* During both construction and operation of the project, the project would comply with all state regulations related to solid waste generation, storage, and disposal, including the California Integrated Waste Management Act, as amended. During construction, all waste would be recycled to the maximum extent possible. During operation, under **PDF-AQ/GHG-1** and **PDF-**

Table 4.6-10. Project Consistency with Scoping Plan Greenhouse Gas Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
		AQ/GHG-2, an extensive recycling/reuse program would be implemented for the Costco Warehouse and office space, including for tires, cardboard, grease, plastics, and electronic waste. Each trash enclosure in the retail east of Warm Springs Parkway would have a recycling bin slot for each landfill bin slot for each tenant.
Increase Production and Markets for Compost and Other Organics	RW-3	*Not applicable.*
Anaerobic/Aerobic Digestion	RW-3	*Not applicable.*
Extended Producer Responsibility	RW-3	*Not applicable*. Applicable to product designer and producers.
Environmentally Preferable Purchasing	RW-3	*Not applicable.* Applicable to product designer and producers.
Forests Sector		
Sustainable Forest Target	F-1	*Not applicable.*
High GWP Gases Sector		
Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	*Consistent.* The project's customers and employees would be prohibited from performing air conditioning repairs and would be required to use professional servicing.
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	*Not applicable.*
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	*Not applicable.*
Limit High GWP Use in Consumer Products	H-4	*Not applicable.*
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	*Not applicable.*
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	*Not applicable.*
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	*Not applicable.*
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	*Not applicable.*
Agriculture Sector		
Methane Capture at Large Dairies	A-1	*Not applicable.*

Source: CARB 2017.
Notes: CARB = California Air Resources Board; GHG = greenhouse gas; SB = Senate Bill; EPA = U.S. Environmental Protection Agency; NHTSA = National Highway Traffic Safety Administration; HVAC = heating, ventilation, and air conditioning; SF_6 = sulfur hexafluoride; GWP = global warming potential.

Based on the analysis in Table 4.6-10, the project would be consistent with the applicable strategies and measures in the Scoping Plan.

SCAG's 2016 RTP/SCS is a regional growth-management strategy that targets per capita GHG reduction from passenger vehicles and light-duty trucks in the Southern California region pursuant to SB 375. In addition to demonstrating the region's ability to attain and exceed the GHG emission-reduction targets set forth by CARB, the 2016 RTP/SCS outlines a series of actions and strategies for integrating the transportation network with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. Thus, successful implementation of the 2016 RTP/SCS would result in more complete communities with a variety of transportation and housing choices, while reducing automobile use. The SCAG 2016 RTP/SCS provides employee estimates for the years 2012 and 2040. To provide an interim year comparison, this analysis interpolates the City's projected employee population in the project's operational year (2021) based on the average growth rate to compare with the estimated increase in employees generated by the project. The SCAG 2016 RTP/SCS estimates that the City's employee population will increase approximately 30% between 2012 and 2040. Regarding households, the SCAG 2016 RTP/SCS estimates that the City's total households will increase approximately 25% between 2012 and 2040. The project's 285 potential employees would not exceed the interpolated annual growth rate of 782 employees a year for the City. Based on these considerations, vehicle trip generation and planned development for the site are concluded to have been anticipated in the SCAG growth projections because the land use designation and zoning would remain the same (i.e., Regional Commercial). The addition of project-generated employees to the City's estimated employee population would not exceed the SCAG 2016 RTP/SCS forecasted population.

With regard to individual developments, such as the project, the strategies and policies set forth in the 2016 RTP/SCS can be grouped into the following three categories: (1) reduction of vehicle trips and vehicle miles traveled (VMT); (2) increased use of alternative fuel vehicles; and (3) improved energy efficiency. The project's consistency with these three strategy categories is presented below.

1. Consistency with VMT Reduction Strategies and Policies

The project's consistency with this aspect of the 2016 RTP/SCS is demonstrated via the project's land use characteristics and features that would reduce vehicular trips and VMT, as well as the project's consistency with the regional growth forecast assumed in the 2016 RTP/SCS for the City. As discussed in Section 4.2.4 of the EIR, vehicle trip generation and planned development for the project site are concluded to have been anticipated in the SCAG 2016 RTP/SCS growth projections because the project would be consistent with the current zoning and land use designation. Regarding VMT reduction characteristics, the project would be serviced by the Riverside Transit Agency bus route 61, which provide residents and employers/employees an alternate mode of transportation to the project site, and the project would provide 100% of the project employees transit subsidies for 3 to 6 months. Furthermore, the residents in the City and surrounding communities would also be provided a nearer commercial/retail center rather than driving to other, more distant locations. Furthermore, the project would also provide additional employment opportunities in the City, which reduces VMT for residents who may otherwise be traveling outside the City for these retail jobs. The project site would be accessible for bicycles and pedestrians. A pedestrian pathway would be constructed to ensure connectivity throughout the site and easy access from adjacent streets and neighboring properties. Bicycle racks would be provided on site.

Furthermore, the proposed Costco warehouse will operate on a members-only basis. There are currently existing warehouses in Temecula and Lake Elsinore within the trade area of the proposed Costco. It is anticipated that up to 80% of Costco members who will shop at the new warehouse are currently shopping at existing Costco

warehouses. As the proposed Costco has been purposely sited to be closer to the homes of those members in the trade area, it is expected the trip lengths, and VMT, of these members will decrease as compared to existing conditions. Nonetheless, to provide a more conservative analysis, the air quality and GHG analyses assumed that all trips to the Costco would be new and did not reflect any VMT reduction.

2. Increased Use of Alternative Fueled Vehicles Policy Initiative

The second goal of the 2016 RTP/SCS with regard to individual development projects such as the project is to increase alternative-fueled vehicles to reduce per capita GHG emissions. This 2016 RTP/SCS policy initiative focuses on accelerating fleet conversion to electric or other near-zero-emission technologies. The project would be consistent with these strategies since EV charging stations would be implemented into the project, including designating 17 (i.e., 5%) parking spaces as EV charging spaces capable of supporting future electric vehicle supply equipment.

3. Energy Efficiency Strategies and Policies

The third important focus within the 2016 RTP/SCS for individual developments such as the proposed project involves improving energy efficiency (e.g., reducing energy consumption) to reduce GHG emissions. The 2016 RTP/SCS goal is to actively encourage and create incentives for energy efficiency where possible. The project would comply with the current CALGreen and Title 24 standards. Additionally, the project applicant committed to installing LED lamps, cool roofs and building materials, high-efficiency HVAC systems, high-efficiency bathroom faucets, high-efficiency water heaters, EV charging stations, a 708-kilowatt solar photovoltaic system, and solar-ready roofs.

Based on the analysis above, the proposed project would be consistent with the SCAG 2016 RTP/SCS.

Conclusion

The City has taken steps to address climate change impacts at a local level. In 2011, the City Council adopted a CAP. The purpose of the City's CAP is to guide the development, enhancement, and implementation of actions that would reduce the City's GHG emissions by 15% below 2009 baseline emission levels by 2020. Actions to be taken to achieve this goal are outlined in the City's CAP. In addition, as summarized in Table 4.6-9, the City's General Plan includes various goals and policies that promote the use of clean and renewable energy sources, facilitate alternative modes of transportation and reduce vehicle miles traveled, reduce waste, conserve water, and promote the efficient and sustainable use of energy. Table 4.6-7 and Table 4.6-8 describe the project's consistency with the City's CAP strategies and goals. As stated in the City's CAP, projects that demonstrate consistency with the goals, strategies, actions, and emission reduction targets contained in the City's CAP would have a less-than-significant impact on climate change. Since Table 4.6-7 and Table 4.6-8 demonstrate the project's consistency with those strategies and goals, the project would be consistent with the City's climate action strategies and would not result in a conflict with the adopted CAP.

SCAG's 2016 RTP/SCS is a regional growth-management strategy that targets per-capita GHG reduction from passenger vehicles and light-duty trucks in Southern California. The 2016 RTP/SCS incorporates local land use projections and circulation networks in city and county general plans. The City's Zoning Map shows the site as being zoned Regional Commercial (City of Murrieta 2014). The project would be consistent with the current zoning and land use designation. The project would add 285 full-time employees.

The project would not impede the attainment of the GHG reduction goals for 2030 or 2050 identified in EO S-3-05 and SB 32. EO S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. SB 32 establishes for a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, ensures that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. Although there are no established protocols or thresholds of significance for that future year analysis, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014).

CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the First Update to the Climate Change Scoping Plan states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the Second Update, which states the following (CARB 2017):

> The Proposed Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while also identifying new, technologically feasibility and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Proposed Plan is developed to be consistent with requirements set forth in AB 32, SB 32, and AB 197.

The project is consistent with the GHG emission reduction measures in the Scoping Plan. The project is consistent with the Scoping Plan, 2016 RTP/SCS, City's General Plan, and the City's CAP, which all promote economic growth while achieving greater energy efficiency. The project would be consistent with SCAG's RTP/SCS, SB 32, and EO S-3-05 by being consistent with VMT reduction strategies and policies, increasing the use of alternative fueled vehicles, and implementing energy efficiency strategies. The project would not conflict with any plans adopted with the purpose of reducing GHG emissions; therefore, the proposed project's impacts with respect to GHG emissions would be less than significant.

4.6.5 Mitigation Measures

No mitigation is required.

4.6.6 Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

4.6.7 Cumulative Impacts

As previously discussed in Section 4.6.1, Existing Conditions, GHG emissions inherently contribute to cumulative impacts, and, thus, any additional GHG emissions would result in a cumulative impact. Development of the project site would be consistent with the City's CAP climate action strategies and would not result in a conflict with the adopted CAP; would support the SCAG 2016 RTP/SCS by being consistent with the current zoning and land use designation and through incorporation of energy and water-efficient features; and would demonstrate consistency with the Scoping Plan. Given the project's consistency with statewide, regional, and local plans adopted for the purpose of reducing GHG emissions, it is concluded that the project's incremental contribution to GHG emissions and their effects on climate change would not be cumulatively considerable. Therefore, the project would result in a less than cumulatively considerable GHG emissions impact.

4.6.8 References Cited

CalRecycle (California Department of Resources Recycling and Recovery). 2012. *AB 341 Final Statement of Reasons: Mandatory Commercial Recycling Regulations*. Accessed August 2016. http://www.calrecycle.ca.gov/laws/rulemaking/archive/2012/MCR/RuleDocs/FSOR.pdf.

CAPCOA (California Air Pollution Control Officers Association). 2008. *CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*. January 2008.

CARB (California Air Resources Board). 2008. Climate Change Scoping Plan: A Framework for Change. December 2008. https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.

CARB. 2014. *First Update to the Climate Change Scoping Plan Building on the Framework Pursuant to AB 32 – The California Global Warming Solutions Act of 2006*. May 2014. Accessed August 2014. http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

CARB. 2016. "Glossary of Air Pollution Terms." CARB website. Accessed June 2016. http://www.arb.ca.gov/html/gloss.htm.

CARB. 2017. The 2017 Climate Change Scoping Plan Update. January 20. Accessed January 2017. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

CARB. 2018. "California Greenhouse Gas Inventory – 2018 Edition." July 11, 2018. Accessed August 2018. http://www.arb.ca.gov/cc/inventory/data/data.htm.

CAT (California Climate Action Team). 2006. *Climate Action Team Report to the Governor Schwarzenegger and the Legislature*. Sacramento, California. March 2006. Accessed August 2016. http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF.

CAT. 2010. *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*. Sacramento, California: California Environmental Protection Agency, Climate Action Team. December 2010.

CAT. 2016. Climate Action Team Reports. Accessed December 2016. http://climatechange.ca.gov/climate_action_team/reports/index.html.

CEC (California Energy Commission). 2018. *2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*. December 2018. https://www.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf.

City of Murrieta. 2011a. *Murrieta General Plan 2035 – Chapter 8: Conservation Element.* Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5178.

City of Murrieta. 2011b. General Plan Appendix P: Murrieta Climate Action Plan. Adopted July 19, 2011. Accessed August 2018. https://www.murrietaca.gov/civicax/filebank/ blobdload.aspx? BlobID=5253.

City of Murrieta. 2014. Murrieta Zoning Map. Adopted June 17, 2014. http://www.murrietaca.gov/civicax/ filebank/blobdload.aspx?BlobID=6702.

CNRA (California Natural Resources Agency). 2009. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB 97*. December 2009.

CNRA. 2014. *Safeguarding California: Reducing Climate Risk—An Update to the 2009 California Climate Adaptation Strategy.* July 2014. http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_ Plan_July_31_2014.pdf.

CRNA. 2016. Safeguarding California: Implementing Action Plans. March 2016. http://resources.ca.gov/docs/ climate/safeguarding/Safeguarding%20California-Implementation%20Action%20Plans.pdf.

CNRA. 2017. Draft Report Safeguarding California Plan: 2017 Update, California's Climate Adaptation Strategy. May 2017. http://resources.ca.gov/wp-content/uploads/2017/05/ DRAFT-Safeguarding-California-Plan-2017-Update.pdf.

CNRA. 2018a. *California's Fourth Climate Change Assessment – Los Angeles Regional Report*. https://www.energy.ca.gov/sites/default/files/2019-07/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles.pdf.

CNRA. 2018b. Safeguarding California Plan: 2018 Update, California's Climate Adaptation Strategy. January 2018. http://resources.ca.gov/docs/climate/safeguarding/update2018/ safeguarding-california-plan-2018-update.pdf.

EPA (U.S. Environmental Protection Agency). 2007. Energy Independence and Security Act of 2007. Accessed December 2016. https://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf.

EPA. 2016. "Glossary of Climate Change Terms." August 9, 2016. Accessed August 2016. https://www3.epa.gov/climatechange/glossary.html.

EPA. 2017a. "Climate Change." Last updated January 19, 2017. Accessed January 2017. https://www.epa.gov/climatechange.

EPA. 2017b. *Carbon Pollution Standards for Cars and Light Trucks to Remain Unchanged Through 2025*. January 13. Accessed February 2017. https://www.epa.gov/newsreleases/carbon-pollution-standards-cars-and-light-trucks-remain-unchanged-through-2025.

EPA. 2018. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2016* EPA 430-R-1B-003. Washington, D.C.: EPA. April 12, 2018. Accessed August 2018. https://www.epa.gov/ sites/production/files/2018-01/documents/2018_complete_report.pdf.

EPA and NHTSA (U.S. Environmental Protection Agency and National Highway Traffic Safety Administration). 2016. Regulations and Standards: Heavy-Duty. EPA and DOT Finalize Greenhouse Gas and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. Last updated August 2016. https://www.epa.gov/newsreleases/epa-and-dot-finalize-greenhouse-gas-and-fuel-efficiency-standards-heavy-duty-trucks-0.

IPCC (Intergovernmental Panel on Climate Change). 1995. *Climate Change 1995: The Science of Climate Change*.

IPCC. 2007. *IPCC Fourth Assessment Synthesis of Scientific-Technical Information Relevant to Interpreting Article 2 of the U.N. Framework Convention on Climate Change*.

IPCC. 2013. *Climate Change 2013: The Physical Science Basis—Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by T.F. Stocker, D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley. Cambridge, United Kingdom and New York, New York: Cambridge University Press.

IPCC. 2014. *Climate Change 2014 Synthesis Report: A Report of the Intergovernmental Panel on Climate Change.* Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Accessed August 2016. http://www.ipcc.ch/report/ar5/syr/.

IPCC. 2018. "Summary for Policymakers." In *Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Accessed July 2019. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

OEHHA (Office of Environmental Health Hazard Assessment). 2018. *Indicators of Climate Change in California.* May 9, 2018. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf

OPR (Governor's Office of Planning and Research). 2018. *Discussion Draft CEQA and Climate Change Advisory.* Accessed March 2019. http://opr.ca.gov/docs/20181228-Discussion_Draft_Climate_Change_Adivsory.pdf.

PBL (PBL Netherlands Environmental Assessment Agency). 2018. *Trends in Global CO2 and Total Greenhouse Gas Emissions.* December 2018. https://www.pbl.nl/sites/default/files/downloads/pbl-2018-trends-in-global-co2-and-total-greenhouse-gas-emissons-2018-report_3125_0.pdf.

PV Watts. 2019. PVWatts Calculator. Accessed February 2019. https://pvwatts.nrel.gov/pvwatts.php.

SCAG (Southern California Association of Governments). 2012. *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted April 2012. Accessed August 2016. http://rtpscs.scag.ca.gov/Pages/2012-2035-RTP-SCS.aspx.

SCAG. 2016. *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted April 7, 2016. Accessed March 2017. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

SCAQMD (South Coast Air Quality Management District). 2008. *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*. October 2008.

SCAQMD. 2009. *Final Localized Significance Threshold Methodology*. Revised July 2009.

SCAQMD. 2010. "Greenhouse Gases CEQA Significance Thresholds Working Group Meeting No. 15." September 28, 2010. Accessed August 2016. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2.

Under 2. 2016. Global Climate Leadership Memorandum of Understanding. https://www.theclimategroup.org/sites/default/files/under2-mou-with-addendum-english-us-letter.pdf.

4.7 Hazards and Hazardous Materials

This section describes the existing hazardous materials within the vicinity of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco/Vineyard II Retail Development Project (project). This analysis was completed, in part, based on a Phase I Environmental Site Assessment (ESA) prepared by Kleinfelder Inc. (Kleinfelder) in November 2019 (provided as Appendix F) and covers the entirety of the project site. This chapter also references the Fire Assessment Summary Letter completed for the project and included as Appendix K. A detailed discussion of potential impacts to fire protection services is included in Section 4.11, Public Services, and a detailed discussion of potential wildfire impacts is included in Section 4.17, Wildfire.

4.7.1 Existing Conditions

A Phase I ESA was prepared by Kleinfelder. Kleinfelder conducted a site reconnaissance on November 2, 2017; conducted interviews with the property owner, site manager, and City of Murrieta (City) Building Safety Division staff; reviewed online historical aerial photographs, maps, historical fire insurance maps, and a radius map report from Environmental Data Resources Inc. (EDR); and reviewed available pertinent records of local, state, and federal agencies in its investigation of the project site. These activities are commonly undertaken during ESAs to help identify recognized environmental conditions. The term "recognized environmental condition" means the presence or likely presence of any hazardous substances or petroleum products on the project site under conditions that indicate an existing release, a past release, or a material threat of a release into the ground, groundwater, or surface water, and can be potential hazards to the public or environment. The following discussion summarizes the findings of the Phase I ESA regarding the existing conditions at the project site.

Site History

According to the Phase I ESA, aerial photographs and historical topographic maps were reviewed to determine the history of the project site. The Phase I ESA concluded that a portion of the site was formerly used for low-intensity agriculture between at least 1901 and 2004. As discussed in Section 3 of this Environmental Impact Report (EIR), Project Description, most of the project site's ground surface has now been disturbed by the grading and rock, sand, and gravel removal project approved by the City in 2006 (Antelope and Cape Aire Mass Grading Plan, EA 2005-1763) and terminated in December 2019. The hills have been heavily excavated, with approximately 55 feet (elevation 1,582 feet) being removed from the northernmost hill (Appendix E-2).

Site Reconnaissance

A site reconnaissance was conducted on November 2, 2017, as part of preparing the December 2017 Phase I ESA (Appendix F). The site reconnaissance consisted of walking the project site and viewing properties adjacent to it. During the reconnaissance, several sand and gravel stockpiles were observed throughout the site. A pole-mounted transformer was observed on the northwestern corner of the site. The transformer was not labeled with its polychlorinated biphenyl (PCB) content, although the transformer appeared new, and no staining or leakage was observed at the base of the transformer. Based on the apparent recent installation of the transformer, it was determined that PCBs were unlikely to be used. Stormwater drains into a catch basin, which was observed on the southeastern corner of the site. Evidence of discolored water, stressed vegetation, underground storage tanks (USTs), aboveground storage tanks, wells, pits, ponds, or lagoons was not observed on the site during the reconnaissance.

Hazardous Materials History

During the Phase I ESA (Appendix F), a review of historical aerial photographs from EDR was conducted for the project site to document prior use of the project site. Table 4.7-1 summarizes land uses and historical development of the project site from 1938 through 2012.

Table 4.7-1. Review of Historical Photographs

Year	Approximate Scale	Summary
1938 1949	1 inch=500 feet	**Site:** The Site encompasses two hills which appear undeveloped. The lowland around the hills appears to be developed for agricultural low-lying crops. **Surrounding Area:** The surrounding lowland to the north, east, and south appears developed for agricultural use. Row crops are present in the fields to the east on the 1949 aerial photograph. The area to the west of the Site appears to be a mix of undeveloped land, a road, and agricultural land or grazing land.
1953 1961 1967 1978	1 inch=500 feet	**Site:** The Site appears generally the same. Some dirt roads are present on the western side of the Site. **Surrounding Area:** The Site vicinity appears generally the same except that the row crops are not apparent. Antelope Road is present along the western boundary of the Site. By 1978, the highway (presently I-215) to the west also appears to be under construction, with widening and further development with on and off-ramps.
1985 1989 1996	1 inch=500 feet	**Site:** The Site appears to consist of vacant land. There appears to be a trail to the peak of the southern hill on Site. **Surrounding Area:** The Site vicinity is generally the same, with the exception that there is some development north and northeast of the Site. By 1985, construction of the I-215 had been completed.
2002	1 inch=500 feet	**Site:** The majority of the Site (all except the southern portion and hill tops) appears to have been cleared of brush. The dirt road remains in the western side of the Site, and the trail to the top of the southern hill remains. **Surrounding Area:** Clinton Keith Road is present south of the Site, and the land beyond appears graded. The land north of the Site appears fallow, and the land east of the Site appears cleared of brush and has dirt roads extending throughout. The highway remains west of the Site. A structure appears between the adjoining road to the west and the highway farther to the west, northwest of the Site.
2005 2006	1 inch=500 feet	**Site:** The site appeared relatively similar to the 2002 aerial photograph. **Surrounding Area:** The land to the east appears to have been developed with residences. The land south of Clinton Keith Road has also been developed with a track, baseball fields, parking lot, and a campus (Vista Murrieta High School). Clinton Keith Road appears paved. The land north of the Site remains undeveloped.
2009 2010 2012	1 inch=500 feet	**Site:** The northern portion of the Site appears to be in the process of being mined/graded. A trailer is located on the west side of the Site and construction vehicles and materials appear to be located on the eastern side of the Site. **Surrounding Area:** The Site vicinity in 2009 appears generally the same as the previous aerial photograph. In the 2010 aerial photograph, the area south of the middle portion of the Site appears graded, and appears to be used as an access road to the Site and staging area for vehicles and trailers. By 2010, reconfiguration of interchange and construction associated with the widening of I-215 was visible.

Note: Aerial photographs only provide information concerning indications of land use, and no conclusions regarding the release of hazardous substances or petroleum products can be drawn from the review of photographs alone.

Table 4.7-2 summarizes historical uses of the project site and surrounding areas from 1901 through 2012. Topographic maps from 1901, 1942, 1943, 1947, 1953, 1973, 1979, and 2012 were reviewed.

Table 4.7-2. Review of Historical Topographic Maps

Year	Scale	Summary
1901	1:125,000	**Site:** The Site is consists of two hills and surrounding lowland. A road is shown bisecting the Site north to south. No other development is shown on the Site. **Surrounding Area:** A road is shown running east to west along the western half of the northern Site boundary. Other roads are shown in the Site vicinity; however, no structures are shown.
1942 1943 1947	1:62,500 1:62,500 1:50,000	**Site:** The road bisecting the Site is no longer present. A structure and adjoining road is present on the western boundary of the Site. **Surrounding Area:** Another structure is located north of the Site.
1953 1973 1979	1:24,000 1:24,000 1:24,000	**Site:** Structures are not shown on these topographic maps. A dirt road is shown along the western side of the hills on the Site's west boundary. **Surrounding Area:** It appears that highway I-395 ends at the northern boundary of the Site and extends north.
2012	1:24,000	**Site:** No structures or development on the Site is shown. **Surrounding Area:** I-215 extends north to southwest of the Site. Clinton Keith Road is located south of the Site. The Site vicinity appears generally more developed, though structures are not shown on this topographic map.

As part of the Phase I ESA, Kleinfelder requested EDR to search its library of Sanborn Fire Insurance maps of the site, but no such maps were available for the site.

Surrounding Property Use

Properties surrounding the project site as observed by during the Phase I ESA (Appendix F) include the following:

- North: Vacant land
- East: Single-family and multifamily residential uses
- South: Vacant land that is under development as the Vineyard I commercial development (also commonly referred to as CK-17), Clinton Keith Road, and Vista Murrieta High School
- West: Vacant land that is proposed as the Vineyard III commercial development (also commonly referred to as Curci or Interstate [I] 215 Scott/Lambda) and I-215

According to the Phase I ESA (Appendix F), none of these nearby properties have documented releases or hydrocarbons close enough to the definition of a potential vapor encroachment condition as defined by American Society for Testing and Materials Standard 2600-10. Additionally, a review of maps prepared by the California Department of Conservation, Geologic Energy Management (CalGEM) (formerly the Division of Oil, Gas, and Geothermal Resources [DOGGR]), revealed that no oil or gas wells are located on the site or in the site vicinity (Appendix F).

Hazardous Materials Inventory

The Phase I ESA conducted for the project site revealed no evidence of recognized environmental conditions in connection with the project site. Table 4.7-3 summarizes the materials/items observed during Kleinfelder's site visit and categorizes them with regard to risk and potential recognized environmental conditions.

Table 4.7-3. Review of Risk and Potentially Recognized Environmental Conditions

Currently Tracked Materials	On-Site Risk	Comment
Asbestos	No	None observed. Mass grading operations were previously performed at the site.
Chromium	No	None observed. Mass grading operations were previously performed at the site.
Freon	No	None observed. Mass grading operations were previously performed at the site.
Lead paint	No	None observed. Mass grading operations were previously performed at the site.
Lead shielding	No	None observed. Mass grading operations were previously performed at the site.
Mercury	No	None observed. Mass grading operations were previously performed at the site.
PCBs lighting ballasts	Low	A pole mounted transformer on the northwestern corner of the site was not labelled with its PCB content. The transformer appeared new, and no staining or leakage was observed at the base of the transformer. Based on the apparent recent installation of the transformer, it is unlikely PCBs were used.
Soil remediation (i.e., lead and other non-tank related materials)	Low	Although not considered a recognized environmental condition, the site was historically used for agricultural purposes from at least 1901 through 2004. It is common for residual concentrations of pesticides and associated applications for pest control to be present in shallow soils on former agricultural sites. However, sand and gravel were actively removed from the site through December 2019, and the elevation has been lowered significantly. Therefore, the potential for further action to be required to address pesticides is low.
USTs	No	None reported or observed.
Aboveground storage tanks	No	None reported or observed.

Source: Appendix F.
Notes: PCB = polychlorinated biphenyl; UST = underground storage tank

Hazardous Sites Database Searches

CEQA requires review of Section 65962.5 of the California Government Code, also known as the "Cortese List," to identify whether the project crosses or is in close proximity to a site known to have had a hazardous materials release or to represent a threat to human health and the environment. A regulatory database search was conducted to identify known chemical handlers, hazardous waste generators, or polluters within a 1-mile radius of the project site. The database search is included as Appendix B of the Phase I ESA (Appendix F).

Table 4.7-4 summarizes the reviewed environmental databases that evaluated the listed sites generally within a 1-mile radius from the project site.

Table 4.7-4. Environmental Agency Lists, Search Distance, Listings

Agency List/Database	Search Radius	Number of Listed Sites
Federal National Priorities List sites	1.0 mile	0
Federal delisted National Priorities List sites	0.5 mile	0
Federal CERCLA list	0.5 mile	0
Federal CERCLA No Further Remedial Action Planned list	0.5 mile	0
Federal Resource Conservation and Recovery Act Corrective Action facilities	1.0 mile	0
Federal Resource Conservation and Recovery Act Non- Conservation and Recovery Act Corrective Action Transportation, Storage, and Disposal	1.0 mile	0

Table 4.7-4. Environmental Agency Lists, Search Distance, Listings

Agency List/Database	Search Radius	Number of Listed Sites
Federal Resource Conservation and Recovery Act generators	0.25 mile	0
Federal institutional controls/engineering controls registries	0.5 mile	0
Federal Emergency Response Notification System of Spills	0.25 mile	1
State and tribal – Equivalent National Priorities List	1.0 mile	0
State and tribal – Equivalent CERCLA	1.0 mile	1
State and tribal – Solid waste facilities	1.0 mile	0
State and tribal – Registered storage tank sites	0.5 miles	0
State and tribal – Leaking storage tank sites	0.5 miles	0
State and tribal – Voluntary cleanup sites	0.5 miles	0
Local brownfield sites	0.5 miles	0
Local lists of landfill/solid waste disposal sites	0.5 miles	1
Local lists of hazardous waste sites	Various	0
Local lists of registered storage tanks	0.5 miles	0
Local land records	Various	0
Records of emergency release reports	Site	0
Other ascertainable records	Various	7
EDR manufactured gas plants	1.0 mile	0
EDR historical auto stations	0.25 miles	1
EDR historical cleaners	0.25 miles	0

Source: Appendix F.
Notes: CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; EDR = Environmental Data Resources Inc.

North County Sand & Gravel Inc. was mapped at the site and listed in the U.S. Mines database. According to the Phase I ESA (Appendix F), observations made during the site reconnaissance indicate that the site's listing in the U.S. Mines database does not represent a recognized environmental condition to the site. In total, 10 other off-site facilities were identified in the environmental database. No releases have been identified at these facilities, and the facilities were not identified as a potential concern to the site.

4.7.2 Relevant Plans, Policies, and Ordinances

Hazardous materials and wastes are identified and defined by federal and state regulations for the purpose of protecting public health and the environment. Hazardous materials contain certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous wastes are defined in the Code of Federal Regulations, Title 40, Volume 25, Parts 260–265, and in the California Code of Regulations (CCR), Title 22 Division 4.5, Chapter 11, Article 1, Section 66261. Over the years, the laws and regulations have evolved to deal with different aspects of the handling, treatment, storage, and disposal of hazardous substances.

Federal

Federal Toxic Substances Control Act of 1976

The Federal Toxic Substances Control Act of 1976 tasked the U.S. Environmental Protection Agency (EPA) with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. The Federal Toxic Substances Control Act addresses the production, importation, use, and disposal of specific chemicals including PCBs, asbestos, radon, and lead-based paint (EPA 2017).

Resource Conservation and Recovery Act of 1976

The objectives of the Resource Conservation and Recovery Act of 1976 are to protect human health and the environment from the potential hazards of waste disposal, conserve energy and natural resources, reduce the amount of waste generated, and ensure that wastes are managed in an environmentally sound manner. The Resource Conservation and Recovery Act affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. The Hazardous and Solid Waste Amendments of 1984 also added Subtitle I, which governs USTs (EPA 2018a).

Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan. The National Contingency Plan provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List, which is a list of contaminated sites warranting further investigation by EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986 (EPA 2018b).

Superfund Amendments and Reauthorization Act

The Superfund Amendments and Reauthorization Act amended CERCLA on October 17, 1986. The Superfund Amendments and Reauthorization Act had several changes and additions, including the following:

- Stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites
- Required Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations
- Provided new enforcement authorities and settlement tools
- Increased state involvement in every phase of the Superfund program
- Increased the focus on human health problems posed by hazardous waste sites
- Encouraged greater citizen participation in making decisions on how sites should be cleaned up
- Increased the size of the trust fund to $8.5 billion

The Superfund Amendments and Reauthorization Act also required EPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List (EPA 2018c).

Hazardous Materials Transportation Act

The U.S. Department of Transportation regulates hazardous materials transportation between states under the Code of Federal Regulations, Title 49, Chapter 1, Parts 100–185. In California, the California Department of Transportation (Caltrans) and the California Highway Patrol enforce federal law related to the transport of hazardous materials. Together, these agencies determine driver training requirements, load labelling procedures, and specifications for container types.

Occupational Safety and Health Act of 1970 and Occupational Safety and Health Administration

The Occupational Safety and Health Act of 1970 was passed to prevent workers from being killed or seriously harmed at work. The Occupational Safety and Health Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health standards. OSHA also provides information, training, and assistance to employers and workers. Under the Occupational Safety and Health Act, employers have the responsibility to provide a safe workplace (OSHA 2014).

State

Primary state agencies with jurisdiction over public health hazards and hazardous chemical materials management are the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board. Other state agencies involved in hazardous materials management are the Department of Industrial Relations (California OSHA implementation), Office of Emergency Services (Office of Emergency Services–California Accidental Release Prevention Implementation), California Department of Conservation, Geologic Energy Management (CalGEM) (formerly the Division of Oil, Gas, and Geothermal Resources [DOGGR]), California Department of Fish and Wildlife, California Air Resources Board (CARB), Caltrans, State Office of Environmental Health Hazard Assessment (Proposition 65 implementation), and the California Integrated Waste Management Board.

The enforcement agencies for hazardous materials transportation regulations are the California Highway Patrol and Caltrans. Hazardous materials and waste transporters are responsible for complying with applicable packaging, labeling, and shipping regulations. South Coast Air Quality Management District Rules and Regulations pertain to asbestos abatement (including Rule 1403), Construction Safety Orders 1529 (pertaining to asbestos), and Section 1532.1 (pertaining to lead) from Title 8 of CCR. Hazardous chemical and biohazardous materials management laws in California include the following statutes:

- Hazardous Materials Management Act – Requires that businesses handling or storing certain amounts of hazardous materials prepare a hazardous materials business plan, which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee training program.
- Hazardous Waste Control Act (California Health and Safety Code, Division 20, Chapter 6.5, Article 2, Section 25100, et seq.) – Authorizes DTSC and local certified unified program agencies to regulate facilities that generate or treat hazardous waste.

- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) – Requires the governor to publish and update, at least annually, a list of chemicals known to the state to cause cancer, birth defects, or other reproductive harm and to inform citizens about exposures to such chemicals.
- Hazardous Waste Management Planning and Facility Siting, also known as the Tanner Act (Assembly Bill 2948, 1986) – Requires counties to prepare, for California DTSC approval, hazardous waste management plans and prescribes specific public participation activities, which must be carried out during the local land use permit process for siting new or expanding off-site commercial treatment, storage, and disposal facilities.
- Hazardous Materials Storage and Emergency Response (Assembly Bill 2185) – Requires the immediate reporting to local fire departments and Offices of Emergency Services of any release or threatened release of a hazardous material, regardless of the amount handled by the business.
- California Medical Waste Management Act (California Health and Safety Code, Sections 117600–118360) – Establishes procedures for the proper handling, storage, treatment, and transportation of medical waste.
- Land Disposal Restrictions (22 CCR, Chapter 18) – Set up by Congress in 1984 for EPA, ensures that toxic constituents present in hazardous waste are properly treated before hazardous waste is land disposed.
- California Fire Code (Chapter 38) – Includes requirements for handling, storing, and using liquefied petroleum gas, principally propane, to reduce the possibility of damage to containers, accidental releases of liquefied petroleum gas, and exposure of flammable concentrations of liquefied petroleum gas to ignition sources.
- California Health and Safety Code, Section 25501 – California law defines a hazardous material as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential hazard to human health and safety or to the environment if released in the workplace or the environment.
- California Health and Safety Code, Section 25280 – Establishes requirements for USTs to mitigate for the potential accidental release of hazardous materials into the environment. The section requires that USTs and associated piping be designed and constructed to have primary and second levels of containment (double-walled). Tanks are required to have continuous leak detection systems capable of detecting the entry of the stored substance from the primary containment into the secondary containment, and be capable of detecting water intrusion into the interstitial space from the environment (CWB 2011).

State regulations and agencies pertaining to hazardous materials management and worker safety are described in the following subsections.

California Air Resources Board Vapor Recovery Program

CARB's role is to protect the public from the harmful effects of air pollution and to develop programs and actions to fight climate change. CARB is part of a coordinated three-tiered approach to cleaning up air pollution:

- The U.S. Environmental Protection Agency (EPA) sets nationwide air quality and emissions standards and oversees state efforts and enforcement.
- CARB focuses on California's unique air quality challenges by setting the state's own stricter emissions standards for a range of statewide pollution sources including vehicles, fuels, and consumer products.
- Thirty-five local air pollution control districts regulate emissions from businesses and stationary facilities, ranging from oil refineries to auto body shops and dry cleaners. The project site is located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

As the regulatory body that establishes and enforces emissions standards for the State, CARB has jurisdiction over a wide range of pollution sources, including gasoline dispensing facilities, where gasoline vapor is a precursor to the formation of ozone and contains benzene, a constituent of gasoline vapor that has been identified as a toxic air contaminant (CARB 2008). As such, CARB has established the Enhanced Vapor Recovery (EVR) Program, which is designed to reduce emissions at gasoline dispensing facilities by requiring gasoline dispensing facilities to install high-efficiency Phase I and Phase II EVR equipment to capture and control gasoline fumes (SCAQMD 2020). EVR equipment is a new generation of equipment collect gasoline vapors that would otherwise escape into the atmosphere during bulk fuel delivery (Phase I) or fuel storage and vehicle refueling (Phase II). Since 2009, the installation of EVR Phase I and Phase II systems has been required for all gasoline dispensing facilities. In-Station Diagnostic systems, which detect and report failures automatically, are another component of the EVR Program that has been required for gasoline dispensing facilities with annual throughputs of 600,000 to 1.8 million gallons since 2010. Throughout the years, the EVR Program has been periodically amended through executive orders issued by CARB to allow for modifications to performance standards, effective dates, and implementation deadlines.

California Environmental Protection Agency

The boards, departments, and offices that make up the California Environmental Protection Agency (CalEPA) include the California Air Resources Board, the Department of Pesticide Regulation, the Department of Resources Recycling and Recovery, DTSC, the Office of Environmental Health Hazard Assessment, and the State Water Resources Control Board. These boards, departments, and offices were placed within the CalEPA "umbrella" to create a cabinet-level voice for the protection of human health and the environment (such as clean air, clean water, clean soil, safe pesticides, and waste recycling and reduction) to assure the coordinated deployment of state resources (CalEPA 2018).

Government Code Section 65962.5

Pursuant to Government Code, Section 65962.5, environmental regulatory database lists are compiled to identify and locate properties with known hazardous substance contamination (California Government Code, Section 65960 et seq.). Four state agencies are required to provide lists of facilities that have contributed to, harbor, or are responsible for environmental contamination within their jurisdiction. The four state agencies that are required to provide these lists to the Secretary for Environmental Protection include DTSC, the State Department for Health Services, the State Water Resources Control Board, and the California Integrated Waste Management Board. The Secretary for Environmental Protection then takes each of the four respective agency lists and forms one list, referred to as the Hazardous Waste and Substances Site List – Site Cleanup (Cortese List), which is made available to every city and/or county in California (DTSC 2007).

California Occupational Safety and Health Administration

California OSHA is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. California OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

California Occupational Safety and Health Regulations, Section 2540.7

Section 2540.7 of CCR helps mitigate fire and explosion dangers by providing safeguards for dispensing liquid and gaseous motor fuels into the fuel tanks of automotive vehicles. Specifically, the regulations require fuel-dispensing facilities to install vapor-processing (recovery) systems and abide by dispenser siting and design requirements. The regulations of the program are contained in CCR, Title 8, Division 1, Chapter 4.5.

California Hazardous Waste Control Law

The California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) is administered by CalEPA to regulate the management of hazardous wastes. While the California Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, until EPA approves the California Hazardous Waste Control Program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Accidental Release Prevention Program

Similar to the Federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements and an additional list of regulated substances and thresholds. The regulations of the program are contained in CCR Title 19, Division 2, Chapter 4.5. The intent of the California Accidental Release Prevention Program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, minimize the damage if releases do occur, and satisfy community right-to-know laws.

California Health and Safety Code

The handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95, of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan. Hazardous materials business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state. Chapter 6.95 of the California Health and Safety Code establishes minimum statewide standards for hazardous materials business plans.

In addition, in the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by the California Health and Safety Code, facilities are also required to prepare a risk management plan and California accidental release plan. The risk management plan and California accidental release plan provide information on the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts (California Health and Safety Code, Chapter 6.95).

Local

South Coast Air Quality Management District – Gasoline Transfer and Dispensing

The SCAQMD is the local air pollution control district responsible for permitting and enforcement activities related to retail gasoline dispensing facilities (SCAQMD 2020). SCAQMD Rule 461 applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler, and from any stationary storage tank or mobile fueler into any mobile fueler or motor vehicle fuel tank (SCAQMD 2012). SCAQMD Rule 461 requires installation of CARB-certified EVR systems for new and in-use gasoline dispensing facilities from certified vapor recovery testing companies/contractors, as well as their regular testing. SCAQMD Rule 461 also contains additional regulations pertaining to permit conditions, recordkeeping requirements, and equipment maintenance.

Riverside County Community Health Agency – Department of Environmental Health

The Environmental Protection and Oversight Division is one of two divisions of the Riverside County (County) Department of Environmental Health. The Environmental Protection and Oversight Division has regulatory control over a number of hazardous materials, land use, and water system–based programs.

The Hazardous Materials Management Division is one of three divisions of the County Community Health Agency. The Hazardous Materials Management Division is the certified unified program agency for the County (City of Murrieta 2011a). A local certified unified program agency is responsible for administering/overseeing compliance with the following programs, as required by state and federal regulations:

- Hazardous materials release response plans and inventories (area plans)
- California Accidental Release Prevention program
- UST program
- Aboveground Petroleum Storage Act requirements for spill prevention, control and countermeasure plans (aboveground storage tank)
- Hazardous waste generator and on-site hazardous waste treatment (tiered permitting) programs
- California Fire Code: Hazardous material management plans and hazardous material inventory statements

Facilities that store, use, or handle hazardous materials above reportable amounts are required to prepare and file a hazardous materials business plan for the safe storage and use of chemicals. In the event of an emergency, firefighters, health officials, planners, public safety officers, health care providers, and others rely on the business plan. Implementation of the business plan should prevent or reduce damage to the health and safety of people and the environment when a hazardous material is released.

A hazardous materials business plan must be submitted by businesses that handle a hazardous material, or a mixture containing a hazardous material, in quantities equal to or greater than the following:

- 500 pounds of a solid
- 55 gallons of a liquid
- 200 cubic feet of a compressed gas at standard temperature and pressure
- The federal threshold planning quantity for extremely hazardous substances
- Radioactive materials in quantities for which an emergency plan is required per Parts 30, 40, or 70, Chapter 1, Title 10, of the Code of Federal Regulations

The business plan must include (1) the type and quantity of hazardous materials, (2) site map, (3) risks of using these materials, (4) spill prevention, (5) emergency response, (6) employee training, and (7) emergency contacts.

Businesses, such as photographic, chrome plating, or service stations, that generate small amount of hazardous waste or require underground storage of hazardous materials require a permit from the department.

City of Murrieta Emergency Operations Plan

The City's Emergency Operations Plan (EOP) addresses the planned response to extraordinary emergency situations associated with natural disasters, national security emergencies, and technological incidents affecting the City. The City's EOP describes the operations of the City's Emergency Operations Center, which is the central management entity responsible for directing and coordinating the various City departments and other agencies in their emergency response activities. The City's Emergency Operations Center centralizes the collection and dissemination of information about the emergency and makes policy-level decision about response priorities and the allocation of resources. As part of the City's Emergency Management Program, the City's Emergency Operations Center Manager (Fire Division Chief) is responsible for ensuring the readiness of the Emergency Operations Center (City of Murrieta 2011a).

City of Murrieta General Plan 2035

The Safety Element of the City's General Plan 2035 (City of Murrieta 2011b) includes goals and policies that would be applied to the project related to hazards and hazardous materials. The following are relevant goals and policies that would be applied to the project (City of Murrieta 2011b):

Goal SAF-8: A community that is protected from the harmful effects of hazardous materials, hazardous waste, and environmental contamination.

Policy SAF-8.1: Require geologic investigations for sites of proposed uses that manufacture, handle, or store hazardous or explosive materials.

Policy SAF 8.2: Ensure that land uses involved in the production, storage, transportation, handling, or disposal of hazardous materials are located and operated to reduce risk to other land uses.

Policy SAF 8.3: Designate appropriate routes for transportation of hazardous materials that are used or produced by facilities in the City.

Policy SAF 8.8: Comply with the Riverside County Hazardous Waste Management Plan.

Policy SAF 8.9: Support Caltrans and California Highway Patrol efforts to ensure safe transportation of hazardous materials on freeways.

Policy SAF 8.13: When approving new development, ensure that the site:

- Is sufficiently surveyed for contamination and remediation, particularly for sensitive uses near existing or former toxic or industrial sites.
- Is adequately remediated to meet all applicable laws and regulations, if necessary.
- Is suitable for human habitation.

- Is protected from known hazardous and toxic materials.
- Does not pose higher than average health risks from exposure to hazardous materials.

4.7.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts related to hazards and hazardous materials are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to hazards and hazardous material would occur if the project would:

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.
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 result, would it create a significant hazard to the public or the environment.
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 or excessive noise for people residing or working in the project area.
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

Thresholds 4 and 5 were analyzed in the Initial Study (Appendix A). The project is not included on a list of hazardous materials sites compiled pursuant to Government Code, Section 65962.5. Additionally, the project site not located within the vicinity of a private airstrip and is outside the planning area for the French Valley Airport or any other airport land use plan. For these reasons, the impacts of the project with respect to hazardous materials sites and airport land use plans were determined to be less than significant. Therefore, Thresholds 4 and 5 will not be further discussed in this section.

With regard to Threshold 7, the Initial Study determined that the project site is located in a predominantly urban area and is not considered to be at a significant risk of loss, injury, or death involving wildland fires. However, because the scope of the threshold was broadened by a December 2018 update to the CEQA Guidelines, this threshold is analyzed in Section 4.17 of this EIR, and the results of the discussion are summarized and included in Section 4.7.4, Impact Analysis.

4.7.4 Impacts Analysis

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

and

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

Both construction and operation of the project could lead to conditions in which the project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or result in their accident conditions.

Construction Impacts

Less-Than-Significant Impact. The project involves the construction of several retail pads, a gas station, and associated infrastructure improvements. It is assumed construction of the project would involve the transport, use, or disposal of hazardous materials on or off site. These materials would include gasoline, diesel fuel, lubricants, and other petroleum-based products used to operate and maintain construction equipment. The transportation, use, and handling of hazardous materials would be temporary and would coincide with project construction activities. Construction contractors are responsible for accident prevention and containment, and construction specifications typically include provisions to properly manage hazardous substances and wastes. Contractors are required to comply with applicable laws and regulations regarding hazardous materials and hazardous waste management and disposal. Examples of hazardous materials management include preventing the disposal or release of hazardous materials onto the ground or into groundwater or surface water during construction and providing completely enclosed containment for all refuse generated in the planning area. In addition, construction waste, including trash, litter, garbage, solid waste, petroleum products, and any other potentially hazardous materials, would be removed and transported to a permitted waste facility for treatment, storage, and/or disposal from the project site onto I-215, which is a National Hazardous Materials Route Registry-designated safe haul route (FMCSA 2020). As a result, proper use and disposal of these materials would not pose a significant risk to the public and the environment.

Operational Impacts

Retail, Fitness Center, and Restaurants

Less-Than-Significant Impact. The project includes operation of several retail pads, a gas station, and associated infrastructure improvements. These facilities would involve the routine handling, transport, use, and disposal of hazardous materials, including the following:

- Cleaning solvents and disinfectants for retail, restaurant, and fitness center operations
- Petroleum-based lubricants associated with the tire center within the Costco Wholesale (Costco) warehouse
- Photo-processing chemicals associated with the photo center within the Costco warehouse
- Automobile batteries sold within the Costco warehouse
- Chlorine, bleach, and other chemicals associated with the pool within the fitness center

Consistent with applicable federal, state, and local requirements, any handling of hazardous materials would be limited to the quantities and concentrations set forth by the manufacturer or applicable regulations, and hazardous materials would be stored in secure locations. The actual quantity of hazardous materials that would be stored on site would be determined by the individual hazardous characteristics of the material; manufacturer guidelines; and applicable federal, state, and local regulations. Measures would also be taken by employees to properly store, handle, and dispose of these materials to the manufacturer's and retailers' specifications.

Additionally, the handling, transport, use, and disposal of hazardous materials must comply with all applicable federal, state, and local agencies and regulations, including the Resource Conservation and Recovery Act, CERCLA, DTSC, OSHA, Caltrans, and the County Fire Department Hazardous Materials Division.

Therefore, based on compliance with federal, state, and local regulations and adherence to manufacturer's and retailers' specifications concerning the handling of hazardous materials, the retail, restaurant, and fitness center operational impacts associated with the handling, transport, use, and disposal of hazardous materials and their accident conditions would be less than significant.

Gas Station

The day-to-day operations of the proposed gas station could pose a significant hazard to the environment through the routine transport, use, and disposal of hazardous materials and may pose a threat to the environment as a result of hazardous materials being accidentally released into the environment.

The operations associated with the gas station where hazardous materials are transported, used, and handled are listed below:

- Gasoline would regularly be transported to the station.
- Petroleum trucks would regularly refill USTs.
- Gasoline would be pumped from USTs to fuel dispensers.
- Motorists would regularly refill automobiles using fuel dispensers

Throughout each of these steps in the vendor-to-consumer chain, the possibility exists that accident conditions could result, and gasoline could be released into the environment. A summary of these accident conditions are listed below:

- Operators could spill gasoline while refueling USTs.
- Motorists could spill gasoline while refueling automobiles.
- USTs could leak, causing fuel to be released into soil.
- Pipes that dispense fuel from USTs to fuel dispensers could burst.
- Automobiles could crash into fuel dispensers, causing the release of gasoline into the environment.
- Motorists could incorrectly refuel their automobile while the engine is on, creating a potential fire hazard.

As referenced above, many of the operations associated with the proposed gas station involve the transport and use of hazardous materials and could involve accident conditions that would allow for the release of hazardous materials into the environment. However, gas stations are required to operate in a strict regulatory environment that mitigates the chance that these conditions would occur.

Regulations

Consistent with California Health and Safety Code, Section 25280, USTs installed after 1988 are required to have a leak detection system consisting of at least one of the following detection methods: secondary containment with interstitial monitoring, automatic tank gauging systems (including continuous automatic tank gauging systems), vapor monitoring (including tracer compound analysis), groundwater monitoring, statistical inventory reconciliation, or other method meeting established performance standards.

Regardless of the chosen leak detection method ultimately used on the project site, efficacy requirements established by EPA require that leak detection methods be able to detect certain leak rates and that they also give the correct answer consistently. In general, methods must detect the specified leak rate with a probability of detection of at least 95% and a probability of false alarm of no more than 5%. EPA found that, with effective leak detection, operators can respond quickly to signs of leaks and minimize the extent of environmental damage and the threat to human health and safety (EPA 1997).

USTs and associated fuel delivery infrastructure (i.e., fuel dispensers) would be required to comply with applicable federal, state, and local regulations, including those provisions established by Section 2540.7, Gasoline Dispensing and Service Stations, of the California OSHA Regulations; Chapter 38, Liquefied Petroleum Gases, of the California Fire Code; the Resource Conservation and Recovery Act; and the County Fire Department Hazardous Materials Division.

The project would also be required to incorporate high-efficiency Phase I and Phase II enhanced vapor recovery (EVR) systems to capture and control gasoline fumes. EVR refers to a new generation of equipment to control emissions at gasoline dispensing facilities in California. EVR systems collect gasoline vapors that would otherwise escape into the atmosphere during bulk fuel delivery (Phase I) or fuel storage and vehicle refueling (Phase II). The project would include an in-station diagnostic system to automatically detect failures and immediately alert operators. Gasoline dispensers would also be fitted with breakaway couplings that allow for the safe separation of the hose from the dispenser or the hose from the nozzle in the event of a forced removal such as in the case of a “drive-off.”

The fuel dispensers, USTs, and associated fuel delivery infrastructure would be subject to routine inspection by federal, state, and local regulatory agencies with jurisdiction over convenience service station facilities.

The handling, transport, use, and disposal of hazardous materials must comply with applicable federal, state, and local agencies and regulations, including the Resource Conservation and Recovery Act; CERCLA; DTSC; OSHA; Caltrans; and the County Fire Department Hazardous Materials Division.

Costco Fuel Station Operation Practices

- In addition to compliance with local, state, and federal requirements, Costco would take additional measures to prevent environmental and safety impacts. Product, vapor, and vent piping would be noncorrosive and would provide three levels of protection. First, product piping would be monitored with pressure line leak detection. Second, piping would be double wall to provide secondary containment. Third, fiberglass piping would be additionally monitored under vacuum in accordance with California Health and Safety Code, Section 25280 regulations such that, if a breach is detected in the vacuum, the product delivery system would shut down, and the system would sound an audible alarm.
- Piping connections to the tanks and dispensers would be flexible. Flexible connectors would be used to prevent rupture from any form of ground movement.

- Piping would slope to the sumps at the USTs. If a piping leak occurs, the gasoline would flow through the secondary pipe to the sump, where a sensor would be triggered to immediately shut down the system and activate an audible/visual alarm.
- Tanks and dispensers would be equipped with latest Phase I and Phase II EVR vapor recovery air pollution control equipment technology in accordance with the California Air Resources Board regulations and associated Executive Orders (SCAQMD 2020). The Phase I EVR equipment would control the vapors in the return path from the tanks back to the tanker truck during offloading filling operations. Phase I EVR systems are 98% effective in controlling fugitive emissions from escaping into the environment. Phase II EVR equipment, which also includes in-station diagnostic systems" would control and monitor the vapors in the return path from the vehicles back to the tanks and are 95% effective in controlling fugitive emissions from escaping into the environment.
- The UST monitoring system incorporates automatic shutoffs. If gasoline is detected in the sump at the fuel dispenser, the dispenser would shut down automatically, and an alarm would sound. If a problem is detected with a tank, the tank would be automatically shut down, and an alarm would sound. If the product piping system detects a failure of the 0.1 gallons per hour test, the line would be automatically shut down, and the alarm would sound. Pursuant to federal requirements, monitoring equipment must be able to detect a minimum leak of 3 gallons per hour (equivalent to the accuracy of a mechanical leak detector). By providing monitoring to a higher standard (0.1 versus 3), Costco would maintain a higher degree of safety than required by current federal requirements.
- Each fuel dispenser would include several safety devices. Specifically, each dispenser sump would be equipped with an automatic shutoff valve to protect against vehicle impact. In addition, each fuel hose would include a breakaway device that would stop the flow of fuel at both ends of the hose in the event of an accidental drive-off. Also, each dispenser would be equipped with internal fire extinguishers. Lastly, dispensers would include leak detection sensors connected to the alarm console inside the controller enclosure.

Therefore, based on compliance with federal, state, and local regulations, impacts associated with the handling, transport, use, and disposal of hazardous materials and the release of hazardous materials into the environment would be less than significant.

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

Less-Than-Significant Impact. The closest school to the project site is Vista Murrieta High School (28251 Clinton Keith Road), approximately 0.1 miles to the south. As discussed in the impact discussion above, the project must comply with a variety of federal, state, and local regulations that collectively ensure that operation of the new retail pads, fitness center, and gas station would not emit hazardous or acutely hazardous materials, substances, or wastes and that any handling of such activities is done so consistent with applicable regulatory requirements. Therefore, based on compliance with federal, state, and local regulations, impacts associated with the emitting or handling hazardous materials or substances within 0.25 miles of a school would be less than significant.

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

Less-Than-Significant Impact. Currently the City has no defined emergency routes; however, I-15 and I-215 may be considered emergency routes, as they traverse the City and connect to multiple major roads (City of Murrieta 2011b). The I-215 travels north to south through the City and is located immediately west of the project site. As

analyzed in Section 4.13, Transportation, of this EIR, the project is not anticipated to significantly impact the freeway mainline facilities. Thus, the project would not impact any potential emergency evacuation routes in the City.

The City's EOP is designed to ensure the most effective response and allocation of resources in the event of an emergency, and is intended to facilitate multi-agency and multi-jurisdictional coordination (City of Murrieta 2017). Murrieta Fire and Rescue also provides emergency preparedness information and safety tips specific to emergency operations. In the event of a major emergency such as fire, hazardous materials spill, police activity, or other situation which may directly impact the City or its residents, the City's Emergency Incident Information website page will contain updated information on the nature of the incident, potential impacts to traffic circulation, possible evacuations, and other pertinent information (City of Murrieta 2011b). The project must comply with the City's EOP for both construction and operations of all phases. Construction activities that may temporarily restrict vehicular traffic during all phases would be required to implement adequate and appropriate measures to facilitate the passage of persons and vehicles through and around any required road closures in accordance with the City's EOP.

In addition, the project would be designed to provide adequate vehicular and emergency apparatus access along these routes at all times. As discussed in Section 4.13 of this EIR, mitigation has been proposed to offset any potential impacts to traffic and circulation that could result from project construction or operation. Further, the project would be designed to provide adequate vehicular and emergency apparatus access with multiple points of ingress/egress via driveways off Warm Springs Parkway, Creighton Avenue, and Antelope Road. Drive aisles, turning radii, and all access points would be designed with adequate emergency access. The project would be required to design, construct, and maintain structures, roadways, and facilities in compliance with applicable local, regional, state, and federal requirements related to fire safety, emergency access, and evacuation plans, and the proposed site plan is subject to approval by the City and the City's Fire Department. More specifically, the City and the City's Fire Department would review any modifications to existing roadways to ensure that adequate emergency access or emergency response would be maintained. Further, travel distance from the nearest fire station (Fire Station No. 4) and potential impacts to existing emergency services have been addressed in Section 4.11, Public Services. As discussed in Section 4.11, the project would result in a less-than-significant impact to public services, including fire protection services. Given these considerations, the project would not result in inadequate emergency access.

Upon review and approval of the site plan, the project would not conflict with emergency ingress or egress. Further, adherence to regulatory requirements would ensure that the project would not substantially impair an emergency response plan or emergency evacuation plan, and impacts would be less than significant.

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

Less-than-Significant Impact. The project site is surrounded by vacant land to the north, Vista Murrieta High School to the south, existing residential development to the east, and Interstate 215 to the west. Land directly to the west is proposed for retail development known as Vineyard III. Land to the south has been approved for retail development known as Vineyard I. The project site is identified by the City's General Plan EIR as occurring within a Very High FHSZ (City of Murrieta 2011a). However, the project site is located in an area of the City where many of the adjacent properties are developed. The vacant land to the west and north is not currently developed and is the subject of the fire assessment (Appendix K).

As discussed in further detail in Section 4.17 of this EIR, the project would be required to comply with regulations regarding wildfire hazards in the Murrieta Municipal Code (Section 15.24) and incorporate mitigation measures **MM-WF-1** through **MM-WF-4**. Structures would be composed of low-flammability materials, and a setback without

vegetative fuels would be maintained along the northern border of the site. For the reasons stated above and as discussed in further detail in Section 4.17, impacts would be **less than significant**.

4.7.5 Mitigation Measures

The project **would not result in significant impacts** related to hazards or hazardous materials, and no mitigation measures are necessary. Mitigation measures relating to wildfire (**MM-WF-1** through **MM-WF-4**) are discussed in Section 4.17 of this EIR.

4.7.6 Level of Significance After Mitigation

Since there would be no significant impacts relating to hazards and hazardous materials needing mitigation, residual impacts would be **less than significant**. With implementation of mitigation measures **MM-WF-1** through **MM-WF-4**, project impacts related to wildfire would be less than significant

4.7.7 Cumulative Impacts

The geographic scope of the cumulative hazards and hazardous materials analysis is the immediate project area, including surrounding land uses and other nearby properties. Hazardous materials incidents are typically site-specific, since adverse effects typically only result from accidental spills or inadvertent releases. Associated health and safety risks generally would be limited to those individuals using the materials or to persons in the immediate vicinity of the materials. As such, adverse effects of hazards and hazardous materials tend to be localized, and thus, the area near the project site would be most affected by project activities. In addition, retail development does not typically combine with other projects to produce cumulative effects, since the use typically only involves the routine use of commercial maintenance products (such as paints, solvents, cleaning supplies, pool chemicals, pesticides, and herbicides). For example, there are limited amounts of hazardous materials (and by extension, limited opportunities for adverse effects) used during construction and operation of retail development when compared to uses that involve greater volumes of hazardous materials (i.e., industrial uses), or uses that produce wastes that would have a more severe adverse effect in the event of upset conditions (i.e., uses that produce radiological wastes). Further, use of hazardous materials by any related projects would be fully regulated, thus reducing potential for public safety risks, and cumulative impacts associated with exposure to hazards and hazardous materials would be less than significant. Through compliance with regulatory requirements, neither the construction nor operation of the related projects would create significant human or environmental health or safety risks that could create a significant and cumulatively considerable impact. Implementation of applicable hazardous materials management laws and regulations adopted at the federal, state, and local level would ensure cumulative impacts related to hazardous materials use remain less than significant.

Because the project site is not located on a hazardous materials site, the project would not combine with other sites to result in a cumulatively considerable impact with respect to existing hazardous materials impact. Additionally, because the project would not produce significant hazardous emissions within 0.25 miles of a school, the project would not combine with other related projects to result in a cumulatively considerable impact. With regard to the City's EOP and evacuation routes, the project would be designed to provide adequate vehicular and emergency apparatus access along these routes at all times, and would not impair emergency access. Related projects would be required to undergo the same site plan review requirements to ensure that ensure that adequate emergency access or emergency response would be maintained. Further, the City is responsible for administering the City's EOP. In the event of a major emergency such as fire, hazardous materials spill, police activity, or other situation that may directly impact the City or its residents, the City's Emergency Incident

Information website page will contain updated information on the nature of the incident, potential impacts to traffic circulation, possible evacuations, and other pertinent information. A coordinated, centralized response by the City, as outlined in the City's EOP, would ensure that the effects of the project and the related projects are not cumulative considerable. Lastly, as discussed in Section 4.17 of this EIR, cumulative impacts with respect to wildfire are less than significant. Therefore, significant cumulative impacts related to hazards and hazardous wastes would be less than significant.

4.7.8 References Cited

CARB (California Air Resources Board). 2008. "Executive Orders G-70-210 AND G-70-211: Modification Of Operative And Effective Dates for Enhanced Vapor Recovery (EVR) Phase II and In-Station Diagnostics on Gasoline Dispensing Facilities with Liquid Condensate Traps and/or Bulk Plants." June 16, 2008. Accessed February 13, 2020. https://ww3.arb.ca.gov/vapor/eos/eo-210/eo-g70210211_c061608.pdf?_ga=2.51005802.2109991017.1581458104-1236902774.1525888357.

CalEPA (California Environmental Protection Agency). 2018. "About Us." Accessed August 2018. https://calepa.ca.gov/about/.

City of Murrieta. 2011a. *City of Murrieta General Plan 2035 Final Environmental Impact Report*. SCH no. 2010111084. Prepared by RBF Consulting. Irvine, California: RBF Consulting. July 2011.

City of Murrieta. 2011b. "Chapter 12: Safety Element." In *Murrieta General Plan 2035.* Adopted July 19, 2011.

CWB (California Water Boards). 2011. *Statutes of Chapter 6.7, Health and Safety Code: Underground Storage of Hazardous Substances*, as amended and effective. Amended January 1, 2011.

DTSC (California Department of Toxic Substances Control). 2007. "Hazardous Waste Transporter Requirements." Fact Sheet. August 2007. Accessed August 2018. http://www.dtsc.ca.gov/HazardousWaste/Transporters/upload/Hazardous-Waste-Transporter-Requirements.pdf.

EPA (U.S. Environmental Protection Agency). 1997. "Leak Detection Methods for Petroleum Underground Storage Tanks and Piping." Published September 1997.

EPA. 2017. "Summary of the Toxic Substances Control Act." Last updated November 28, 2017. Accessed August 2018. https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act.

EPA. 2018a. "Resources Conservation and Recovery Act (RCRA) Overview." Last updated July 9, 2018. Accessed August 2018. https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview.

EPA. 2018b. "Superfund: CERCLA Overview." Last updated June 4, 2018. Accessed August 2018. https://www.epa.gov/superfund/superfund-cercla-overview.

EPA. 2018c. "The Superfund Amendments and Reauthorization Act (SARA)." Last updated June 4, 2018. Accessed August 2018. https://www.epa.gov/superfund/superfund-amendments-and-reauthorization-act-sara.

FMCSA (Federal Motor Carrier Safety Administration). 2020. National Hazardous Materials Route Registry. Last updated: January 2, 2020. https://www.google.com/maps/d/viewer?hl=en_US&app=mp&mid=1Yyz6yA9I9I5DQ5Gb2U1X7f_8enM&ll=33.6012037108848%2C-117.16963751963118&z=14

IWS (IWS Environmental). 2017. *Phase I Environmental Site Assessment, Val Vista – CK-17, Vacant Land, 8.23 Acres, NEQ Clinton Keith Road and 215 Freeway, Murrieta, California*. August 23, 2017.

OSHA (Occupational Safety and Health Administration). 2014. "At-A-Glance OSHA." OSHA 3439-2014.

SCAQMD (South Coast Air Quality Management District). 2012. Rule 461 – Gasoline Transfer and Dispensing. Amended April 6, 2012. Accessed February 13, 2020. http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-461.pdf?sfvrsn=4.

SCAQMD. 2013. *Above Ground* Storage *Tanks, Standing Loss Control and Phase I EVR Requirements*. PowerPoint slides. November 2013. Accessed August 2018. http://www.aqmd.gov/docs/default-source/compliance/Gas-Dispensing/ast-outreach-presentation.pdf.

SCAQMD. 2020. "Archived Advisories and Presentations for Gasoline Dispensing Facilities." Accessed February 2020. https://www.aqmd.gov/home/rules-compliance/compliance/gasoline-dispensing2/archived-advisories.

INTENTIONALLY LEFT BLANK

4.8 Hydrology and Water Quality

This section describes the existing hydrological and water quality conditions of the proposed Costco/Vineyard II Retail Development Project (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of project. This analysis was completed, in part, based on the Murrieta General Plan 2035 Environmental Impact Report (EIR) (City of Murrieta 2011a), the Murrieta General Plan 2035 (City of Murrieta 2011b), and the following technical reports, which are included as appendices to this EIR:

- *Geotechnical Review Proposed Costco Wholesale Warehouse Northeast of Interstate 215 and Clinton Keith Road Murrieta, California CW# 17-0237* prepared by Kleinfelder Inc. in October 2017, updated February 4, 2020 (Appendix E-1)
- Preliminary Geotechnical Investigation Proposed Vineyard/Val Vista Center NEC Clinton Keith Road and 215 Freeway Murrieta, California prepared by Geotechnical Professionals Inc. in September 2017 (Appendix E-2)
- Drainage Study Costco Wholesale Murrieta CA prepared by Fuscoe Engineering Inc. in October 2019 (Appendix G-1)
- Hydrology/Hydraulics Study For: TPM 37511 Unit 2 Clinton Keith Road prepared by Excel Engineering in March 2018 (Appendix G-2)
- Project-Specific Water Quality Management Plan Costco Wholesale, Murrieta CA prepared by Fuscoe Engineering Inc. in October 2019 (Appendix G-3)
- Project Specific Water Quality Management Plan Candee prepared by Excel Engineering Inc. in September 2018 (Appendix G-4)

4.8.1 Existing Conditions

Regional Hydrology

The project site is located within the inland portion of the Santa Margarita River Watershed, which is composed of approximately 750 square miles. The watershed is located in northern San Diego and southwestern Riverside Counties and borders San Juan Watershed to the northwest and San Luis Rey Watershed to the south. The Santa Margarita Watershed can be divided into nine distinct hydrological areas, each with unique hydrological and environmental features. Specifically, the project site is located on the boundary of the Wildomar and Murrieta Hydrologic Subareas (2.31 and 2.32, respectively) of the Murrieta Hydrologic Area (2.30) and encompassing Santa Margarita Hydrologic Unit (i.e., Santa Margarita Watershed) (2.00). Murrieta Creek and Temecula Creek collect water from the upper watershed and represent the main tributaries to the Santa Margarita River (City of Murrieta 2011). The Santa Margarita Hydrologic Unit empties into the Pacific Ocean via the Santa Margarita Lagoon, on Marine Corps Base Camp Pendleton. The slough at the river mouth is normally closed off from the ocean by a sandbar, except during periods of high precipitation. Primary water storage areas in the Santa Margarita Hydrologic Unit are Vail Lake and O'Neill Lake. Annual precipitation ranges from less than 12 inches near the coast to more than 45 inches inland, near Palomar Mountain (San Diego RWQCB 2016).

Project Site Drainage

The existing topography overlaps portions of two adjacent, partially excavated hills, about 660 feet apart, with original prominent peaks rising to about 100 to 130 feet above nearby Clinton Keith Road to the south and Cape Aire Way to the north. The hills form a northeast trending drainage. Existing off-site stormwater runoff occurs toward three locations, denoted as Points of Comparison (POC) A, POC-B, and POC-C in Figure 4.8-1, Existing Site Drainage (Appendix G-1; Appendix G-2). Since approximately 2006, the project site and area south of Clinton Keith Road have been disturbed by sand and gravel mass-grading operations (Appendix G-1). A review of historical topographic maps and aerial photographs show that after about 2009 the site has been disturbed by excavation activities at both hill peaks and south to Clinton Keith Road (Appendix G-1). Variable stockpiles of rock, gravel, and soil have been present in association with rock crushing equipment (Appendix E-1). The slopes are highly variable as a result of grading activities, with localized areas exhibiting grades as steep as 2.5:1 (horizontal to vertical) (Appendix E-2).

Surface water is generated by precipitation that cannot be absorbed into the ground in the period following a storm event. The amount of surface water runoff is a factor of precipitation, ground saturation, and the permeability (or perviousness) of existing ground surfaces. Permeability is a measure of how quickly water can penetrate a surface area. Natural or unpaved surfaces have a higher permeability compared to paved and other built surfaces. A portion of the stormwater falling on a relatively pervious surface will infiltrate into surface soils. Runoff occurs when soil infiltration capacity is exceeded. In contrast, stormwater falling onto pavement or other hardscape areas does not infiltrate, resulting in immediate runoff during precipitation events. The project site is underlain by topsoil and weathered bedrock, consisting of silty sands, sands, and sandy silts, with varying amounts of cobbles and boulders, underlain by relatively impermeable granitic bedrock (Appendices E-1 and E-2); therefore, stormwater infiltration is limited at the site. The drainage studies conducted for the project use pre-mass grading baselines to conservatively estimate the changes in pre- and post-development runoff flows (Appendices G-1 and G-2).

Regional Drainage

Surface runoff from the project site flows toward a network of improved and natural streams, storm channels, storm drains, and catch basins. These facilities are maintained by the Riverside County Flood Control and Water Conservation District and the City of Murrieta (City). Regional master-planned facilities are owned and maintained by the Riverside County Flood Control and Water Conservation District, and all non-master -planned facilities are maintained by the City. The drainage facilities in the vicinity of the project site flow to Warm Springs Creek through tributary creeks, including a south-trending unnamed creek, approximately 1,200 feet west of the site, and a southeast-trending creek, approximately 1,500 feet northeast of the project site. Warm Springs in turn flows into Murrieta Creek, approximately 5 miles south of the project site. Murrieta Creek extends approximately 14 miles and drains an area of approximately 220 square miles. Both Warm Springs and Murrieta Creeks remain in a semi-natural state, with areas of substantial native vegetation occurring along portions of each. Stormwater runoff represents the primary source of surface water within the Murrieta Creek Basin. Additional sources of surface water include groundwater from springs, runoff from agricultural uses, and snowmelt (City of Murrieta 2011). Downstream, these flows combine and constitute the Santa Margarita River.

Surface Water Quality

Stormwater runoff is a nonpoint source of pollutants in the greater Santa Margarita River Watershed. The amount of nonpoint pollution is generally a function of the amount of developed areas, agricultural fields, and roadways. The project site is bordered to the west by vacant land, Interstate 215, and a shopping center to the west of Interstate 215, which contains existing paved surfaces, existing buildings, and parking lots. Vacant land is located to the north, Murrieta High School and vacant land to the south, and a residential tract to the east, all of which are

composed of a mix of permeable and impermeable surfaces. Within the Santa Margarita River Watershed, constituents of concern include nitrate (surface water and groundwater), sediment, indicator bacteria, and total dissolved solids in groundwater. Specific activities or uses that affect the quality of surface water include agricultural activities, orchards, livestock, domestic animals, septic systems, use of recycled water, and urban runoff (City of Murrieta 2011).

Warm Springs Creek is a receiving water that the project site is tributary to. The U.S. Environmental Protection Agency (EPA) lists Warm Springs Creek as impaired under the *2014–2016 California 303(d) List of Water Quality Limited Segments* for chlorpyrifos, iron, manganese, phosphorous, and total nitrogen (EPA 2018). Surface water quality within Murrieta Creek is generally good; however, high concentrations of total dissolved solids occur intermittently during times of low flow. Occasional exceedances of nitrate and phosphate levels also occur. Murrieta Creek is also listed as impaired under the *2014–2016 California 303(d) List of Water Quality Limited Segments* for chlorpyrifos, copper, indicator bacteria, iron, manganese, nitrogen, and toxicity (EPA 2018). Beneficial uses for Murrieta Creek and Warm Springs Creek are identified as municipal/domestic supply, agricultural supply, industrial process/service supply, recreation, warm freshwater habitat, and wildlife habitat (San Diego RWQCB 2016).

To minimize detrimental effects of stormwater pollution, the City implements a Stormwater Management Plan (SWMP), which identifies methods to reduce potential stormwater runoff and the contribution of pollutants to the storm drain system from industrial, commercial, residential, and municipal sources (City of Murrieta 2011). In addition, water quality in the encompassing upper Santa Margarita River Watershed, which includes the City, is managed under the Santa Margarita Region Watershed Protection Program, the Upper Santa Margarita Integrated Regional Water Management Plan (IRWMP), and the Santa Margarita Region Hydromodification Management Plan. The latter was prepared as part of the Santa Margarita River Municipal Separate Storm Sewer System (MS4) Permit. See additional information in Section 4.8.2, Relevant Plans, Policies, and Ordinances.

Flooding

The project site is located within the Warm Springs Creek and Murrieta Creek Watersheds. Flooding problems in the Murrieta Creek Watershed are related to inadequate capacity of the existing drainage network. Much of the Murrieta Creek area and sections along Warm Springs Creek are currently without formal flood control systems. As a result, moderate rainfall creates haphazard drainage in the less developed areas of the City. The problem manifests itself as frequent overtopping of the Murrieta Creek channel by floodwaters in a number of channel reaches, flood inundation of structures with attendant damages, and other water-related problems caused by these events, including emergency costs, traffic disruption, and automobile damage (City of Murrieta 2011).

Floods that have a 1% chance of occurring in any given year are referred to as “100-year floods.” Flood insurance rates are based on Federal Emergency Management Agency (FEMA) designations of flood zones. The practice is to avoid or restrict construction within the 100-year flood zones, or to engage in flood-proofing techniques, such as elevating building pads or constructing flood walls and levees. The project site is not located within or in the vicinity of a 100-year flood zone. The site is located within FEMA Zone X, which is an area of minimal flooding (City of Murrieta 2011; FEMA n.d.).

Portions of the City are subject to potential flooding in the event of dam failure at Lake Skinner and Diamond Valley Lake. However, the project site is not located in a potential inundation area due to dam failure (City of Murrieta 2011).

Groundwater

The project site is underlain by topsoil and weathered bedrock, underlain by relatively impervious granitic bedrock. Groundwater is not reported to be present on site, as the San Marcos gabbro that underlies the project site is composed of interlocking materials with little to no permeability (Appendix E-1). Furthermore, borings drilled on site to a maximum depth of 38 feet did not encounter groundwater (Appendix E-2).

Runoff from the project site flows southeast toward Warm Springs Creek and Murrieta Creek, which are important sources of groundwater recharge of the downstream Murrieta–Temecula Groundwater Basin. The Murrieta–Temecula Groundwater Basin is approximately 60,000 acres and has an estimated storage capacity of 1.2 million acre-feet.

Groundwater quality varies within the Murrieta Basin. Many wells extracting groundwater from this basin are present within the Murrieta area. In general, water that is extracted at higher elevations and from deeper unconfined aquifers is typically of higher quality. Groundwater is generally unconfined within Pleistocene (older) alluvium, which is estimated to exceed 2,500 feet in thickness in the Murrieta–Temecula Groundwater Basin. In addition, Holocene (younger) alluvium, consisting of unconsolidated gravel, sand, silt, and clay, ranges from 100 to 200 feet in thickness (City of Murrieta 2011).

4.8.2 Relevant Plans, Policies, and Ordinances

Federal

Clean Water Act

The federal Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the nation's navigable waters. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) are responsible for enforcing water quality standards within the state. As mandated by Section 303(d) of the CWA, the SWRCB maintains and updates a list of "impaired water bodies" (i.e., water bodies that do not meet state and federal water quality standards). This list is known as the Section 303(d) list of impaired water bodies. The state is required to prioritize waters/watersheds for development of total maximum daily load (TMDL) regulations. Section 303(d) of the CWA bridges the technology-based and water quality–based approaches for managing water quality, and requires each state to make a list of waters that are not attaining standards after implementation of the technology-based limits. For waters on this list (and where the EPA administrator deems it appropriate), the states develop TMDLs that are established at the level necessary to implement applicable water quality standards. A TMDL must account for all sources of pollutants that cause the water to be listed. Federal regulations require that TMDLs, at a minimum, account for contributions from point sources and nonpoint sources. This information is compiled in a list and submitted to the EPA for review and approval. Section 303(c)(2)(b) of the CWA requires states to update the TMDLs on a triennial basis (SWRCB 2018a).

Section 319 of the CWA mandates specific actions for the control of pollution from nonpoint sources. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and programs such as the National Pollutant Discharge Elimination System (NPDES) program, to the SWRCB and RWQCBs.

National Pollutant Discharge Elimination System Permit

The NPDES permit system was established by the CWA to regulate both point-source discharges and nonpoint-source discharges. Nonpoint pollution often enters receiving waters in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that the EPA must consider in setting effluent limits for priority pollutants.

A detailed discussion of the NPDES program is provided under the discussion of state regulations in this section, since the authority to implement the NPDES program has been delegated to the SWRCB and RWQCBs.

State

Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement water quality control plans that consider regional beneficial uses, water quality characteristics, and water quality problems. The project site is located within the jurisdiction of the San Diego RWQCB.

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of waste discharge requirements (WDRs) by the RWQCBs. WDRs related to land and groundwater (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process/wash-down wastewater. WDRs for discharges to surface water also serve as NPDES permits, which are further described in this section.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including surface water and groundwater), and directs the RWQCBs to develop regional water quality control plans. Section 13170 of the California Water Code authorizes the SWRCB to adopt water quality control plans on its own initiative.

Waste Discharge Requirements

All dischargers of waste to waters of the state are subject to regulation under the Porter-Cologne Water Quality Control Act, and the requirements for WDRs is incorporated into the California Water Code. This includes point-source and nonpoint-source dischargers. All current and proposed nonpoint-source discharges to land must be regulated under WDRs, waivers of WDRs, a water quality control plan prohibition, or some combination of these administrative tools. Discharges of waste directly to state waters are subject to an individual or general NPDES permit, which also serves as WDRs. The RWQCBs have primary responsibility for issuing WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders or Cease and Desist Orders, assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

National Pollutant Discharge Elimination System Permits

The NPDES permit system was established by the CWA to regulate point-source discharges and nonpoint-source discharges to surface waters of the United States, and the authority to implement the NPDES program has been delegated to the SWRCB and RWQCBs. The EPA developed the federal NPDES stormwater permitting program in two phases. Phase I, promulgated in 1990, addresses large and medium MS4s located in incorporated places and counties with populations of 100,000 or more. Phase I addresses 11 categories of industrial activity, one of which is large construction activity that disturbs 5 acres or more of land. Phase II, also promulgated in 1999, addresses additional sources, including MS4s not regulated under Phase I, and small construction activity disturbing from 1 to 5 acres of land. For point-source discharges, each NPDES permit outlines limits on allowable concentrations and mass emissions of pollutants contained in the discharge. For diffuse-source discharges, the NPDES program establishes a stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable. The NPDES program consists of characterizing receiving water quality, identifying harmful constituents, targeting potential sources of pollutants, and implementing a comprehensive stormwater management program.

One of the primary objectives of water quality regulations is to reduce pollutants in urban stormwater discharge to the maximum extent practicable through the use of structural and nonstructural best management practices (BMPs). BMPs typically used to manage runoff water quality include controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets, cleaning parking lots on a regular basis, incorporating peak-flow reduction and infiltration features (e.g., grass swales, infiltration trenches, and grass filter strips in landscaping), and implementing educational programs.

Construction General Permit

The SWRCB permits all regulated construction activities under Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ. The order requires that, prior to beginning any construction activity, the permit applicant obtain coverage under the Construction General Permit by preparing and submitting to the SWRCB a Permit Registration Document that includes a Notice of Intent and appropriate fee. The SWRCB may issue a Construction General Permit or an Individual Construction Permit that would contain more specific permit provisions. Individual Construction Permits replace Construction General Permit regulations and provisions, if issued. Additionally, coverage would not occur until an adequate stormwater pollution prevention plan (SWPPP) has been prepared. A separate Notice of Intent is submitted to the SWRCB for each construction site.

SWRCB adopted the Construction General Permit on September 2, 2009, and it became effective on July 1, 2011. In addition, 2010-0014-DWQ was adopted on November 16, 2010, and became effective on February 14, 2011. The amendment provided text changes to the fact sheet, Conditions for Permit Coverage, Special Provisions, Electronic Signature, and Certification Requirements of Order No. 2009-009-DWQ. Similarly, 2012-0006-DWQ was adopted on July 17, 2012. The amendment provided updated text changes to the Fact Sheet, primarily with respect to replacing numeric effluent limitations with narrative effluent limitations for Risk Level 3 and Linear Underground/Overhead Project Type 3 construction sites (with the exception of Active Treatment Systems).

Construction activities subject to the NPDES Construction General Permit include clearing, grading, and disturbances to the ground (e.g., stockpiling or excavating), which result in soil disturbances of at least 1 acre of total land area. Because construction of the project would cumulatively disturb more than 1 acre, all improvements and development activities would be subject to these permit requirements, and the project would be required to prepare a SWPPP. The SWPPP has two main objectives: to help identify the sources of sediment and other pollutants that affect the quality of stormwater

discharges, and to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges.

A SWPPP's required elements include a site description addressing the elements and characteristics specific to the site; BMPs for erosion and sediment controls; BMPs for construction waste handling and disposal; implementation of approved local plans; proposed post-construction controls, including a description of local post-construction erosion and sediment control requirements; and non-stormwater management. The SWPPP must include BMPs that address source control, and if necessary, include BMPs that address specific pollutant control. The SWPPP prepared to comply with the Construction General Permit would also address post-construction activities that can result in ongoing erosion and sedimentation impacts.

All construction activities related to the project are subject to the requirements of the Construction General Permit. The current amended order includes the following:

- **Technology-Based Numeric Action Levels:** The Construction General Permit includes numeric action levels for pH and turbidity.
- **Narrative Effluent Limitations:** The Construction General Permit requires Risk Level 3 and Linear Underground/Overhead Project Type 3 dischargers with direct discharges to surface waters to conduct receiving-water monitoring whenever their effluent exceeds specified receiving-water monitoring triggers with respect to pH and turbidity. However, in contrast to previous numeric effluent limitations, exceedance of a receiving-water monitoring trigger does not constitute a violation of the Construction General Permit. Best available technology/best conventional technology must be installed to control erosion and off-site sedimentation.
- **Risk-Based Permitting Approach:** The Construction General Permit establishes a four-level risk calculation, with only the lowest three levels covered under the Construction General Permit. Discharges determined to be Risk Level 4 are not covered by the Construction General Permit, and those projects are required to submit a Report of Waste Discharge to the appropriate RWQCB and seek coverage under an individual or other applicable general permit.
- **Minimum Requirements Specified:** The Construction General Permit specifies minimum BMPs and requirements that were previously only required as elements of the SWPPP or were suggested by guidance.
- **Project Site Soil Characteristics Monitoring and Reporting:** The Construction General Permit requires all dischargers to monitor and report the soil characteristics at the project location. The primary purpose of this requirement is to provide better risk determination and eventually better program evaluation.
- **Effluent Monitoring and Reporting:** The Construction General Permit requires effluent monitoring and reporting for pH and turbidity in stormwater discharges. This monitoring is to be used to determine compliance with the narrative effluent limitations included in this Construction General Permit.
- **Receiving Water Monitoring and Reporting:** The Construction General Permit requires some Risk Level 2 and Risk Level 3 dischargers to monitor receiving waters.
- **New Development and Redevelopment Stormwater Performance Standards:** The Construction General Permit specifies runoff reduction requirements for all sites not covered by a Phase I or Phase II MS4 NPDES permit to avoid, minimize, and/or mitigate post-construction stormwater runoff impacts.
- **Rain Event Action Plan:** The Construction General Permit requires sites to develop and implement a Rain Event Action Plan that must be designed to protect all exposed portions of the site 48 hours prior to any likely precipitation event.

- **Site Photographic Self-Monitoring and Reporting:** The Construction General Permit requires all projects to provide photographs of their sites at least once quarterly if there are no rain events causing a discharge during that quarter. The purpose of this requirement is to help RWQCB staff prioritize their compliance evaluation measures (e.g., inspections). In addition, this reporting makes compliance-related information more available to the public.
- **Annual Reporting:** The Construction General Permit requires all projects that are enrolled for more than one continuous 3-month period to submit information and annually certify that their site is in compliance with the requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and public information.
- **Certification/Training Requirements for Key Project Personnel:** The Construction General Permit requires that key personnel (e.g., SWPPP preparers, inspectors) have specific training or certifications to ensure that their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with permit requirements.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), Senate Bill 1168 (Pavley), and Senate Bill 1319 (Pavley)—collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically overdrafted basins, sustainability should be achieved by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. Through SGMA, the California Department of Water Resources provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably, and requires those Groundwater Sustainability Agencies to adopt Groundwater Sustainability Plans for crucial groundwater basins in California. The Temecula Valley Groundwater Basin (9-005), located downstream of the project site, is considered a very low-priority basin with respect to SGMA (SWRCB 2018b).

California Water Code, Section 12924

The California Department of Water Resources, in conjunction with other public agencies, conducts investigations of the state's groundwater basins. The Department of Water Resources identifies the state's groundwater basins on the basis of geological and hydrologic conditions and with consideration of political boundary lines whenever practical. The Department of Water Resources also investigates existing general patterns of groundwater extraction and groundwater recharge within those basins to the extent necessary to identify basins that are subject to critical conditions of overdraft. The Temecula Valley Groundwater Basin has not been identified as a critically overdrafted basin (California Department of Water Resources 2016).

Regional

Santa Margarita Region Watershed Protection Program

Water quality in the encompassing upper Santa Margarita River Watershed, including in the City, is managed under the Santa Margarita Region Watershed Protection Program. The Riverside County Flood Control and Water Conservation District is the Principal Permittee of the Santa Margarita MS4 Permit (Regional Permit), in accordance

with San Diego RWQCB Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100. The area covered by this Regional Permit is referred to as the Santa Margarita Region.

To assist in the design of the development projects within the Santa Margarita Region and ensure compliance with the Regional Permit, the co-permittees have developed and adopted the Water Quality Management Plan for the Santa Margarita Region of Riverside County (San Diego RWQCB 2018a). As stipulated in the Water Quality Management Plan for the Santa Margarita Region of Riverside County, a project-specific water quality management plan (WQMP) is required to be prepared for all development projects within the Santa Margarita Region that meet the Priority Development Project categories and thresholds, as defined in Section F.1.d.(1) of the Regional Permit. Priority Development Projects are defined within the Water Quality Management Plan for the Santa Margarita Region of Riverside County and include new development projects that create 10,000 square feet or more of impervious surfaces. Because the project is a new development project that creates more than 10,000 square feet of impervious surfaces, the project is considered a Priority Development Project and a project-specific WQMP is required.

Per the Regional Permit, and as described in the Water Quality Management Plan for the Santa Margarita Region of Riverside County, a project-specific WQMP is required to manage the discharge of stormwater pollutants from development projects to the "maximum extent practicable" (San Diego RWQCB 2018a). The maximum extent practicable is the standard for control of stormwater pollutants, as set forth by Section 402(p)(3)(iii) of the CWA. However, the CWA does not quantitatively define the term maximum extent practicable. As implemented, maximum extent practicable varies with conditions. In general, to achieve the maximum extent practicable standard, co-permittees must require deployment of whatever BMPs are technically feasible (that is, are likely to be effective) and are not cost prohibitive. To achieve fair and effective implementation, criteria and guidance for those controls must be detailed and specific, while also offering the right amount of flexibility or exceptions for special cases. A project-specific WQMP's compliance with the requirement to achieve the maximum extent practicable standard is documented within the project-specific WQMP through the completion of worksheets that document the feasibility or infeasibility of the deployment of BMPs.

Per the requirements of the Water Quality Management Plan for the Santa Margarita Region of Riverside County, the project's project-specific WQMP is required to address potential water quality impacts from pollutants to the maximum extent practicable by ensuring that the project incorporates low-impact development (LID) principles, LID BMPs, and conventional treatment control BMPs (where LID BMPs are technically infeasible), and by explaining the basis for the determination of each BMP's feasibility.

Water Quality Control Plan for the San Diego Region

The San Diego RWQCB has prepared the Water Quality Control Plan for the San Diego Region (Basin Plan) in accordance with state and federal law, and completed its most recent triennial review in 2018 (San Diego RWQCB 2016, 2018b). The Basin Plan sets forth the regulatory water quality standards for surface water and groundwater within the region. The applicable water quality standards are composed of the designated beneficial use for each water body and the water quality objectives to meet those designated beneficial uses. Where multiple designated beneficial uses exist, water quality standards must protect the most sensitive use. Water quality objectives are typically numeric, although narrative criteria based on biomonitoring methods may be employed where numerical objectives cannot be established or where narrative criteria are needed to supplement numerical objectives. In cases where the Basin Plan does not contain a water quality objective for a particular pollutant, other criteria are used to establish a standard. Other criteria may be applied from SWRCB documents (e.g., the Inland Surface Waters Plan and the Pollutant Policy Document) or from water quality criteria developed under Section 304(a) of the CWA.

Total Maximum Daily Loads

In accordance with the CWA and Porter-Cologne Water Quality Control Act, TMDLs have been developed and incorporated into the Basin Plan for some pollutants identified on the 303(d) list as causing impairment in receiving waters. For other pollutants listed on the 303(d) list, TMDLs are scheduled to be determined, are undergoing determination, or are in the process of review by the SWRCB. No TMDLs have been established for the Santa Margarita River Basin (SWRCB 2018a).

Upper Santa Margarita Integrated Regional Water Management Plan

The upper Santa Margarita River Watershed is also managed in accordance with the Upper Santa Margarita IRWMP. The Upper Santa Margarita IRWMP is a planning and management tool that facilitates efficient use of water resources and the development of effective water conservation measures through a regional- and watershed-based approach. Development of the Upper Santa Margarita IRWMP is a cooperative effort by the Rancho California Water District, Riverside County Flood Control and Water Conservation District, and Riverside County. The intent of the IRWMP is to enable greater watershed-wide coordination and management of water resources within the Santa Margarita Watershed, as well as adjoining watershed and regional planning and funding efforts. Through the Upper Santa Margarita IRWMP, stakeholders collaborate across jurisdictional boundaries to implement water resource management projects. These stakeholders include regional water agencies, flood control districts, counties, cities, and federal/state/local agencies. The Upper Santa Margarita IRWMP also provides opportunities to identify and evaluate information on the present and future needs within the watershed, for consideration in the California Water Plan (City of Murrieta 2011).

Local

City of Murrieta Stormwater Management Plan

To minimize the potential effects of stormwater runoff, the City implements its SWMP to reduce pollutants in urban runoff to the maximum extent practicable. The SWMP identifies methods to reduce potential stormwater runoff and contribution of pollutants to the storm drain system. BMPs for industrial, commercial, and residential sources are identified for consideration and implementation to reduce potential discharges to the maximum extent practicable.

Murrieta Municipal Code

Municipal Code 8.36.140, Jurisdictional Runoff Management Program, requires the city engineer to adopt a specific jurisdictional runoff management program to comply with the NPDES permit and ensure that stormwater pollutant discharges in runoff are reduced to the maximum extent practicable and do not cause or contribute to a violation of water quality standards.

Municipal Code 15.52.160, Erosion and Sediment Control, requires that all grading plans include an erosion and sediment control plan designed to limit erosion and sediment of all disturbed portions of the property and to minimize the transport of soil onto adjacent properties or into streets, storm drains, or drainage ways.

Municipal Code 16.96.030, Application Filing and Department Review, requires that a detailed drainage and flood control report be prepared. Municipal Code 16.98.070, Preliminary Submittal, requires completion of a 100-year flood inundation map and complete hydrology and hydraulic calculations of all flood flows, retention facilities, and storm drains.

City of Murrieta General Plan 2035

The Conservation Element of the City's General Plan sets forth goals, policies, and implementation measures for the protection and management of surface water and groundwater within the boundaries of the City and sphere of influence, as well as the management of stormwater volumes and flows, including the following (City of Murrieta 2011):

Goal CSV-3 A community that participates in a multi-jurisdictional approach to protecting, maintaining, and improving water quality and the overall health of the watershed.

Policy CSV-3.1 Collaborate with partner agencies and other communities to conserve and properly manage surface waters within the City and Sphere of Influence, through protection of the watershed and natural drainage system.

Policy CSV-3.2 Promote storm water management techniques that minimize surface water runoff in public and private developments.

Policy CSV-3.3 Utilize low-impact development (LID) techniques to manage storm water through conservation, on-site filtration, and water recycling, and continue to ensure compliance with the NPDES permit.

Policy CSV-3.4 Encourage the creation of a network of "green" streets that minimize stormwater runoff, using techniques such as on-street bioswales, bio-retention, permeable pavement, or other innovative approaches, as feasible.

Policy CSV-3.5 Seek opportunities to restore natural watershed function as an added benefit, while mitigating environmental impacts.

4.8.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to hydrology and water quality are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to hydrology and water quality would occur if the project would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would:
   i. Result in substantial erosion or siltation on or off site;
   ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site;
   iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
   iv. Impede or redirect flood flows.

4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Thresholds 3(iv) and 4 were analyzed in the Initial Study and were not carried forward for further analysis in this EIR because the project site is not in a flood hazard, tsunami, or seiche zone or susceptible to substantial inundation.

4.8.4 Impacts Analysis

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

Construction

Less-than-Significant Impact. Project construction would involve the use of heavy machinery on site, including bulldozers, front loaders, track hoes, trenchers, semi-trucks, and various other large equipment, which would be used for site preparation and construction activities. The project site has been subject to extensive grading and therefore has exposed soil/bedrock and very limited vegetation. Excavations and grading for the project would result in disturbance of existing sediments, such that erosion could be exacerbated during precipitation events. In addition, construction and related activities could result in the incidental, minor release of oils, grease, antifreeze, paint washout, cement washout, and other potential water quality pollutants. During a storm event, these pollutants could also become entrained in stormwater and be released into natural waterways, causing water quality degradation in receiving waters. This could have an adverse impact on water quality.

Because the project would involve construction within an area that is larger than 1 acre, the project applicants would be required to apply for and receive coverage under the current General Construction Permit. As discussed in Section 4.8.2, acquisition of coverage under the General Construction Permit would require adherence to a variety of conditions designed to protect receiving water quality from degradation that could otherwise result from construction activities, as specified in a project-specific SWPPP. Conditions would include adherence to sediment and stormwater pollutant control BMPs, effluent monitoring and compliance, post-construction period requirements, worker training, and various other measures designed to minimize potential for sediment and construction-related pollutants to degrade stormwater quality downstream.

In addition to requirements of the General Construction Permit, the project would be required to adhere to relevant construction stormwater practices required under the City Municipal Code, including the Jurisdictional Runoff Management Program and Erosion/Sediment Control requirements. Stormwater BMPs would include those recommended by the California Stormwater Quality Association, such as scheduling or limiting activities to certain times of the year, installing sediment barriers (e.g., silt fences and fiber rolls), maintaining equipment and vehicles used for construction, tracking controls such as stabilizing entrances to the construction site, and developing and implementing a spill prevention and cleanup plan. Non-stormwater management BMPs would include installing specific discharge controls during activities such as paving operations, vehicle and equipment washing, and fueling. BMPs that relate to the handling of hazardous materials, spill prevention and clean up, and the handling of contaminated soil could include minimizing the storage of hazardous materials on site, providing training on spill prevention and clean up, and ensuring proper handling procedures for contaminated soils (California Stormwater Quality Association 2003). Compliance with existing regulations and implementation of an SWPPP would prevent violation of water quality standards and minimize the potential for contributing sources of polluted runoff. Therefore, impacts to water quality and waste discharge from construction activities associated with the project would be less than significant.

Operation

Less-than-Significant Impact. Operation of the project would not result in the violation of any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, as discussed in detail below.

Groundwater Quality

The project site is underlain by relatively impermeable granitic bedrock (Appendices E-1 and E-2); therefore, stormwater infiltration is limited at the site. Due to the layer of relatively impermeable granitic bedrock underlying the site, and the fact that the project does not involve a groundwater recharge component, the project would have no impact on groundwater quality.

Waste Discharge Requirements

Development projects that have the potential to violate waste discharge requirements are typically industrial in nature and generate wastewater flows that may contain pollutants that could affect the quality of receiving waters that receive those discharges. Examples of projects for which waste discharge requirements are an important consideration include mining projects, oil and gas projects, and projects that involve chemical processing. The project involves the development of a retail center, and thus, would not involve the discharge of waste flows into receiving waters. As discussed in detail in Section 4.15, Utilities and Service Systems, the project would only generate municipal wastewater flows that would be typical of other wastewater flows generated within the City, and all wastewater flows would be collected via the project's interior plumbing systems and discharged into the local sewer system for treatment at the regional water reclamation facility. The project would not generate any wastewater streams that would require specialized treatment processes, and the project's future wastewater treatment provider (i.e., Eastern Municipal Water District) has indicated that it has the capacity and capability to treat all project-generated wastewater at its regional wastewater treatment plants to a standard that is consistent with the water quality requirements imposed upon it by the San Diego RWQCB and EPA. For additional detail about project-generated wastewater and its treatment, see Section 4.15.

Surface Water Quality

A project could have a significant impact with respect to surface water quality if a project were to contribute pollutants to downstream receiving waters and the addition of those pollutants were to cause water quality objectives within the San Diego RWQCB Basin Plan to be violated, or if the addition of those pollutants were to cause the loss or impairment of beneficial uses. A project may contribute pollutants to downstream receiving waters through a variety of vectors, such as directly discharging pollutants into receiving waters, or by indirectly allowing stormwater runoff, which can collect and carry pollutants, to flow into receiving waters. As previously discussed, the project would not directly discharge wastewater into receiving waters and would therefore not directly result in a water quality violation or cause the loss or impairment of beneficial uses. With the occurrence of rain events, the project would generate stormwater runoff that would be routed through the City's stormwater system and ultimately into Warm Springs Creek, Murrieta Creek, and the Santa Margarita River. With the generation of stormwater and its discharge into receiving waters, the project has the potential to allow for pollutants to be collected within the project site and carried toward receiving waters, which could potentially indirectly result in a water quality violation or loss or impairment of beneficial uses.

To ensure that development projects do not contribute pollutants via stormwater runoff to receiving waters, projects in the Santa Margarita Water Region are required to prepare a project-specific WQMP in accordance with the requirements of Section F.1.d.(1) of the Regional Permit for the Santa Margarita Region. Project-specific WQMPs are required to manage and treat the discharge of stormwater pollutants from development projects to the maximum extent practicable. The Regional Permit and the CWA do not quantitatively define the term maximum extent practicable, nor do they establish quantitative criteria by which a project's efforts to manage and treat stormwater may be evaluated. Rather, the CWA and Regional Permit qualitatively define the maximum extent practicable standard that requires projects to deploy whatever BMPs are technically feasible (i.e., are likely to be effective) and not cost prohibitive (San Diego RWQCB 2018a). A project-specific WQMP's compliance with the requirement to achieve the maximum extent practicable standard is documented within the project-specific WQMP through the completion of worksheets and studies that document the feasibility or infeasibility of deployment of BMPs.

In accordance with the requirements of the Regional Permit, two project-specific preliminary WQMPs have been prepared for the project: one report for the western Costco portion of the site and one report for the eastern Vineyard II portion of the site (Appendices G-3 and G-4). As discussed in the project-specific WQMPs, the project would deploy a number of BMPs that would meet the maximum extent practicable standard, as discussed in detail below.

Costco Portion of Site

Based on the WQMP for the western, Costco portion of the project site, stormwater will be managed and treated through a mixture of strategies, including self-mitigating drainage management areas, hydromodification, and the use of low-impact development BMPs.

The project site is underlain by dense, generally impermeable bedrock; therefore, soil infiltration would be limited in effectiveness and is therefore not deployed as a strategy to manage and treat stormwater. On-site percolation tests indicate infiltration rates ranging from 0.13 to 0.38 inches per hour, which is both below and above the generally accepted minimum infiltration rate of 0.3 inches per hour (Appendix G-1).

To compensate for the lack of natural infiltration, the project design would utilize biofiltration and self-mitigating drainage management areas, where feasible, as hydromodification tools. Self-mitigating drainage management areas consist of cut slopes and landscaped perimeter slopes that would be isolated and planted per the requirements of self-mitigation. For impervious pavement, the project would grade select areas into landscaped BMPs, consisting of bioretention areas located around the perimeter of the parking lot and BMP bioretention planters located within the parking lot. The larger perimeter bioretention BMP basins would treat and meet hydromodification requirements, including a 36-inch layer of biofiltration soil media, a 12- to 18-inch layer of gravel, and an underlying perforated subdrain that would flow into the storm drain system. Within the parking lot, areas would be graded to flow into parking lot bioretention planter islands to be located throughout the project site. For planter islands and other areas where bioretention alone is too small to meet hydromodification requirements, underground stormwater tanks would be utilized to supplement storage and serve as low-impact development BMPs. The treatment control BMPs have been designed to remove greater than 80% of the priority pollutants, including bacteria, metals, organic compounds, sediment, trash, and oil/grease, which is considered to be a removal efficiency of high effectiveness (Appendix G-3).[1]

[1] The 80% effectiveness threshold is a threshold used to evaluate the effectiveness of proprietary treatment mechanisms to treat potential pollutants in runoff (San Diego RWQCB 2018a).

The street runoff in Warm Springs Parkway (east of the Costco portion of the project site) would be treated using tree wells. The proposed gas station would be covered, and roof runoff would be collected and conveyed into bioretention areas for treatment and hydromodification. Under the gas station canopy, the area would be isolated by concrete ditches that, in case of an accidental spill, would collect and convey spills into an oil–water separator. Gasoline spill kits would be included in the gasoline dispensing area for personnel to utilize as necessary (Appendix G-3).

The strategy for roof areas, including the main building and food court, would be to convey water to proprietary biofiltration units (modular wetlands units) for treatment and collection to underground tanks for hydromodification. This strategy would be implemented because roof drains tie in 3 feet below ground and are too deep to daylight to surface biofiltration planters. The proposed refuse trash area would be covered (Appendix G-3).

Vineyard II Portion of Site

Similar to the Costco portion of the project site, the eastern, Vineyard II portion of the project site is underlain by dense, generally impermeable bedrock; therefore, soil infiltration would be limited in effectiveness. Based on the WQMP completed for this portion of the project site, at 100% buildout, the site would be approximately 80% impervious. When brought to grade, the site will become much flatter than its natural condition and all impervious areas would successively drain to detention pipe storage and water quality basins, before draining into the public storm drain system that flows beneath the adjacent residential tract to the east. Curb cuts would be placed on site to drain runoff to two on-site bioretention basins, in the southeast and northeast corners of the site, and two tree wells. Bioretention basins would treat and meet hydromodification requirements, including a 24-inch layer of biofiltration soil media, a 36- to 48-inch layer of gravel, and an underlying perforated subdrain that would flow into the storm drain system. The proprietary treatment control BMPs have been designed to remove greater than 80% of the priority pollutants, including bacteria, metals, organic compounds, sediment, trash, and oil/grease (Appendix G-4).

The street runoff in Warm Springs Parkway (east of the Costco portion of the project site) would be treated using tree wells. For Antelope Road, the improvements for the cul de sac utilize the existing asphalt concrete pavement area. The added pavement is a de minimis condition and does not require treatment.

Surface Water Quality Conclusion

Although the effectiveness of the project's BMPs is not easily predictable, the Water Quality Management Plan for the Santa Margarita Region states that that deployment of BMPs has been shown in studies throughout the country to be effective and reliable at treating a wide range of pollutants that can be found in runoff (San Diego RWQCB 2018a). As such, if deployed to the maximum extent practicable as demonstrated in a project-specific WQMP, the Water Quality Management Plan for the Santa Margarita Region states that BMPs are expected to treat discharges of urban-sourced pollutants from priority development projects with a high level of effectiveness, such that the runoff discharges from the priority development projects should not cause or contribute to an exceedance of receiving water quality objectives or the loss or impairment of beneficial uses. As demonstrated within the project-specific WQMPs, the project has been designed to include the appropriate selection of BMPs that would satisfy the requirements of a project-specific WQMP per the Regional Permit. Furthermore, the project's project-specific WQMPs will be submitted to the City's Engineering Department for review prior to issuance of grading permits. Implementation of the strategies identified in the two project-specific WQMPs would ensure that potential impacts to surface water quality resulting from stormwater runoff are less than significant.

Operational Impacts Conclusion

The project would collect waste through an indoor plumbing system and discharge it to the existing sewer treatment system and would not generate any wastewater streams that would require specialized treatment processes. Eastern Municipal Water District has indicated that it has the capacity and capability to treat all project-generated wastewater at its regional wastewater treatment plants to a standard that is consistent with the water quality requirements imposed upon it by the San Diego RWQCB and EPA. For additional detail about project-generated wastewater and its treatment, see Section 4.15.

Project grading and construction would be completed in accordance with an NPDES-mandated SWPPP, which would include standard BMPs to reduce potential off-site water quality impacts related to erosion and incidental spills of petroleum products and hazardous substances from equipment. Surface water runoff during project operations would be managed through a mixture of strategies, including self-mitigating drainage management areas, hydromodification, and low-impact development BMPs, such as bioretention basins, tree wells, planter boxes, underground detention basins, and spill interceptor trenches. These features are designed to remove priority pollutants from on-site runoff prior to discharge into the storm drain system to the maximum extent feasible, as demonstrated within the project-specific WQMPs. Therefore, the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality and water quality impacts would be less than significant.

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

Less-than-Significant Impact. The project site is underlain by relatively impermeable granitic bedrock with no appreciable quantities of groundwater. As a result, local groundwater would not be used for the project. The nearest groundwater basin is located in downstream alluvial sediments of the Murrieta–Temecula Groundwater Basin. Water would be provided to the project by the Eastern Municipal Water District, which utilizes a combination of imported water, groundwater, and recycled water as water sources. As a result, impacts would be less than significant. See Section 4.15 regarding availability of water for the project.

Because the project site is underlain by granitic bedrock that is not an area of groundwater recharge, the project would not interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. Thus, impacts would be **less than significant**.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off site; or (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Erosion or Siltation

Less-than-Significant Impact. The project site overlies portions of two partially excavated hills, with drainage generally flowing to the northwest and southeast. Existing off-site stormwater runoff occurs toward three locations, denoted as POC-A, POC-B, and POC-C in Figure 4.8-1. Precise grading would result in a series of building pads with intervening south-, east-, and southeast-facing slopes. The northern property boundary would consist of a south-

facing cut slope. The controlled drainages, as described earlier in this section with respect to water quality, would change the internal drainage patterns of the site. However, stormwater would continue to flow off site toward existing storm drains located at POC-A, POC-B, and POC-C. Runoff from the southwest portion of the project site would flow toward off-site location POC-A, where runoff is collected via catch basins and conveyed west into Interstate 215. A portion of the runoff from the cut slope along the northern site boundary would flow east and then north toward a storm drain at off-site location POC-C, and runoff from the remaining project area would flow southeast toward a storm drain located at an off-site location POC-B (Appendix G-1).

The proposed drainages have been designed such that no substantial erosion and associated off-site siltation would occur. Hydromodification calculations were performed to determine the flow duration for the flow rates that cause erosive conditions. As previously described in this section with respect to water quality, bioretention basins and other low-impact development BMPs are proposed as part of the project. The basins were designed with low-flow thresholds in order to meet peak flow frequency and flow duration controls. The resulting mitigated outflows associated with design storm scenarios (i.e., theoretical storm scenarios used to evaluate the effectiveness of a storm drain system; a design storm is the rainfall amount and distribution in space and time, used to determine a design flood or design peak discharge) would be equal to or less than the pre-developed outflows, or within the 10% tolerance (Appendix G-3; Appendix G-4). As a result, the project would not substantially alter the existing drainage pattern of the site, such that substantial erosion or siltation on or off site would occur. Additionally, as discussed in Section 4.5, Geology and Soils, the project would implement an SWPPP during construction, which would involve adherence to sediment and stormwater pollutant control BMPS, effluent monitoring and compliance, post-construction-period requirements, worker training, and various other measures designed to minimize potential for soil erosion and loss of top soil. Thus, the project would not result in substantial erosion or siltation on or off site and impacts would be less than significant.

Surface Runoff and Stormwater System Capacity

Less-than-Significant Impact. As previously discussed, proposed controlled drainages would change the internal drainage patterns of the site. The site would be graded such that there would be large building pads with relatively small, intervening south-, east-, and southeast-facing slopes. The proposed grading patterns and drainage facilities would match the existing drainage patterns to the maximum extent practical. The on-site drainage would be collected and treated via a combination of on-site biofiltration basins with retention and partial infiltration biofiltration units with storm drain retention tanks. The project proposes the construction of on- and off-site storm drain pipes to convey runoff to POCs A, B, and C. Based on project-specific drainage analyses, the project would result in a decrease of unmitigated 100-year runoff flow rates compared to pre-developed conditions (i.e., conditions before the mass grading operation began) for both the western, Costco portion of the project, and the eastern, Vineyard II portion of the project (Appendices G-1 and G-2). The unmitigated conditions do not account for project design features, including the bioretention basins and retention storm drain tanks provided for hydromodification. This unmitigated reduction in runoff can be attributed to the fact that the project lies on two hills with peaks over 100 feet above adjacent street grades, and the post-developed conditions would effectively level the site to adjacent street grades.

The proposed biofiltration features would further attenuate flows associated with 10-year storm events and have additional stormwater storage for 100-year attenuation, as necessary. On-site biofiltration basins with partial retention and partial infiltration are designed to serve dual purposes for water quality and hydromodification requirements. Storm drainage storage tanks throughout the site supplement biofiltration-only units, are designed to meet hydromodification requirements to attenuate 10-year storm events, and have additional available storage for 100-year attenuation, as necessary. Because the project, by way of the design of the on-site stormwater system,

would result in post-development 100-year peak flows rates that would be below or effectively equal to pre-development conditions (Appendix G-1; Appendix G-2), it follows that the project would not contribute additional stormwater that would exceed the capacity of existing or planned stormwater drainage systems. Therefore, although the project would substantially alter the existing drainage pattern of the site, the project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. Additionally, the project's project-specific WQMPs address the requirements for water quality, as discussed in the section above. Accordingly, the project would not result in substantial additional sources of polluted runoff, would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, and would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Thus, impacts would be less than significant.

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

Less-than-Significant Impact. As previously discussed, during construction and operation the project would comply with applicable water quality regulatory requirements, including implementation of a SWPPP, stormwater BMPs, and low-impact development design, which would minimize potential off-site surface water quality impacts and contribute to a reduction in water quality impacts within the overall Santa Margarita Region watersheds. In addition, with compliance with these regulatory requirements, the project would reduce potential water quality impairment of surface waters such that existing and potential beneficial uses of key surface water drainages throughout the jurisdiction of the San Diego RWQCB Basin Plan and Upper Santa Margarita Integrated Regional Water Management Plan would not be adversely impacted. As a result, the project would not conflict with or obstruct the San Diego RWQCB Basin Plan.

With respect to groundwater management, the Temecula Valley Groundwater Basin has not been identified as a critically overdrafted basin and is considered a very low-priority basin with respect to SGMA. As a result, the project would not conflict with or obstruct this sustainable groundwater management plan. Impacts are considered less than significant, and no mitigation measures are required.

No other adverse water quality impacts would occur in association with the project. Thus, impacts would be less than significant.

4.8.5 Mitigation Measures

No mitigation measures are required.

4.8.6 Level of Significance After Mitigation

The project would not result in significant impacts, and no mitigation measures are necessary.

4.8.7 Cumulative Impacts

Water Quality

The geographic context for the analysis of cumulative impacts associated with water quality is the encompassing Santa Margarita River Watershed. The analysis accounts for projects provided in Table 4-1, Cumulative Projects, in Chapter 4, Environmental Analysis. Cumulative development in the watershed could add new sources of stormwater runoff. Construction activities associated with development could temporarily increase the amount of exposed surfaces that could contribute to sediments in stormwater runoff. Additionally, materials associated with construction activities could be deposited on surfaces and carried to receiving waters in stormwater runoff.

Continued development and redevelopment within the Santa Margarita River Watershed could also increase the amount of impervious surfaces that could increase stormwater runoff rates and amounts, as well as changes in land use that may increase the amount of pollutants in stormwater runoff. However, all cumulative development in the watershed would be subject to the existing regulatory requirements to protect water quality and minimize increases in stormwater runoff during construction and operation. For example, the Construction General Permit requires development and implementation of a SWPPP for all construction sites larger than 1 acre to mitigate potential impacts to water quality from polluted stormwater runoff. Additionally, because the City is a co-permittee of the Regional MS4 Permit, new development would be required to prepare a project-specific WQMP to mitigate operational impacts to water quality.

Every 2 years, the San Diego RWQCB must re-evaluate water quality within its geographic region and identify those water bodies not meeting water quality standards. For those impaired water bodies, a TMDL must be prepared and implemented to reduce pollutant loads to levels that would not contribute to a violation of water quality standards. All development within the Santa Margarita River Watershed is subject to the water quality standards outlined in the Basin Plan and must comply with any established TMDLs. The continuing review process would ensure that cumulative development within the watershed would not substantially degrade water quality.

As discussed in detail in Section 4.15, wastewater treated by cumulative development would be treated by the applicable future wastewater treatment provider to a standard that is consistent with the water quality requirements imposed upon it by the San Diego RWQCB and EPA prior to discharge into the Santa Margarita River Watershed. The project would generate a wastewater stream that is similar to other wastewater streams generated throughout the Santa Margarita River Watershed region. As discussed in detail in Section 4.15, the project's future wastewater treatment provider (i.e., Eastern Municipal Water District) has indicated that it has the capacity and capability to treat all project-generated wastewater at its regional wastewater treatment plants. Given the excess capacity available at Eastern Municipal Water District wastewater treatment plants (see Section 4.15), the project would not combine with other cumulative development to result in a scenario where wastewater treatment providers could not treat wastewater to applicable standards.

Because the project site is underlain by granitic bedrock that is not an area of groundwater recharge, the project would not interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. It follows that the project would not combine with other cumulative development to result in a cumulatively considerable impact to groundwater quality.

In addition, other projects in the City would be subject to the City Municipal Code requirements and City's SWMP, and other projects in the Santa Margarita River Watershed would be subject to provisions, goals, and requirements of the Santa Margarita Region Watershed Protection Program and the Upper Santa Margarita IRWMP. Therefore,

impacts associated with water quality standards and polluted runoff in the watershed would be minimized, and the project's contribution to cumulative impacts would not be cumulatively considerable.

Stormwater Drainage

The geographic context for the analysis of cumulative impacts related to storm drainage is the Santa Margarita River Watershed. Cumulative development within the watershed could potentially increase the amount of impervious surfaces that could cause or contribute to storm drain and creek bed capacity exceedance, alter existing creek bed profiles (i.e., create erosive downcutting and bank failure), and/or require construction of new or expanded flood control infrastructure. However, as the project decreases flows from the project site into the watershed as compared with the pre-development condition of the site, the project would not contribute to such exceedances and therefore impacts would not be cumulative considerable. New development within the watershed would be subject to the environmental review process and compliance with local stormwater regulations, such as the Construction General Permit, Section 1602 of the California Fish and Game Code, the Section 404 permit process of the CWA, local municipal code requirements, and local Water Quality Management Plan requirements. Similar to the project, other projects in the Santa Margarita River Watershed would incorporate hydromodification features such that drainage rates and volumes would be less than or equal to existing conditions. Therefore, impacts associated with changes in runoff in the watershed would be minimized, and the project's contribution to cumulative impacts would not be cumulatively considerable.

4.8.8 References Cited

California Department of Water Resources. 2016. *California's Groundwater, Working Toward Sustainability*. Bulletin 118. Sacramento: California Department of Water Resources. December 22, 2016. Accessed September 2018. https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Statewide-Reports/Bulletin_118_Interim_Update_2016.pdf.

California Stormwater Quality Association. 2003. *California Stormwater Quality Association, Stormwater Best Management Practice Handbook: New Development and Redevelopment*. Accessed September 2018. https://www.casqa.org/sites/default/files/ BMPHandbooks/BMP_NewDevRedev_Complete.pdf.

City of Murrieta. 2011. *Murrieta General Plan 2035*. Accessed August 2018. https://www.murrietaca.gov/departments/planning/general.asp.

County of San Diego. 2014. *Final Low Impact Development Handbook, Stormwater Management Strategies*. County of San Diego, Department of Public Works. July 2014. Accessed September 2018. https://www.sandiegocounty.gov/content/dam/sdc/dpw/WATERSHED_PROTECTION_PROGRAM/susmppdf/lid_handbook_2014sm.pdf.

EPA (U. S. Environmental Protection Agency). 2018. "2014–2016 California 303(d) List of Impaired Waters." Approval letter from T. Torres (EPA) to E. Sobeck (California State Water Resources Control Board). April 6, 2018. Accessed September 2018. https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/impaired_waters_list/2014_int_rpt_dev/2014_2016_int_rpt/2018_0406_usepa_appr_ltr_final.pdf.

FEMA (Federal Emergency Management Agency). n.d. "FEMA Flood Map Service Center: Search By Address." Accessed September 2018. https://msc.fema.gov/ portal/search#searchresultsanchor.

Riverside County Flood Control and Water Conservation District. n.d. "Santa Margarita Region Watershed Protection Program." Riverside County Watershed Protection. Accessed September 2018. http://rcflood.org/NPDES/SantaMargaritaWS.aspx.

San Diego RWQCB (Regional Water Quality Control Board). 2016. *Water Quality Control Plan for the San Diego Basin*. Accessed August 2018. https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan.

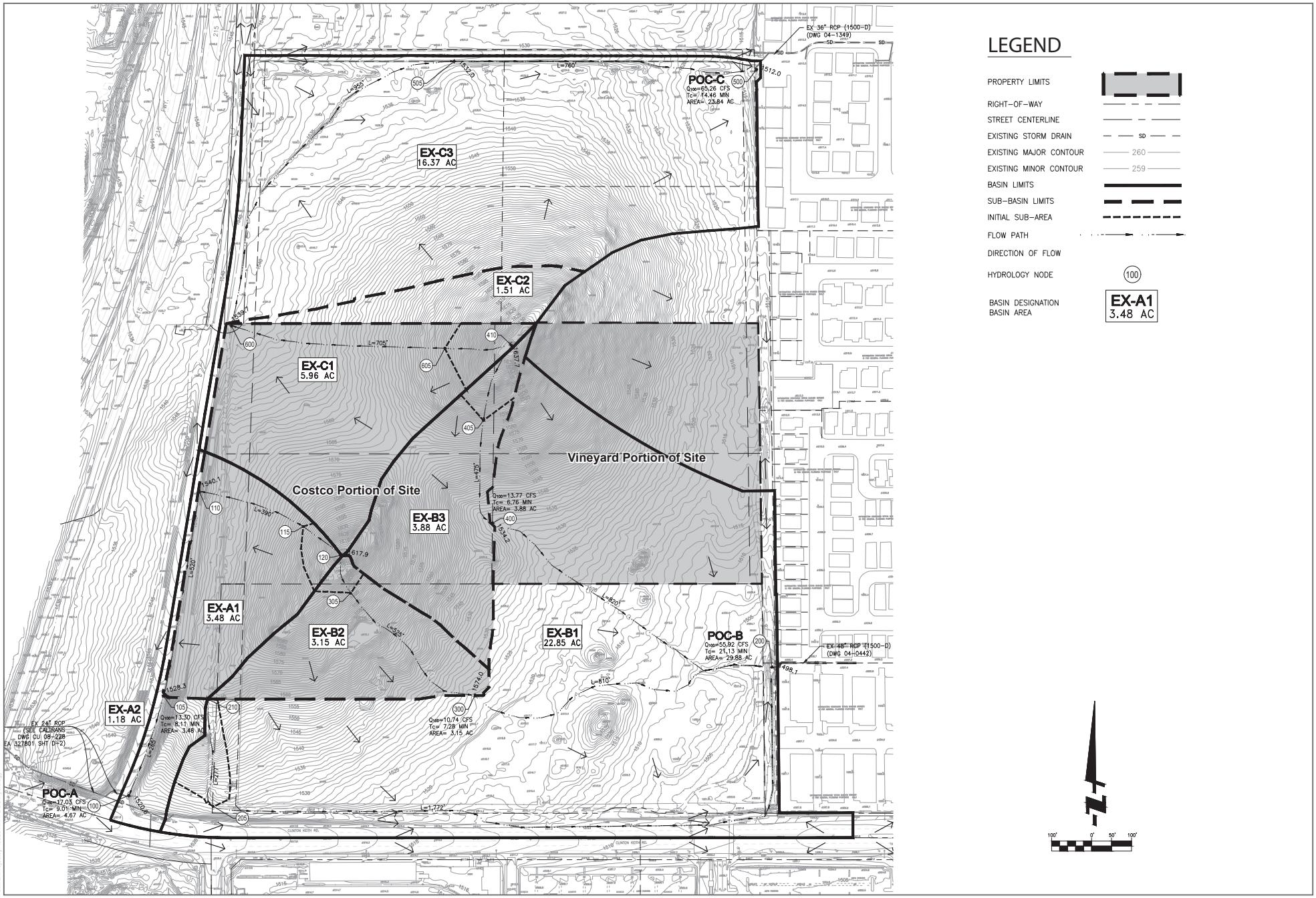
San Diego RWQCB. 2018a. *2018 Water Quality Management Plan*. Accessed January 2020. http://rcflood.org/downloads/NPDES/Documents/SM_WQMP/2018_SMR_WQMP.pdf.

San Diego RWQCB. 2018b. "San Diego Region–Basin Plan Review." Accessed September 2018. https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/tri_review.html.

SWRCB (State Water Resources Control Board). 2018a. "Total Maximum Daily Load (TMDL) Program." Accessed September 2018. https://www.waterboards.ca.gov/ water_issues/programs/tmdl.

SWRCB. 2018b. "Draft 2018 SGMA Basin Prioritization Dashboard." Accessed September 2018. https://gis.water.ca.gov/app/bp2018-dashboard.

INTENTIONALLY LEFT BLANK



SOURCE: Fuscoe Engineering 2018a; Excel Engineering 2018a

DUDEK

FIGURE 4.8-1

Existing Site Drainage

Costco/Vineyard Phase II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK

4.9 Noise

This section describes the existing noise setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco/Vineyard II Retail Development Project (project).

4.9.1 Existing Conditions

Noise and Vibration Concepts

Sound may be described in terms of level or amplitude (measured in decibels [dB]), frequency or pitch (measured in hertz, or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the amplitude of sound is the decibel. Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Noise is defined as unwanted sound and is known to have several adverse effects on people, including hearing loss, speech interference, sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal government, the State of California, and local agencies have established criteria to protect public health and safety, to prevent disruption of certain human activities, and to minimize annoyance.

Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise, on a community. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a sound energy level averaged over a specified time period (usually 1 hour). L_{eq} is a single numerical value that represents the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement would represent the average amount of energy contained in all the noise that occurred in that 1 hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors. L_{max} is the greatest sound level measured during a designated time interval or event.

Unlike the L_{eq} metric, L_{dn} and CNEL metrics always represent 24-hour periods. L_{dn} and CNEL also differ from L_{eq} because they apply a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). “Time weighted” refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m.–7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m.–10:00 p.m.) is penalized by adding 5 dB, and nighttime (10:00 p.m.–7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is defined as 7:00 a.m.–10:00 p.m., thus eliminating the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 to 1 dB; for that reason, the L_{dn} and CNEL noise metrics are often considered functionally equivalent to one another for most purposes.

Table 4.9-1 represents some typical noise levels found in the existing environment. Noise-sensitive uses near the project site include residential uses and a school (Vista Murrieta High School).

Table 4.9-1. Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kph (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural night time	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013a.
Note: kph = kilometers per hour; mph = miles per hour.

There are three conceptual components to noise: the source; the transmission path; and the receiver. Noise can be reduced by reducing noise at its source; by lengthening or interrupting the transmission path through diversion, absorption, or dissipation; or by protecting the receiver through noise insulation. The most efficient and effective means of abating noise is to reduce noise at its source. Source noise can be controlled through regulation, such as restrictions outlined in noise ordinances, muffling techniques, or sound proofing. The transmission path can be interrupted through creation of a buffer between the source and the receiver, such as a noise wall, earth embankment, or a building. The receiver can be protected from noise impacts through insulation, building orientation, or shielded areas.

Noise sources can be classified in two forms: point sources, such as individual pieces of stationary or mobile equipment (pumps, heavy construction equipment); and line sources, such as a roadway with a large number of pass-by sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6 dB for each doubling of distance from the source to the receptor. For example, a 60 dBA noise level measured at 50 feet from a point source would be 54 dBA at 100 feet from the source and 48 dBA at 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3 dB and 4.5 dB per doubling of distance from the source to the receptor for hard and soft sites, respectively. Typical sound levels generated by various activities are listed in Table 4.9-1.

Sound levels can also be attenuated by built or natural barriers. Intervening noise barriers, such as a solid wall or berm, typically reduce noise levels by 5 dB to 10 dB. Structures can also provide noise reduction by insulating interior spaces from outdoor noise. The exterior-to-interior noise attenuation provided by typical California building structures ranges from 15 dB to 25 dB for windows open and closed, respectively. Acoustically designed enclosures and buildings can provide up to approximately 50 dB of noise reduction, depending on the noise abatement treatments.

Vibration tolerance typically depends on the type of structures that are affected. Structural response to vibration is typically evaluated in terms of peak particle velocity (PPV), generally expressed in inches per second (in/sec). PPV is often used since it is related to the stresses that are experienced by the buildings. Various general standards are contained in the International Standards Organization's Standards 3945, 4866, and 7626-1. Limits set by these standards indicate a low probability of structural damage occurring to common structures at a PPV of 2 in/sec. Older (and non-reinforced) masonry structures would have a limit of 0.75 to 1.0 in/sec (Caltrans 2013b). The U.S. Department of Transportation's Federal Transit Administration identifies a vibration damage threshold criterion of 0.20 in/sec for non-engineered timber and masonry buildings (i.e., fragile buildings) or 0.12 in/sec for buildings extremely susceptible to vibration (i.e., fragile historic buildings) (DOT 2018).

Existing Noise Environment

The approximately 26-acre project site is located on a vacant lot and is undergoing an ongoing mass-grading operation (with the associated noise from heavy construction equipment) that is removing the low-lying hills on site. Additionally, the surrounding roadways (Interstate 215, Clinton Keith Road, Whitewood Road) generate traffic noise. Surrounding residential and educational land uses also generate noise that contribute to ambient noise levels in the project area.

A sound level survey was conducted on February 23, 2018, and August 13, 2019, to evaluate existing sound levels and assess potential project noise impacts on the surrounding area. Short-term sound levels were measured at existing noise-sensitive receptors adjacent to the project site, as shown in Figure 4.9-1, Noise Measurement and Modeling Locations. Noise measurements were taken at the multi-family residences south of the project site (ST1), the high school south of the project site (ST2), the multi-family residences east of the project site (ST3), and the single-family residences east of the project site (ST4 and ST5).

Short-term (1 hour or less), attended sound level measurements were taken with a Rion NL-52 Sound Level Meter. This instrument is categorized as Type 1, Precision Grade. The sound measuring instrument used for the survey was set to the "slow" time response and the dBA scale for all noise measurements. To ensure accuracy, the laboratory calibration of the instrument was field checked before and after each measurement period using an acoustical calibrator. The accuracy of the acoustical calibrator is maintained through a program established through the manufacturer and traceable to the National Institute of Standards and Technology. The sound measurement instrument meets the requirements of American National Standards Institute Standard S 1.4-1983 and International Electrotechnical Commission Publications 804 and 651. In all cases, the microphone height was 5 feet above the ground, and the microphone was equipped with a windscreen.

During the field measurements, physical observations of the predominant noise sources were noted. The primary noise source in the project area was vehicle traffic on Clinton Keith Road, located south of the project site. Other secondary noise sounds included noise from heating, ventilation, and air conditioning (HVAC) equipment, distant construction noise, rustling leaves, birds, distant aircraft overflights, and other community noises. The results of the sound level measurements are summarized in Table 4.9-2. As shown in Table 4.9-2, measured noise levels ranged from 41 dBA L_{eq} at ST5 to 56 dBA L_{eq} at ST1 when rounded to whole numbers, as is customary for community noise measurements.

Table 4.9-2. Short-Term Sound-Level Measurement Results

Site ID	Measurement Location	Measurement Period			Noise Sources	Measurement Results (dBA)					
		Date	*Start Time (a.m.)*	*Duration (minutes)*		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
ST1	Multi-family residences south of project site	02-23-18	10:56	10	Traffic, birds, rustling leaves	55.6	71.3	46.3	48.9	52	55.4
ST2	Vista Murrieta High School, south of project site	02-23-18	9:56	15	HVAC, pool pumps, distant traffic, birds, distant aircraft, distant construction noise	55	65.1	46.8	49.2	52	58.4
ST3	Multi-family residential east of project site	02-23-18	10:18	10	Traffic, birds, rustling leaves	54.3	65.8	44.2	47.3	52.6	57.8
ST4	Single-family residential east of project site	02-23-18	10:39	10	Construction noise, birds, distant aircraft, rustling leaves	52.1	63.6	43.9	45.4	48.2	55.9
ST5	Single-family residential east of project site	08-13-19	10:34	15	Construction noise, birds, distant aircraft, distant traffic	40.6	49.7	37.5	38.7	40.1	42.1

Note: L_{eq} = equivalent continuous sound level (energy-averaged sound level); L_{max} = maximum sound level during the measurement interval; L_{min} = minimum sound level during the measurement interval; L_{90} = sound level exceeded for 90% of the measurement period; L_{50} = sound level exceeded for 50% of the measurement period; L_{10} = sound level exceeded for 10% of the measurement period; HVAC = heating, ventilation, and air conditioning.

4.9.2 Relevant Plans, Policies, and Ordinances

Federal

Noise Control Act

The Noise Control Act of 1972 recognized the role of the federal government in dealing with major commercial noise sources that require uniform treatment. Since Congress has the authority to regulate interstate and foreign commerce, regulation of noise generated by such commerce also falls under congressional authority. The federal government specifically preempts local control of noise from aircraft, railroads, and interstate highways. The U.S. Environmental Protection Agency has identified acceptable noise levels for various land uses to protect the public, with an adequate margin of safety, and to establish noise emissions standards for interstate commerce.

The Department of Housing and Urban Development's standards define day-night average sound levels (L_{dn}) at below 65 dBA for outdoors as acceptable for residential areas. Outdoor levels up to 75 dBA L_{dn} may be made acceptable through the use of insulation in buildings (HUD 2009).

State

California Code of Regulations, Title 24, Noise Insulation Standards

The pertinent California noise regulations are contained in the California Code of Regulations. Title 24, Noise Insulation Standards, establishes the acceptable interior environmental noise level for multi-family dwellings at 45 dBA L_{dn}. This may be extended by local legislative action to include single-family dwellings.

California Code of Regulations, Section 65302(f)

California Code of Regulations, Section 65302(f), requires local land use planning jurisdictions to prepare a general plan. The noise element is a mandatory component of general plans. It may include general community noise guidelines developed by the California Health and Human Services Agency and specific planning guidelines for noise/land use compatibility developed by the local jurisdiction. The state guidelines also recommend that the local jurisdiction consider adopting a local noise control ordinance. The California Health and Human Services Agency developed guidelines (OPR 2003) for community noise acceptability for use by local agencies. Selected relevant levels are as follows (OPR 2003):

- CNEL below 60 dBA – normally acceptable for low-density residential use
- CNEL of 55 dBA to 70 dBA – conditionally acceptable for low-density residential use
- CNEL below 65 dBA – normally acceptable for high-density residential use
- CNEL of 60 dBA to 70 dBA – conditionally acceptable for high-density residential use, transient lodging, churches, and educational and medical facilities
- CNEL below 70 dBA – normally acceptable for playgrounds and neighborhood parks

"Normally acceptable" is defined as satisfactory for the specified land use, assuming that normal conventional construction is used in buildings. "Conditionally acceptable" may require some additional noise attenuation or special study. Under most of these land use categories, overlapping ranges of acceptability and unacceptability are presented, leaving some ambiguity in areas where noise levels fall within the overlapping range. Table 4.9-3 presents the complete land use/noise compatibility matrix.

Table 4.9-3. Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	*Conditionally Acceptable*	*Normally Unacceptable*	*Clearly Unacceptable*
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50–60	55–70	70–75	75–85
Residential – Multiple Family	50–65	60–70	70–75	70–85
Transient Lodging – Motel, Hotels	50–65	60–70	70–80	80–85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50–70	60–70	70–80	80–85
Auditoriums, Concert Halls, Amphitheaters	N/A	50–70	N/A	65–85
Sports Arenas, Outdoor Spectator Sports	N/A	50–75	N/A	70–85
Playgrounds, Neighborhood Parks	50–70	N/A	67.5–77.5	72.5–85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50–70	N/A	70–80	80–85
Office Buildings, Business Commercial and Professional	50–70	67.5–77.5	75–85	N/A
Industrial, Manufacturing, Utilities, Agriculture	50–75	70–80	75–85	N/A

Source: OPR 2003.
Notes: CNEL = community noise equivalent level; N/A = not applicable.
Normally Acceptable: Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made, and needed noise-insulation features must be included in the design.
Clearly Unacceptable: New construction or development should generally not be undertaken.

California Occupational Safety and Health Administration Occupational Noise Exposure Regulations

The extensive state regulations pertaining to worker noise exposure are, for the most part, applicable only to the construction phase of any project,[1] or workers in a central plant and/or maintenance facility, or involved in the use of landscape maintenance equipment or heavy machinery.

Local

Murrieta General Plan 2035

The Noise Element of the Murrieta General Plan includes goals and policies associated with the protection of noise-sensitive land uses, development of a comprehensive land use planning and development review process that ensures noise impacts are adequately addressed, minimization of noise from mobile noise sources, and reduction of noise levels from construction activities, as follows (City of Murrieta 2011):

Goal N-1 Noise sensitive land uses that are properly and effectively protected from excessive noise generators.

[1] For example, the California Occupational Safety and Health Administration Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095, et seq.).

Policy N-1.1 Comply with the Land Use Compatibility for Community Noise Environments [shown herein as Table 4.9-3].

Policy N-1.2 Protect schools, hospitals, libraries, churches, convalescent homes, and other noise sensitive uses from excessive noise levels by incorporating site planning and project design techniques to minimize noise impacts. The use of noise barriers shall be considered after all practical design-related noise measures have been integrated into the project. In cases where sound walls are necessary, they should help create an attractive setting with features such as setbacks, changes in alignment, detail and texture, murals, pedestrian access (if appropriate), and landscaping.

Goal N-4 Reduced noise levels from construction activities.

Policy N-4.5 Allow exceedance of noise standards on a case-by-case basis for special circumstances including emergency situations, special events, and expedited development projects.

City of Murrieta Noise Ordinance

The City's Noise Ordinance (Section 16.30 of the City's Municipal Code) sets interior and exterior noise standards for specific land uses (Sections 16.30.090 and 16.30.100). The City's Noise Ordinance also has general noise regulations (Section 16.30.130) that regulate noise from construction activities. Construction noise deemed to be disturbing is prohibited from 7:00 p.m. to 7:00 a.m. Monday through Friday, or at any time on Sundays or holidays. Construction activities must be conducted in a manner that the maximum noise levels at the affected structures will not exceed those listed in Table 4.9-4.

Table 4.9-4. City of Murrieta Construction Noise Standards

Equipment Type	Single-Family Residential	Multi-Family Residential	Commercial
Mobile Equipment			
Daily, except Sundays and holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, except Sundays and holidays, 8:00 p.m. to 7:00 a.m.	60 dBA	64 dBA	70 dBA
Stationary Equipment			
Daily, except Sundays and holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, except Sundays and holidays, 8:00 p.m. to 7:00 a.m.	50 dBA	55 dBA	60 dBA

Source: City of Murrieta 1997.
Note: dBA = A-weighted decibel scale.

Operational noise generated between two properties within the City is regulated by the standards contained in Section 16.30.090 of the City's Noise Ordinance. The City's exterior noise level limits between properties are presented in Table 4.9-5. Pursuant to Section 16.30.090(C), if the location in question is on a boundary property between two zoning districts (as is the case for this project), the exterior noise standard is the arithmetic mean of the exterior noise

levels. For example, the exterior noise standard between the commercial zone of the project site and the residential area to the east would be 50 dBA from 10:00 p.m. to 7:00 a.m., and 55 dBA from 7:00 a.m. to 10:00 p.m.

Table 4.9-5. City of Murrieta Exterior and Interior Noise Limits

Noise Zone	Land Use (Receptor Property)	Time Period	Allowed Noise Level (dBA)
Exterior Noise Limits			
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m.	45
		7:00 a.m. to 10:00 p.m.	50
	Residential properties within 500 feet of a kennel(s)	7:00 a.m. to 10:00 p.m.	70
III	Commercial properties	10:00 p.m. to 7:00 a.m.	55
		7:00 a.m. to 10:00 p.m.	60
IV	Industrial properties	Anytime	70
Interior Noise Limits			
All noise zones	Multi-family residential	10:00 p.m. to 7:00 a.m.	40
		7:00 a.m. to 10:00 p.m.	45

Source: City of Murrieta 1997.
Note: dBA = A-weighted decibel scale.

Vibration Standards

The City's Noise Ordinance Section 16.30.130(K) prohibits the operation of any device that creates vibration above the City's established perception threshold of 0.01 PPV in/sec over the range of 1 to 100 hertz. Typically, the City applies this threshold to both construction and operation, except under certain circumstances, including those listed under Policy N-4.5 of the General Plan Noise Element (listed above). Additionally, Section 16.30.140 (Modification of Standards) within Title 16 (Development Code) of the City's Municipal Code provides the following exception:

Section 16.30.140 Modification of Standards.

> Modifications to the requirements of this chapter may be granted by the director for a period of up to two years, subject to any terms, conditions, or requirements to minimize adverse effects on the surrounding neighborhood reasonable. Modifications may be granted only if one of the following findings can be made:
>
> A. Additional time is necessary for the applicant to alter or modify the activity, operation, or noise source to comply with this chapter: or
>
> B. The activity, operation, or noise source cannot feasibly be done in a manner that would comply with the provisions of this chapter. and no other reasonable alternative is available to the applicant.

4.9.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts related to noise are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to noise would occur if the project would:

1. Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
2. Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Neither the City's General Plan Noise Element nor the Municipal Code have quantified levels of increase in noise above ambient that are considered "substantial." Some guidance regarding the determination of a substantial permanent increase in ambient noise levels in the project vicinity above existing levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON recommendations are based on studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a qualitative measure of the adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment (FICON 1992).

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn} (and by extension, CNEL). The changes in noise exposure that are shown in Table 4.9-6 are expected to result in equal changes in annoyance at sensitive land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are used in this analysis to define a substantial increase in community noise levels related to all transportation noise sources.

Table 4.9-6. Measures of Substantial Increase for Community Noise Levels

Ambient Noise Level Without Project (L_{dn})	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels by Amount Listed
<60 dBA	+ 5 dB or more
60–65 dBA	+ 3 dB or more
>65 dBA	+ 2 dB or more

Note: L_{dn} = day-night average noise level; dBA = A-weighted decibel scale; dB = decibel.

For stationary operational noise sources related to the proposed project, noise levels exceeding the standards contained in Table 4.9-5 are considered significant. For construction related to the proposed project, noise levels exceeding the standards contained in Table 4.9-4 are considered significant. For groundborne vibration, project-related activities exceeding the City's vibration threshold of perception (0.01 inches per second PPV) are considered potentially significant, with the proviso that this threshold may be exceeded under certain circumstances based upon Policy N-4.5 of the General Plan Noise Element.

4.9.4 Impacts Analysis

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

Implementation of the proposed project would result in two primary types of potential noise impacts: short-term (i.e., temporary) noise during construction and long-term noise during operation of the project.

Short-Term Construction Noise

Less-than-Significant Impact with Mitigation Incorporated. Construction of the proposed project would occur in phases, including grading, site preparation, building construction, architectural coatings, and paving.

The types of construction equipment that would be used to construct the proposed project would include standard equipment that would be employed for any routine construction project of this scale, such as excavators, graders, trenchers, cranes, rubber-tired bulldozers, generators, and paving equipment. Additionally, rock-crushing would occur on-site and potential rock "popping"[2] may take place, if necessary. Rock popping, if necessary, is anticipated to take place at least 400 feet from the nearest noise-sensitive receivers.[3] Construction equipment with substantially higher noise-generation characteristics (such as pile drivers, rock drills, blasting equipment) would not be necessary for most proposed project components; however, rock blasting is anticipated to be needed for construction of Warm Springs Parkway, and is addressed below.

Construction equipment would typically be operating all over the project site, both near and far from any one location in the project vicinity. The nearest point of construction activities to the closest noise-sensitive receivers (single-family residences located east of the project site) would be approximately 40 feet (during site preparation, grading, and paving of the Vineyard II portion of the project), and the farthest would be approximately 1,500 feet (during some of the Costco portion of the project). Because construction taking place within 40 feet would be temporary and intermittent, and because the site is quite large, the distance from the nearby receivers to the "acoustic center" (the point from which the energy sum of all construction activity noise, near and far, would be centered on an average or typical basis) is utilized. For example, the nearest noise-sensitive receivers are located approximately 150 feet away from what would be the acoustic center of Phase I site preparation of the Vineyard II portion of the project site. Thus, the distance to construction activities for the closest residences would be as near as 40 feet away on a temporary and intermittent basis, but would typically be approximately 150 feet away during Phase I site preparation. For other nearby noise-sensitive land uses (such as the high school and the multi-family residences to the south), the nearest point of construction would be approximately 140 feet from adjacent noise-sensitive receivers, and the typical construction activity distance would range from approximately 420 feet to 1,100 feet, depending on the project phase.

---

2 A technique used to break up large boulders. Rock popping differs from conventional blasting techniques in that gun-powder capsules, inserted into drilled holes, are used rather than the ammonium nitrate fuel/oil explosives typically used, resulting in substantially lower noise and groundborne vibration levels. Noise from a rock popping event was measured by Dudek staff on the project site on October 26, 2019. Two separate rock popping events were measured, each from an approximate distance of 75 feet. In order to capture the impulsive nature of the events, the measurement intervals were 1/100 of a second in duration. The resultant rock popping noise levels ranged from approximately 52 to 59 dBA, at 75 feet. These noise levels may in fact have been lower if not for the background noise from the high school marching band practice to the south, which was nearly as loud if not louder than the rock popping noise.

3 Based upon information provided by the property owner, rock popping, if any more is necessary, would not occur any closer than approximately 400 feet from receivers to the south or approximately 1,200 feet from receivers to the east.

The Federal Highway Administration's Roadway Construction Noise Model (FHWA 2008) was used to estimate construction noise levels at these noise-sensitive land uses. Although the model was funded and promulgated by the Federal Highway Administration, the Roadway Construction Noise Model is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are also used for other project types. Input variables for the Roadway Construction Noise Model consist of the receiver/land use type, the equipment type and number of each (e.g., two graders, one loader, one tractor), the duty cycle for each piece of equipment (e.g., percentage of hours the equipment typically works per day), and the distance from the noise-sensitive receiver.

Noise levels from the proposed construction activities are summarized in Table 4.9-7. The complete set of Roadway Construction Noise Model input and output data for construction noise is provided in Appendix B of Appendix H, Noise Analysis Technical Report, of this Environmental Impact Report (EIR). As shown in Table 4.9-7, at the nearest residences, located east of the project site, noise levels would range from approximately 42 to 81 dBA L_{eq} when construction would take place at or near the project boundary. More typical construction noise levels at the residences east of the site would range from approximately 41 to 74 dBA L_{eq}. At the residences and the school south of the project site, noise levels would range from approximately 50 to 77 dBA L_{eq} when construction would take place at or near the project boundary; more typically, noise levels would range from approximately 47 to 70 dBA L_{eq}.

As stated previously, it is anticipated that blasting would be necessary during construction of Warm Springs Parkway. Details regarding the amount of blasting needed or duration of such activities is not known at this time. The purpose for blasting is to sufficiently break the rock in order for it to be excavated and removed. To accomplish this, the blaster drills a pattern of boreholes distributed evenly throughout the rock to be shattered. These boreholes are then filled with a pre-determined amount of explosives. Typically, the explosives are detonated in a sequence (separated by fractions of a second) for optimal breakage. The blaster is required to design the burden, stemming, subdrill, spacing, and timing to minimize excessive vibration, airblast, and fly rock. The blaster must monitor the airblast and vibration for every blasting event (or "shot") at the nearest structure. Seismographs are used to monitor the vibration (ODOT 2002). Based upon prior experience with such projects, blasting is typically limited to one or two shots per day.

Based upon the Roadway Construction Noise Model modeling, noise from blasting is estimated to range from approximately 46 to 51 dBA L_{eq}, with maximum (L_{max}) levels ranging from approximately 66 to 71 dBA at the distances (in feet) indicated in Table 4.9-7. In the context of the overall construction noise levels, the noise from blasting, while differing in character, would be lower than conventional construction.

Table 4.9-7. Construction Noise Modeling Summary Results

Project Phase	Noise-Sensitive Receiver	Nearest or Typical Construction Activity Distance (feet)	L_{eq} (dBA)
Costco			
Site Preparation	Residences to the East of Project Site	Nearest Construction Work (670)	58
		Typical Construction Work (980)	55
	School and Residences to the South of Project Site	Nearest Construction Work (450)	61
		Typical Construction Work (750)	57
Grading	Residences to the East of Project Site	Nearest Construction Work (670)	58
		Typical Construction Work (980)	55
	School and Residences to the South of Project Site	Nearest Construction Work (450)	62
		Typical Construction Work (750)	58

Table 4.9-7. Construction Noise Modeling Summary Results

Project Phase	Noise-Sensitive Receiver	Nearest or Typical Construction Activity Distance (feet)	L_{eq} (dBA)
Building Construction	Residences to the East of Project Site	Nearest Construction Work (1.100)	52
		Typical Construction Work (1,260)	51
	School and Residences to the South of Project Site	Nearest Construction Work (780)	59
		Typical Construction Work (970)	58
Paving	Residences to the East of Project Site	Nearest Construction Work (670)	54
		Typical Construction Work (980)	51
	School and Residences to the South of Project Site	Nearest Construction Work (450)	57
		Typical Construction Work (750)	53
Architectural Coating	Residences to the East of Project Site	Nearest Construction Work (1.100)	42
		Typical Construction Work (1,260)	41
	School and Residences to the South of Project Site	Nearest Construction Work (780)	50
		Typical Construction Work (970)	48
Vineyard II			
Phase I Site Preparation	Residences to the East of Project Site	Nearest Construction Work (40)	80
		Typical Construction Work (150)	70
	School and Residences to the South of Project Site	Nearest Construction Work (140)	75
		Typical Construction Work (420)	66
Phase I Grading and Trenching	Residences to the East of Project Site	Nearest Construction Work (40)	81
		Typical Construction Work (150)	74
	School and Residences to the South of Project Site	Nearest Construction Work (140)	77
		Typical Construction Work (420)	70
Phase I Building Construction	Residences to the East of Project Site	Nearest Construction Work (65)	79
		Typical Construction Work (190)	72
	School and Residences to the South of Project Site	Nearest Construction Work (800)	64
		Typical Construction Work (1,100)	62
Phase I Paving	Residences to the East of Project Site	Nearest Construction Work (40)	74
		Typical Construction Work (150)	64
	School and Residences to the South of Project Site	Nearest Construction Work (140)	69
		Typical Construction Work (420)	60
Phase I Architectural Coating	Residences to the East of Project Site	Nearest Construction Work (65)	66
		Typical Construction Work (190)	57
	School and Residences to the South of Project Site	Nearest Construction Work (800)	50
		Typical Construction Work (1,100)	47
Phase II Precise Grading and	Residences to the East of Project Site	Nearest Construction Work (40)	80
		Typical Construction Work (150)	70
		Nearest Construction Work (140)	76

Table 4.9-7. Construction Noise Modeling Summary Results

Project Phase	Noise-Sensitive Receiver	Nearest or Typical Construction Activity Distance (feet)	L_{eq} (dBA)
Footing Trenching	School and Residences to the South of Project Site	Typical Construction Work (420)	68
Phase II Building Construction	Residences to the East of Project Site	Nearest Construction Work (65)	75
		Typical Construction Work (190)	68
	School and Residences to the South of Project Site	Nearest Construction Work (800)	60
		Typical Construction Work (1,100)	58
Phase II Paving	Residences to the East of Project Site	Nearest Construction Work (40)	78
		Typical Construction Work (150)	68
	School and Residences to the South of Project Site	Nearest Construction Work (140)	73
		Typical Construction Work (420)	64
Phase II Architectural Coating	Residences to the East of Project Site	Nearest Construction Work (65)	66
		Typical Construction Work (190)	57
	School and Residences to the South of Project Site	Nearest Construction Work (800)	50
		Typical Construction Work (1,100)	47
Warm Springs Parkway			
Blasting	Residences to the East of Project Site	Nearest Construction Work (610)	47 (67 dBA L_{max})
		Typical Construction Work (740)	46 (66 dBA L_{max})
	School and Residences to the South of Project Site	Nearest Construction Work (700)	51 (71 dBA L_{max})
		Typical Construction Work (1,090)	47 (67 dBA L_{max})
Grading	Residences to the East of Project Site	Nearest Construction Work (610)	59
		Typical Construction Work (740)	58
	School and Residences to the South of Project Site	Nearest Construction Work (700)	62
		Typical Construction Work (1,090)	59
Paving	Residences to the East of Project Site	Nearest Construction Work (610)	55
		Typical Construction Work (740)	54
	School and Residences to the South of Project Site	Nearest Construction Work (700)	58
		Typical Construction Work (1,090)	55

Note: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum sound level.

The estimated construction noise levels indicate that during the relatively brief periods when construction takes place at or near the eastern project boundary, the unmitigated noise levels would exceed the City's daytime construction noise standards for mobile equipment (75 dBA for single-family residences and 80 dBA for multi-family residences). However, with implementation of standard conditions and mitigation measures as required by the City as well as **Mitigation Measure (MM) NOI-1**, **MM-NOI-2**, and **MM-NOI-3** (see Section 4.9-5, Mitigation Measures), this impact would be reduced to less than significant. To control construction noise levels to a level consistent with the City's General Plan Noise Element and Noise Ordinance, the City would require noise reduction measures as conditions of approval for grading and building permits. Some standard policies include limiting the hours of construction activity, locating noisy equipment as far as possible from noise-sensitive receivers, and requiring establishment of a noise complaint/resolution process.

Long-Term Operational Noise Impact

Traffic Noise Impacts

Less-than-Significant Impact. As a result of regional population growth and growth under the proposed project, traffic on local arterial streets is expected to increase relative to current conditions. Potential noise impacts from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model Version 2.5 (FHWA 2004). Data used to model noise from vehicular traffic were derived from the project-specific Traffic Impact Analysis prepared by Kittelson & Associates (2020; Appendix I of this EIR). Information used in the modeling included the following scenarios (for more detailed explanation of these traffic scenarios, please refer to Section 4.13, Transportation, and/or Appendix I:

- Existing
- Existing with Project with Creighton Avenue Access
- Existing with Project without Creighton Avenue Access
- Year 2021 without Project
- Year 2021 Cumulative Conditions with Project with Creighton Avenue Access
- Year 2021 Cumulative Conditions with Project without Creighton Avenue Access
- Year 2035 without Project with Creighton Avenue Access
- Year 2035 without Project without Creighton Avenue Access
- Year 2035 Cumulative Conditions with Project with Creighton Avenue Access
- Year 2035 Cumulative Conditions with Project without Creighton Avenue Access

Each of the above scenarios was modeled using the provided average daily traffic volumes for typical weekdays and for Saturdays.[4] Noise levels were modeled at representative noise-sensitive receivers. The receivers were modeled to be 5 feet above the local ground elevation. Six receptors (ST1 through ST5 and M1) represent existing off-site residences, as shown in Figure 4.9-1.

[4] Traffic data for Saturdays were not provided by the project's traffic consultant for the Year 2035 scenarios because the 2035 scenario was assessed for informational purposes only. As stated in the traffic study and traffic section of this EIR, a long-range analysis is not required per the City's Traffic Impact Analysis Preparation Guide or for CEQA because the project does not propose a zone change. The 2035 analysis was conducted for the weekday PM peak hour to ensure that adequate capacity was provided along Warms Springs Parkway and for information requested by the California Department of Transportation. Therefore, traffic noise on Saturdays for Year 2035 was not modeled.

The information provided from this modeling was compared to the noise impact significance criteria to assess whether project-related traffic noise would cause a significant impact and, if so, where these impacts would occur. The results of the comparisons for the noise-sensitive land uses for the existing conditions are presented in Table 4.9-8. The results of the comparisons for the noise-sensitive land uses for the future year (2021 and 2035) conditions are presented in Tables 4.9-9 and 4.9-10, respectively.

As shown in Table 4.9-8, the Existing-plus-Project traffic noise would generate a noise level increase of 2 dB CNEL or less (rounded to whole numbers) along the studied roads in the vicinity of the project site. Based on the FICON criteria shown in Table 4.9-6, an increase of 2 dB is not considered to be a substantial increase for traffic noise levels of less than 65 dBA CNEL. The additional traffic volumes along the adjacent roads would not result in an exceedance of applicable compatibility standards (i.e., 60 dBA CNEL for low-density residential, 65 dBA CNEL for high-density residential, 70 dBA CNEL for playgrounds and park), nor would project traffic substantially increase the existing noise level in the project vicinity. Similarly, as shown in Table 4.9-9 and Table 4.9-10, the Future-plus-Project traffic noise would generate a noise level increase of 2 dB CNEL or less (rounded to whole numbers), and the additional traffic volumes along the adjacent roads would not result in an exceedance of applicable compatibility standards. Therefore, project-related traffic noise would be less than significant, and no mitigation measures would be required.

Table 4.9-8. Project-Related Traffic Noise: Existing

Modeled Receptor	Existing Weekday (dBA CNEL)	Existing with Project with Creighton Access Weekday (dBA CNEL)	Existing with Project without Creighton Access Weekday (dBA CNEL)	Maximum Increase (with Project vs. Without Project) (dBA)	Existing Saturday (dBA CNEL)	Existing with Project with Creighton Access Saturday (dBA CNEL)	Existing with Project without Creighton Access Saturday (dBA CNEL)	Maximum Increase (with Project vs. Without Project) (dBA)
ST1 – Multi-family residences south of project site, adjacent to Clinton Keith Road	57	58	58	1	56	58	58	2
ST2 – Vista Murrieta High School, south of project sites, adjacent to Clinton Keith Road	57	57	57	0	56	57	57	1
ST3 – Multi-family residential east of project site, adjacent to Clinton Keith Road	59	61	61	2	59	60	61	2
ST4 – Single-family residential east of project site, approximately 500 feet north of Clinton Keith Road	53	53	54	1	52	53	53	1
ST5 – Single-family residential east of project site, approximately 1,100 feet north of Clinton Keith Road	50	50	51	1	50	51	51	1
M1 – Single-family residences east of project site, adjacent to Whitewood Road	57	57	57	0	56	57	57	1

Source: Appendix H
Note: dBA = A-weighted decibels; CNEL = community noise equivalent level.

Table 4.9-9. Project-Related Traffic Noise: Future Year 2021

Modeled Receptor	Year 2021 Weekday without Project (dBA CNEL)	Year 2021 Cumulative Conditions with Project with Creighton Access Weekday (dBA CNEL)	Year 2021 Cumulative Conditions with Project without Creighton Access Weekday (dBA CNEL)	Maximum Increase (with Project vs. Without Project) (dBA)	Year 2021 Saturday without Project (dBA CNEL)	Year 2021 with Project with Creighton Access Saturday (dBA CNEL)	Year 2021 with Project without Creighton Access Saturday (dBA CNEL)	Maximum Increase (with Project vs. Without Project) (dBA)
ST1 – Multi-family residences south of project site, adjacent to Clinton Keith Road	58	59	59	1	58	59	59	1
ST2 – Vista Murrieta High School, south of project sites, adjacent to Clinton Keith Road	58	58	59	1	57	58	59	2
ST3 – Multi-family residential east of project site, adjacent to Clinton Keith Road	61	62	62	1	61	62	62	1
ST4 – Single-family residential east of project site, approximately 500 feet north of Clinton Keith Road	54	55	55	1	54	55	56	2
ST5 – Single-family residential east of project site, approximately 1,100 feet north of Clinton Keith Road	51	52	52	1	51	52	52	1
M1 – Single-family residences east of project site, adjacent to Whitewood Road	58	58	58	0	58	58	58	0

Source: Appendix H.
Note: dBA = A-weighted decibels; CNEL = community noise equivalent level.

Table 4.9-10. Project-Related Traffic Noise: Future Year 2035

Modeled Receptor	Year 2035 with Creighton Access without Project Weekday (dBA CNEL)	Year 2035 Cumulative Conditions with Project with Creighton Access Weekday (dBA CNEL)	Increase (with Project vs. Without Project) (dBA)	Year 2035 without Creighton Access without Project Weekday (dBA CNEL)	Year 2035 Cumulative Conditions with Project without Creighton Access Weekday (dBA CNEL)	Increase (with Project vs. Without Project) (dBA)
ST1 – Multi-family residences south of project site, adjacent to Clinton Keith Road	59	59	0	59	59	0
ST2 – Vista Murrieta High School, south of project sites, adjacent to Clinton Keith Road	58	59	1	58	59	1
ST3 – Multi-family residential east of project site, adjacent to Clinton Keith Road	62	63	1	62	63	1
ST4 – Single-family residential east of project site, approximately 500 feet north of Clinton Keith Road	55	56	1	55	56	1
ST5 – Single-family residential east of project site, approximately 1,100 feet north of Clinton Keith Road	52	52	0	52	52	0
M1 – Single-family residences east of project site, adjacent to Whitewood Road	60	60	0	60	60	0

Source: Appendix H.
Note: dBA = A-weighted decibels; CNEL = community noise equivalent level.

On-Site Mechanical, Delivery, and Parking Lot Noise

Less-than-Significant Impact. Mechanical HVAC equipment associated with the proposed project would have the potential to generate significant noise levels. Based on information provided by the project applicant, the HVAC equipment (consisting of 5- and 10-ton capacity units) would be located on the rooftops of the proposed buildings, and the HVAC equipment would be visually and acoustically shielded by parapet walls. Noise emissions information from the HVAC manufacturer, along with standard acoustical formulas for addition of multiple sources, attenuation with distance, and attenuation from structural shielding, were used to estimate the resulting noise levels at the nearest residences, east of the project site. As shown in Table 4.9-11, the resultant combined noise level with all HVAC units running would be approximately 45 dBA at the nearest noise-sensitive land uses. The noise from HVAC equipment would be below the City's Municipal Code noise standards for the boundary between a commercial zone and a residential zone (55 dBA L_{eq} during daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.). Noise from HVAC equipment related to the proposed project would be less than significant.

Table 4.9-11. Project-Related Heating, Ventilation, and Air Conditioning Noise

Building Type	HVAC Units		Distance from sensitive receptor (approximate worst-case) (feet)	Resultant Unattenuated Noise Level (dBA L_{eq})	Attenuation from Building and Parapet (dB)	Resultant noise level with Attenuation (dBA L_{eq})
	Quantity	*Capacity (in tons)*				
Fitness Center	16	10	105	60.1	15.8	44.3
Major	8	10	200	51.5	12.9	38.5
Shop	1	5	300	38.9	17.6	21.4
Shops	4	5	500	40.5	17.9	22.6
Fast Food	1	10	600	32.9	14.8	18.2
	1	5	600	32.9	14.8	18.2
Combined noise level at nearest noise-sensitive receivers (worst-case) (dBA L_{eq})						45.4

Source: Appendix H.
Note: HVAC = heating, ventilation, and air conditioning; dBA = A-weighted decibel; L_{eq} = equivalent sound level; dB = decibel.

Noise would occur from retail store deliveries and gas station deliveries. Costco warehouse hours are anticipated to be Monday through Friday from 10:00 a.m. to 8:30 p.m., Saturday from 9:30 a.m. to 6:00 p.m., and Sunday from 10:00 a.m. to 6:00 p.m. The gas station hours are anticipated to be daily from 5:00 a.m. to 10:00 p.m. Costco anticipates an average of approximately 10 trucks delivering goods to the warehouse on a typical weekday. The trucks range in size from 26 feet long for single-axle trailers to 70 feet long for double-axle trailers. Receiving times would vary based on jurisdictional restrictions, but would typically take place in the early morning, with most deliveries completed before the 10:00 a.m. warehouse opening time. Deliveries to the warehouse would be made primarily in Costco trucks from its freight consolidation facility in Mira Loma, California, entering the site from Interstate 215 and exiting at Clinton Keith Road. The Costco warehouse location (in the northwestern portion of the project site) and the delivery area (in the northeasterly corner of the warehouse building) would result in truck delivery activities taking place approximately 800 feet or more from the nearest noise-sensitive receivers; these activities would also be shielded from a direct view by intervening structures (either the Costco warehouse building itself or the Vineyard II buildings).

It is estimated that fuel would be delivered to the gasoline facility via eight to nine trucks per day,[5] as needed. The gas station's proposed location near the northern project boundary, the acoustical shielding provided by proposed on-site structures and existing residential boundary walls, and the relatively large distances (approximately 650 feet or more from the nearest noise-sensitive receivers) would minimize gas-station-related noise.

The Costco warehouse building would include a tire center. The proposed 2,720-square-foot tire center would have five bays and hydraulic lifts where customers could have new tires installed on their vehicles. The tire center would be located approximately 780 feet from the nearest noise-sensitive land uses (the school and residences to the south) and would be physically separated from those residences by Clinton Keith Road and the proposed retail structures to the south, which would likely provide some degree of structural shielding by blocking the direct view (and thus, the direct source–receiver noise path) of the work area.

Noise-generating equipment at the tire center would most likely include tire changers, wheel balancers, air compressors, and various tools. The primary noise sources would be the power and pneumatic tools, as well as noise from hitting and banging car parts such as hubcaps, tires, car hoods, and car doors being closed. The tire center would operate during the same hours as the Costco warehouse retail hours (Monday through Friday from 10:00 a.m. to 8:30 p.m., Saturday from 9:30 a.m. to 6:00 p.m., and Sunday from 10:00 a.m. to 6:00 p.m.). Additionally, it is anticipated that the tire center would receive one to two tire delivery trucks twice a week between the hours of 6:00 a.m. and 9:00 a.m.

Based on a prior noise study conducted at an existing Costco tire center (Giroux & Associates 2015), the noise level during a noisy period (with 5 air guns in intermittent operation) was approximately 53 dBA L_{eq} at a distance of 70 feet directly in front of the open bay doors. Very brief maximum noise levels of approximately 67 dBA L_{max} at 70 feet were measured. All related work would take place within the building, which would have a solid wall with no openings to the residences to the east. However, there would be service bay doors on the south side of the building, and these would likely be open much of the time for ventilation and in order to move the cars in and out of the facility.

The closest residential properties would be approximately 780 feet or more from the tire center. At this distance, the average noise level from the tire center activities would be approximately 32 dBA L_{eq} or less, conservatively neglecting likely shielding from intervening structures. This noise level would be well below the City's noise ordinance standard for residential uses of 50 dBA L_{eq} from 7:00 a.m. to 10:00 p.m. Very brief maximum noise levels of approximately 46 dBA L_{max} at residences are estimated; these would likely not be readily audible, because the existing ambient maximum noise levels are substantially higher (a noise level of 71 dBA L_{max} was measured at ST1, and a noise level of 65 dBA L_{max} was measured at ST2). Similarly, the tire delivery noise, occurring 780 feet or more from nearby noise-sensitive uses, would be negligible.[6] Therefore, noise from auto-related services would be less than significant. No mitigation is required.

For the Vineyard II Retail Development, deliveries would be through the front doors before 10:30 a.m., except at the major retail pad (Building J), which has an enclosed truck door dock to control sound in the rear of the building. Operating hours for the retail development would vary and are subject to the policies of each building occupant; however, operating hours for the retail uses are expected to be 8:30 a.m. to 6:00 p.m. Operating hours for the restaurant uses are expected to be 11:00 a.m. to 10:00 p.m. The fitness center is expected to operate from 6:00 a.m. to 11:00 p.m.

---

5 Based upon reference noise levels conducted for a proposed gas station by others (Extant Acoustics 2016), fuel delivery trucks are estimated to create maximum 1-second noise levels of approximately 71 dBA at 50 feet. At the nearest residences, located approximately 650 feet away, the resultant noise level would be approximately 49 dBA, not accounting for acoustical shielding. Thus, noise from this activity (likely the loudest activity associated with the fueling station) would not be loud or intrusive.

6 A study in the Journal of Environmental Engineering and Landscape Management (Baltrënas et al. 2004) published cargo truck delivery noise levels of 96 dBA (L_{max}) at 1 meter (3.28 feet) from the boundary of the truck activity area. At a distance of 780 feet, the resulting noise level would be approximately 48 dBA L_{max}. Average delivery truck noise levels would be substantially lower.

Parking for the project would primarily be provided in the center of the retail center, with stores on the perimeter. Primary access to the proposed parking lots would be via Warm Springs Parkway from Clinton Keith Road to the south. Noise sources from parking lots include car alarms, door slams, radios, and tire squeals. The instantaneous sound pressure levels from these sources typically range from approximately 30 dBA to 66 dBA at a distance of 100 feet (Gordon Bricken & Associates 1996) and are generally short term and intermittent. Parking lots have the potential to generate instantaneous noise levels that exceed 60 dBA depending on the location of the source; however, noise sources from the parking lot would be different from each other in kind, duration, and location, so that the overall effects would be separate, and in most cases would not affect noise-sensitive receptors at the same time. Other parking lot activities such as periodic parking lot cleaning, which could occur prior to or after retail business hours, would create additional noise; however, such activities would be quite brief at any one location on site, and would be conducted in accordance with the City of Murrieta Municipal Code. Furthermore, the proposed parking areas would, for the most part, be shielded from a direct view of residences to the east by the intervening proposed fitness center and other retail buildings. Additionally, the existing perimeter wall (approximately 6 feet in height) at the eastern project boundary would provide noise reduction from the on-site noise-generating activities. Therefore, noise impacts from on-site operational noise would be less than significant.

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

Less Than Significant with Mitigation Incorporated. Construction activities may generate excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Heavier pieces of construction equipment, such as bulldozers, have peak particle velocities of approximately 0.089 in/sec or less at a distance of 25 feet (DOT 2018).

Groundborne vibration typically attenuates over short distances. At the distance from the nearest residence to the construction area (approximately 40 feet) and with the anticipated construction equipment (i.e., heavier equipment such as bulldozers), the PPV would be approximately 0.044 in/sec. If extended construction work with heavy equipment were to occur adjacent to the closest sensitive receptors, vibration levels would exceed the City's established perception threshold of 0.01 PPV in/sec (Section 16.30.130[K]), and thus result in a significant impact. However, this is not anticipated, because work would only occur intermittently near the project boundary. This is due to the majority of the project work not being adjacent to the project boundary. Furthermore, based upon Policy N-4.5 of the General Plan Noise Element, the City permits the exceedance of noise standards on a case-by-case basis for special circumstances, including expedited development projects, of which this project is one.

Regarding groundborne vibration from anticipated blasting activities during construction of Warm Springs Parkway, vibration levels would be negligible at the nearest sensitive receptors, located 600 feet away or further. Based upon reference Blast Vibration Prediction Curves per Oriard (Caltrans 2013b), vibration levels would typically range from less than 0.001 PPV in/sec to approximately 0.008 PPV in/sec at 600 feet, and thus would not exceed the City's established perception threshold of 0.01 PPV in/sec at the nearest sensitive receptors.

Implementation of **MM-NOI-1** would ensure that construction staging and stockpiling is situated as far from nearby noise- and vibration-sensitive receivers as possible and that sensitive receptors are notified of construction activities and are provided contact information for noise- or vibration-related complaints, as well as a resolution process. Implementation of these measures would reduce vibration impacts at sensitive receptor locations to a less-than-significant level.

Construction can also affect nearby buildings by inflicting damage from vibration. However, construction vibration associated with this project would not result in structural building damage. Building damage typically occurs at vibration levels of 0.5 in/sec or greater for buildings of reinforced concrete, steel, or timber construction (DOT 2018). As discussed above, the anticipated vibration levels during construction would be well below potential structural damage thresholds.

Once operational, the project would not generate substantial levels of groundborne vibration. Off-site delivery trucks, for example, are not anticipated to generate significant levels of vibration, because vehicles traveling on pneumatic tires with flexible suspension systems minimize such vibration, provided that the road surface is relatively smooth (Caltrans 2013b). Thus, upon compliance with MM-NOI-1, impacts associated with vibration would be less than significant with mitigation incorporated.

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

No Impact. The closest airport to the project site is French Valley Airport, located at 37600 Sky Canyon Drive in Murrieta, California, approximately 2.5 miles southeast of the project site. The project would not be located within 2 miles of any airport and would not expose people residing or working in the project area to excessive noise levels associated with an airport. Additionally, there are no private airstrips in the vicinity of the project site. Therefore, the project would result in no impact related to airports.

4.9.5 Mitigation Measures

Standard Conditions

The following standard condition (SC) applies to the project:

SC-NOI-1 The applicant shall ensure that construction activities be limited to no more than the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday except in the event of emergency declared by City, State, or Federal officials. These conditions shall be listed on the project's final design plans to the satisfaction of the City.

Mitigation Measures

The following mitigation measures would be implemented as a condition of project approval:

MM-NOI-1 Prior to grading permit issuance, the applicant shall ensure the following:

- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers.
- Construction noise reduction methods, such as shutting off idling equipment, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools rather than diesel equipment, shall be used where feasible.
- Noise attenuation measures, which may include temporary noise barriers or noise blankets, shall be placed around stationary construction noise sources.

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from or shielded from sensitive receptors.
- During construction, stockpiling and vehicle staging areas shall be located as far as practical from noise-sensitive receptors while being located on the project site or on existing developed areas.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow surrounding property owners and residents to contact the job superintendent if necessary. In the event that the City of Murrieta receives a complaint, appropriate corrective actions (such as eliminating the use of high-noise and vibration-producing equipment or replacing with smaller equipment types or other equivalent methods) shall be implemented and a report of the action provided to the reporting party.

MM-NOI-2 The applicant shall require that all construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement shall be accomplished by random field inspections by applicant personnel during construction activities to the satisfaction of the City of Murrieta Engineering Department.

MM-NOI-3 A temporary construction noise barrier shall be constructed along the eastern boundary of the project site during construction of Vineyard II. The noise barrier shall be a minimum of 8 feet in height, shall have a surface density of at least 4 pounds per square foot, shall be free of openings and cracks, and shall be designed to achieve a noise reduction of at least 5 A-weighted decibels.

4.9.6 Level of Significance After Mitigation

The effectiveness of **MM-NOI-1** and **MM-NOI-2** would vary from several decibels (which in general is a relatively small change) to 10 or more decibels (which subjectively would be perceived as a substantial change), depending on the specific equipment, the original condition of that equipment, the specific locations of the noise sources and the receivers, and other factors. Installation of more effective silencers could range from several decibels to well over 10 decibels. **MM-NOI-3**, which requires the construction of an 8-foot-high temporary noise barrier along the eastern boundary of the project site during construction of Vineyard II site, would provide an additional noise reduction of approximately 5 dB. Cumulatively, these measures would result in substantial decreases in the noise from construction. Assuming a nominal reduction of 7 dB from the combination of these measurements, the maximum estimated noise level from construction activities would be reduced to below the City of Murrieta construction noise standard of 75 dBA L_{eq}. With implementation of **MM-NOI-1**, **MM-NOI-2**, and **MM-NOI-3**, short-term construction impacts associated with exposure of persons to or generation of noise levels in excess of established standards would be less than significant.

4.9.7 Cumulative Impacts

Non-transportation noise sources (e.g., project operation) and construction noise impacts are typically project-specific and highly localized (i.e., these do not generally affect the community noise level at distances beyond several hundred feet). Construction activities associated with proposed or future development within the area would contribute to cumulative noise levels, but in a geographically limited and temporary manner. As other development occurs in the area, noise from different types of uses (e.g., traffic, aircraft, fixed noise sources) would continue to combine, albeit on a localized basis, to cause increases in overall background noise conditions within the area. However, such sources do not significantly contribute to cumulative noise impacts at distant locations, and so were not evaluated on a cumulative level.

The future (Year 2021 and Year 2035) traffic volumes used for the analysis of traffic noise include cumulative growth. As shown in Table 4.9-9 and Table 4.9-10, the project's future traffic-related impacts would not result in a significant noise level increase along adjacent roadways. Table 4.9-12 compares Future (Year 2035) Cumulative with Project Conditions traffic noise to the Existing traffic noise scenario.

Table 4.9-12. Project-Related Traffic Noise: Cumulative Impacts (Future with Project vs. Existing)

Modeled Receptor	Existing Weekday without Project (dBA CNEL)	Year 2035 Cumulative Conditions with project with Creighton Access Weekday (dBA CNEL)	Year 2035 Cumulative Conditions with project without Creighton Access Weekday (dBA CNEL)	Maximum Cumulative Increase (dBA)
ST1 – Multi-family residences south of project site, adjacent to Clinton Keith Road	57	59	59	2
ST2 – Vista Murrieta High School, south of project sites, adjacent to Clinton Keith Road	57	59	59	2
ST3 – Multi-family residential east of project site, adjacent to Clinton Keith Road	59	63	63	4
ST4 – Single-family residential east of project site, approximately 500 feet north of Clinton Keith Road	53	56	56	3
ST5 – Single-family residential east of project site, approximately 1,100 feet north of Clinton Keith Road	50	52	52	2
M1 – Single-family residences east of project site, adjacent to Whitewood Road	57	60	60	3

Note: dBA = A-weighted decibel scale; CNEL = community noise equivalent level.

As shown in Table 4.9-12, the cumulative noise increase is estimated to range from 2 to 4 dB. The resulting increase would not be substantial based upon the FICON noise thresholds. Therefore, impacts would not be cumulatively considerable and would be less than significant.

4.9.8 References Cited

Baltrënas, P., D. Kazlauskas, & E. Petraitis. 2004. Testing on noise levels prevailing at motor vehicle parking lots and numeral simulation of its dispersion. *Journal of Environmental Engineering and Landscape Management* 12(2):63-70.

Caltrans (California Department of Transportation). 2013a. *Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol*. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. September 2013.

Caltrans. 2013b. *Transportation and Construction Vibration Guidance Manual.* Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. Sacramento, California. September 2013.

City of Murrieta. 1997. City of Murrieta Noise Ordinance, Section 16.30.

City of Murrieta. 2011. *Murrieta General Plan 2035, Chapter 11: Noise Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5175.

DOT (U.S. Department of Transportation). 2018. *Transit Noise and Vibration Impact Assessment Manual*. DOT, Federal Transit

Extant Acoustics. 2016. *1705 Berryessa Avenue Convenience Store, Gas Station and Car Wash, Environmental Noise Assessment.* September 2016.

FHWA (Federal Highway Administration). 2004. FHWA Traffic Noise Model, Version 2.5. Washington, D.C.: FHWA Office of Environment and Planning. April 2004.

FHWA. 2008. *Roadway Construction Noise Model (RCNM), Software Version 1.1.* U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division.

FICON (Federal Interagency Committee on Noise). 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*. August 1992.

Giroux & Associates. 2015. *Culver City Warehouse Expansion Noise Impact Study*. June 2015.

Gordon Bricken & Associates. 1996. "Parking Lot Noise Estimates."

HUD (Department of Housing and Urban Development). 2009. *The Noise Guidebook.* Office of Environment and Energy, Environmental Planning Division. March 2009.

ODOT (State of Ohio Department of Transportation). 2002. "Construction and Material Specifications." Accessed March 24, 2020. http://www.dot.state.oh.us/Divisions/ConstructionMgt/OnlineDocs/Specifications/2002CMS/2003_Manual_for_web/208.htm.

OPR (Governor's Office of Planning and Research). 2003. "Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan." In *County General and Other Plans*. California Environmental Resources Evaluation System, California Land Use Planning Information Network. http://ceres.ca.gov/planning/genplan/appendix_a.html.

INTENTIONALLY LEFT BLANK

SOURCE: NAIP 2016

DUDEK

0 100 200 Feet

FIGURE 4.9-1

Noise Measurement and Modeling Locations

Costco/Vineyard II Retail Development Project, City of Murrieta, California

INTENTIONALLY LEFT BLANK

4.10 Population and Housing

This section describes the existing population and housing trends in Southern California, Riverside County (County), and the City of Murrieta (City). This section evaluates consistency with applicable plans, policies, and regulations as they relate to population and housing. It also evaluates potential impacts to population and housing related to the proposed Costco/Vineyard II Retail Development Project (project). Data sources for this section include Southern California Association of Governments (SCAG), U.S. Census Bureau, California Department of Finance, the County, and the City.

4.10.1 Existing Conditions

The following subsections provide an overview of existing conditions and growth projections related to population, housing, and employment in the SCAG Region, the County, and the City.

Regional Existing Conditions

SCAG is the nation's largest metropolitan planning organization, representing six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura), 191 cities, and approximately 19 million residents (SCAG 2019a). The SCAG region is the second most populous metropolitan region in the nation. Approximately 6% of the national population lives in the SCAG region, and for over half a century, the region has been home to approximately half the population of California (SCAG 2016a). The highest population densities occur in Los Angeles County, and the lowest densities occur in the unincorporated territories of the other five counties. The average household size in the region grew from 3.0 in 2010 to 3.1 in 2015 (SCAG 2016a). SCAG develops long-range regional transportation plans (RTPs), including sustainable communities strategy (SCS) and growth forecast components, regional transportation improvement programs, regional housing needs allocations, and a portion of the South Coast Air Quality Management District's plans. Table 4.10-1 indicates the SCAG growth forecasts for the region in terms of population, housing, and employment.

Table 4.10-1. Regional Growth Forecast

	2014	2020	2035	2040	Total Projected Growth 2014–2040
Population	18,545,063	19,395,000	21,475,000	22,122,000	3,576,937
Housing	6,029,326	6,415,000	7,169,000	7,406,000	1,376,674
Employment	8,327,300	8,507,000	9,572,000	9,872,000	1,544,700

Source: SCAG 2016a.

Local Existing Conditions

County of Riverside

Population

As of January 2019, the total population of the County was 2,440,124 (DOF 2019). The largest ethnic group is Hispanic, making up approximately 48% of the population. The Non-Hispanic demographic groups that make up the remainder of the County population include White (36.6%), Black (6%), Asian (6.1%), Native American (0.4%), and

other (2.9%). The County has a population density of 324 people per square mile, while the average population density in the SCAG region is 494 people per square mile (SCAG 2019a).

The median age in the County is 35 years old. The 35 to 54 age group increased most during the 18-year period from 2000 to 2018, adding 254,685 people to the population (SCAG 2019a). According to the most recent census data, 81.1% of people residing in the County, age 25 years or older, have a high school degree, while 21.5% have a bachelor's degree or higher (U.S. Census Bureau n.d.).

Housing

As of 2018, there were 840,904 housing units in the County, with a homeownership rate of 52.4%. The average household size in the County is 3.1. Of the households in the County, 68.2% are single-family detached, 6.2% are single-family attached, 16.1% are multi-family, and 9.5% are mobile homes.

Employment

In 2017, there were 762,114 jobs in the County, with employees earning an average salary of $45,085. With a large population and an inequivalent number of jobs (further discussed below), only 46.9% of County residents commute to work within the County. Others commute outside of Riverside County to Los Angeles County (13.7%), San Bernardino County (13.9%), Orange County (12.7%), San Diego County (7%), and other destinations (5.5%) (SCAG 2019b).

City of Murrieta

Population

As of January 2019, the City had a population of approximately 118,125 and was the fourth largest city in the County (DOF 2019). From 2000 to 2018, the City's population grew by a rate of 156.4%, which is much higher than the County's growth rate of 56.3% during this same time period. The City's population makes up 4.7% of the population of the County (SCAG 2019c).

According to the SCAG 2019 Local Profile of the City, the median household income in the City is $80,373. As of 2018, the median age was 33.7 years old, and approximately 91.7% of residents age 25 and older graduated from high school, while 30% hold a bachelor's degree or higher. In 2016, the ethnic composition of the population of the City consisted of White (49.7%), Hispanic (28.7%), Asian (9%), Black (5.9%), Native American (0.3%), and other (6.4%) (SCAG 2019c).

Housing

There are 34,498 households in the City, and the average household size is 3.3 persons. As of 2018, the City had a homeownership rate of 66.5%. Between 2000 and 2018, the total number of households in the City increased by 140.9%, or 20,178 units. Of the households in the City, 74.2% are single-family detached, 3.4% are single-family attached, 17.8% are multi-family, and 4.6% are mobile homes (SCAG 2019c).

Employment

In 2017, there were 32,712 jobs in the City, with an average salary of $44,023. The majority of residents commute outside of the City for employment, with only 15.3% employed within the City. The top places that residents commute

to include the City of Temecula (15.1%), San Diego County (9.4%), Riverside County (4.1%), Los Angeles County (2.9%), City of Lake Elsinore (2.1%), City of Menifee (1.8%), City of Irvine (1.8%), City of Hemet (1.6%), and other locations (45.9%). As of 2017, education sector jobs make up the largest percentage (27.8%) of jobs in the City, followed by retail (15.9%) (SCAG 2019c).

Jobs-to-Housing Ratio

The "jobs-to-housing ratio" measures the extent to which job opportunities in a given geographic area are sufficient to meet the employment needs of area residents. An area with a jobs-to-housing ratio that is lower than the regional or County ratio would be considered a "jobs poor" area, indicating that many of the residents must commute to places of employment outside of the area. Alternatively, an area with a jobs-to-housing ratio that is higher than the regional ratio would be considered a "jobs rich" area, indicating the majority of persons that have jobs in the City are commuting from outside the City. A balanced community would have a match between employment and housing opportunities enabling most residents to also work in the community. Based on the growth projections shown below in Table 4.10-2, comparing the number of jobs to the number of households indicates a jobs-to-housing ratio of 0.94:1.00 for the City in 2020, and a jobs-to-housing ratio of 1.04:1 for the City in 2040. This ratio indicates that the City is providing more housing than jobs in the year 2020, as is evident by the number of people who commute outside of the City for employment. By 2040, however, the ratio becomes more equal with the City providing approximately 1 job per household. While the City's ratio is expected to equalize in the future, more employment opportunities could be added to support the growing number of households. For comparison, the jobs-to-housing ratio in the SCAG region is 1.3:1 for the year 2020 and is projected to remain the same for the year 2040.

Local Growth Forcast

As discussed above, as of January 2019, the County had a population of approximately 2,440,124 people and the City had a population of approximately 118,125 people (DOF 2019). Table 4.10-2 shows population, household, and employment projections for the County and the City, as calculated by SCAG.

Table 4.10-2. Local Growth Forecast

Year	City of Murrieta			County of Riverside		
	Population	*Households*	*Employment*	*Population*	*Households*	*Employment*
2012	105,600	32,800	23,200	2,245,100	694,400	616,600
2020	109,200	35,600	33,400	2,479,800	802,400	848,700
2035	129,100	43,200	43,600	3,183,100	1,009,000	1,111,800
2040	129,800	43,500	45,100	3,183,700	1,054,300	1,174,300

Source: SCAG 2016b, SCAG 2016c

4.10.2 Relevant Plans, Policies, and Ordinances

Federal

There are no federal programs, policies, or regulations related to housing that are applicable to the project.

State

Department of Housing and Community Development

State law requires that jurisdictions provide their fair share of regional housing needs. The California Department of Housing and Community Development is mandated to determine the statewide housing need. In cooperation with the California Department of Housing and Community Development, local governments and councils of governments are charged with making a determination of the existing and projected housing need as a share of the statewide housing need of their city or region. The housing construction need is determined for four broad household income categories: very low (households making less than 50% of median family income), low (50% to 80% of median family income), moderate (80% to 120% of median family income), and above moderate (more than 120% of median family income). The intent of the future needs allocation by income groups is to relieve the undue concentration of very low and low-income households in a single jurisdiction and to help allocate resources in a fair and equitable manner.

The "fair share" allocation process begins with the California Department of Finance's projection of statewide housing demand for an 8-year period, which is then apportioned by the California Department of Housing and Community Development among each of the state's official regions. The regions are represented by an agency typically termed a council of government. In the six-county Southern California region, which includes the City and other incorporated cities and unincorporated areas of the County, the agency responsible for assigning these fair share goals to each jurisdiction is SCAG. A local jurisdiction's fair share of regional housing need is the number of additional dwelling units that will need to be constructed during a given 8-year planning period.

SCAG estimates each jurisdiction's future housing need using the following four factors:

1. The number of units needed to accommodate forecasted household growth
2. The number of units needed to replace demolitions due to attrition in the housing stock (i.e., fire damage, obsolescence, redevelopment, and conversions to nonhousing uses)
3. Maintenance of ideal vacancy rate for a well-functioning housing market
4. An adjustment to avoid an over-concentration of lower-income households in any one jurisdiction

The new construction need must be allocated to the four household income categories described above. The allocations are further adjusted to avoid over-concentration of lower income households in any one jurisdiction. The fair share allocation must also consider the existing "deficit" of housing resulting from lower income households that pay more than 30% of their incomes for housing costs. This is the threshold used by the U.S. Department of Housing and Urban Development to determine housing affordability (City of Murrieta 2013).

Local

Southern California Association of Governments

SCAG is the responsible agency for developing and adopting regional housing, population, and employment growth forecasts for local governments within the SCAG region. To facilitate regional planning efforts, SCAG's planning area is further organized into 14 subregions. The City is located in the Western Riverside Council of Governments subregion.

Current regional growth forecasts are included in SCAG's 2012–2035 RTP/SCS, adopted April 2012. The forecasts included in SCAG's RTP/SCS are provided by the County Center for Demographic Research. SCAG's demographic data is developed to enable the proper planning of infrastructure and facilities to adequately meet the needs of the anticipated growth. Growth

forecasts contained in the RTP/SCS for the County, the Western Riverside Council of Governments, and the City are used in this section in order to analyze population, housing, and employment forecasts.

City of Murrieta General Plan

The Housing Element of the City of Murrieta General Plan includes goals, policies, and programs to ensure that residents have decent, safe, sanitary, and affordable housing regardless of income. The following five goals have been established to guide the development, redevelopment, and preservation of a balanced inventory of housing to meet the needs of present and future residents of the City:

1. Increased opportunities for affordable housing
2. Conservation of the City's existing housing stock
3. Removal of constraints to the constructions of affordable housing
4. Equal housing opportunity
5. Identification of adequate site to achieve a variety and diversity of housing

Riverside County General Plan

The Housing Element of the County General Plan identifies and establishes the County's policies with respect to meeting the needs of existing and future residents in the County. It establishes policies that will guide County decision making and sets forth an action plan to implement its housing goals. The commitments are in furtherance of the statewide housing goal of "early attainment of decent housing and a suitable living environment for every California family," as well as a reflection of the concerns unique to the County.

4.10.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to population and housing are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to population and housing would occur if the project would:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

As determined in the Initial Study, the project would not displace substantial numbers of existing housing or people because the site is vacant. Thus, the project would have no impact on Thresholds 2. Threshold 1 is the only threshold addressed in this Project Environmental Impact Report.

4.10.4 Impacts Analysis

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

Less-Than-Significant Impact. The project includes the construction of a new retail development consisting of a Costco Wholesale (Costco) warehouse, tire center and fuel station, a fitness center, a major retail pad, four smaller retail shops, one restaurant, one drive-through fast-food restaurant, two detention basins, and associated parking, on approximately 26.3 acres in the City as shown on the proposed site plan in Chapter 3, Project Description (Figure 3-2). The project is expected to be completed and operational by 2021. It is anticipated that the Costco warehouse, tire center, and gas station would employ approximately 250 full-time employees, while the fitness center, restaurants, and retail development would employ approximately 35 full-time employees, for approximately 285 full time employees. Conservatively, this analysis assumes that all 285 employees would be new employees who would move to the City, and analyzes the potential for impacts to population, housing, and employment growth in the City.

Population

The population has increased throughout the region, and the population of the City in particular has grown drastically, with a growth rate of 156.4% from 2000 to 2018 (SCAG 2019c). The City is expected to see continued population growth, as shown in Table 4.10-2. The City is expected to increase by approximately 20,600 people from 2020 to 2040 (SCAG 2019c). Given the City's average household size of 3.3 persons (SCAG 2019c), adding 285 new employees to the City would result in a population increase of approximately 940.5 people. This increase represents approximately 4.6% of the 20,600 people anticipated to be added to the City between 2020 and 2040. Therefore, the project would not result in unplanned population growth in the City, as projected by SCAG.Housing

Conservatively assuming all 285 new employees would relocate to the City as new residents, the project would result in a need for 285 new housing units in the City. California's housing element law requires that each city and county develop local housing programs designed to meet its fair share of existing and future housing needs for all income groups. This effort is coordinated by the jurisdiction's Council of Governments (the City is in the Western Riverside Council of Governments) when preparing the state-mandated Housing Element of its General Plan. This fair share allocation concept seeks to ensure that each jurisdiction accepts responsibility for the housing needs of, not only its resident population, but for all households that might reasonably be expected to reside within the jurisdiction, particularly lower income households. This assumes the availability of a variety and choice of housing accommodations appropriate to their needs, as well as certain mobility among households within the regional market. Table 4.10-3 indicates the 2014 to 2021 fair share housing needs for Murrieta.

Table 4.10-3. Fair Share Housing Needs 2014–2021, in number of dwelling-units

Very Low	Low	Moderate	Above Moderate	Total Adjusted Need
395	262	289	627	1,573

Source: City of Murrieta 2013.

Thus, the City's fair share allocation for the planning period is 1,573 units. This indicates that between the years 2014 and 2021, the City would need to add at least 1,573 housing units, consisting of a variety of housing types to accommodate very low, low, moderate, and above moderate income households to keep pace with housing

demand. In addition, a list of approved and proposed projects in the area indicates that there are 942 single- and multi-family dwelling units currently planned for development in the area (see Table 4.10-4). According to the General Plan Housing Element, the City has historically been successful in meeting its fair share housing allocation and achieving the other goals set forth in the General Plan Housing Element. The potential need to provide housing for the 285 full-time employees of the project is well within the City's ability to provide housing for its future residents. Thus, the project would not have a substantial impact on the City's housing stock.

Employment

The expected 285 new full-time employees that would be added to the City as a result of the project represents 3% of the 9,500 employees anticipated to be added to the City's labor force between 2020 and 2040. Thus, the employee growth that can be attributed to the project is within SCAG's overall growth projections for the City and would not result in a substantial increase.

While the project would create the potential for new employment in the City, such growth is not unplanned and is not considered a substantial or significant population growth. The expected number of employees make up a small percentage of the overall expected growth in the City. Further, the project itself would aid in improving the jobs-housing imbalance that currently exists in the City. As previously discussed in Section 4.10.1, Existing Conditions, approximately 15.3% of residents are employed within the City, with 84.7% of residents commuting outside of the City for work. This is due to a lack of employment opportunities and an abundance of housing, which creates a jobs-housing imbalance. Also discussed in Section 4.10.1, the existing jobs-to-housing ratio in the City is 0.94:1.00, indicating a need for more employment opportunities to be added to the City. By adding new employment opportunities to the City, the project would help to improve the population-employment ratio and reduce this imbalance.

A project could result in indirect growth as a result of the extension of roads or other infrastructure. Warm Springs Parkway, a proposed four-lane north–south road, would be constructed as part of the project. The new road would extend north from Clinton Keith Road and would bisect the project site, with construction associated with the project ending at the northern extent of the project site. Any future extension of the road would occur separately from the proposed project. The Circulation Element of the General Plan identifies a future roadway alignment for the approximate location of the proposed Warm Springs Parkway and extending north to Scott Road. Exhibit 5-10 in the Circulation Element identifies the future roadway alignment as a major road, and Exhibit 5-6 indicates that the road is anticipated to have an average daily traffic volume of 17,200 vehicles on the portion of the road near the project site. Therefore, the construction of the road has been previously contemplated in the General Plan, and the project is implementing that vision. Therefore, the construction of Warm Springs Parkway would not result in substantial indirect growth in the City beyond what was previously contemplated in the General Plan.

The project would not directly or indirectly result in substantial unplanned population growth in the City. Impacts would be less than significant, and no mitigation is required.

4.10.5 Mitigation Measures

The project would not result in significant impacts, and no mitigation measures are necessary.

4.10.6 Level of Significance After Mitigation

The project would not result in significant impacts, and no mitigation measures are necessary.

4.10.7 Cumulative Impacts

Cumulative impacts to population and housing would result from a combination of projects that induce population growth. Individually, the project would result in minimal population growth in the City; however, as previously discussed, this growth projection is consistent with SCAG's growth projections for the City. A list of approved and proposed projects in the project area was provided by the City of Murrieta and the City of Menifee, as shown in Table 4.10-4. The list consists of a combination of retail and residential projects. The most comparable to the project include Walmart (Menifee) and Junction (Menifee), which consist of large retail facilities and are anticipated to employ a combined total of no more than 1,000 people. Other retail projects on the list are much smaller and likely to employ fewer full time employees.

Of the proposed or approved projects in the area, six consist of residential development. These projects would have the most obvious impact on population growth in the area. As previously discussed, these projects are expected to produce 942 dwelling units. Compared to the growth forecast of 10,700 additional units by 2040, this addition is nominal. When considering the project in combination with these projects, it is unlikely that substantial or unplanned population growth would occur.

The region is expected to see continued population growth, and the cumulative projects consist of many retail development projects that would also aid in reducing the jobs-housing imbalance. The cumulative growth induced by the project combined with other approved and proposed projects is unlikely to result in substantial population growth beyond that which the City and region has planned. In combination with the project, cumulative impacts to population growth or housing availability would not be considerable.

Table 4.10-4. Approved/Proposed Projects List

Project Name	Description
Mitchell Crossing	331 Multi-Family Housing dwelling units 50,000 square feet of Specialty Retail
The Orchard	436,735 -square -foot Shopping Center 215,850 square feet remaining to be built; 100,000 square feet assumed to be built by 2020
Vineyard Shopping Center (updated)[1]	78,489 -square -foot Shopping Center
Makena Hills	116,200 -square -foot Medical Office 9,300 -square -foot Restaurant 206-room Hotel
Adobe Springs	287 Single -Family Detached dwelling units 208,500 -square -foot Business Park
Alderwood	10 Single -Family Detached dwelling units
Golden Cities Phase 3	69 Single -Family Detached dwelling units
Golden Cities Phase 4	126 Single -Family Detached dwelling units
Golden Cities Phase 5	119 Single -Family Detached dwelling units
Junction (Menifee)	148,663 -square -foot Discount Club 140,760 -square -foot Home Improvement Store 237,377 -square -foot Retail/Shopping Center
Walmart (Menifee)	205,000 -square -foot Discount Store 6,680 -square -foot Automobile Care Center 13,800 -square -foot Specialty Retail 6,500 -square -foot High-Turnover (sit-down) Restaurant

Table 4.10-4. Approved/Proposed Projects List

Project Name	Description
	6,200 -square -foot Fast-Food with Drive-Through 16,000 -square -foot Gas Station w/ Food Mart & Car wash
Curci	5 positions Lube/Tune 5,000 -square -foot Bank 22,500 -square -foot Shopping Center 2,500 -square -foot Fast-Food with Drive-Through 5,500 -square -foot High-Turnover (sit-down) Restaurant
Clinton Keith Village (Wildomar)	5,940-square-foot Fast-Food with Drive-Through 12,840-square-foot Variety Store 12 fueling position Convenience Market with Gas Pumps 18,250 square feet of Commercial Retail

Source: Appendix I.
Note: The project list was derived from contacting the jurisdictions directly, and then the traffic engineer reviewed the list to include locations that would contribute traffic to the project's study intersections and would be open by 2020.
[1] While the Vineyard Shopping Center traffic study includes a 78,489 square foot shopping center and 91-room hotel, updated plans for the site include an approximately 32,700 square foot shopping center and no hotel.

4.10.8 References Cited

City of Murrieta. 2013. *City of Murrieta 2014–2021 Housing Element*. Prepared by Environmental Science Associates. Los Angeles, California: Environmental Science Associates. Adopted October 8, 2013. Accessed August 2018. http://www.hcd.ca.gov/community-development/housing-element/docs/murrieta-5th-adopted101413.pdf.

DOF (California Department of Finance). 2019. "E-1 Population Estimates for Cities, Counties, and the State — January 1, 2018 and 2019." Accessed March 2020. http://dof.ca.gov/Forecasting/Demographics/Estimates/E-1/.

SCAG (Southern California Association of Governments). 2016a. "Section 3.14: Population, Housing, and Employment." In *Program Environmental Impact Report for the Draft 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy.* SCH#2015031035. December 2015. Accessed August 2018. http://scagrtpscs.net/Documents/2016/peir/draft/2016dPEIR_3_14_PopulationHousingandEmployment.pdf.

SCAG. 2016b. "Appendix: Current Context: Demographics & Growth Forecast." In the *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. Adopted April 2016. Accessed August 2018. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_DemographicsGrowthForecast.pdf.

SCAG. 2016c. "2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction." https://www.scag.ca.gov/Documents/2016_2040RTPSCS_FinalGrowthForecastbyJurisdiction.pdf.

SCAG. 2019a. *Regional Guide 2019*. Accessed March 2020. http://www.scag.ca.gov/Documents/scag-2019-Regional-Guide.pdf.

SCAG. 2019b. *Profile of Riverside County: Local Profiles Report 2019*. May 2019. Accessed March 2020. https://www.scag.ca.gov/Documents/RiversideCountyLP.pdf.

SCAG. 2019c. *Profile of the City of Murrieta: Local Profiles Report 2019*. May 2019. Accessed March 2020. https://www.scag.ca.gov/Documents/Murrieta.pdf.

U.S. Census Bureau. n.d. "QuickFacts: Riverside County, California." Accessed August 2018. https://www.census.gov/quickfacts/fact/table/riversidecountycalifornia/AGE295217#viewtop.

4.11 Public Services

This section describes the existing setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco/Vineyard II Retail Development Project (project).

4.11.1 Existing Conditions

Fire Protection and Emergency Medical Services

The Murrieta Fire and Rescue (MFR) is the primary provider of fire suppression and fire prevention services in the City of Murrieta (City), while the Sphere of Influence is served by the Riverside County (County) Fire Department. However, the MFR participates in an Automatic Aid Agreement with the County Fire Department to expedite service delivery to the eastern portion of the City. The MFR may also provide service to the Sphere of Influence by means of this Automatic Aid Agreement. The MFR participates in the California Master Mutual Aid Agreement. In the event of a major fire, outside resources can be brought into the City as needed (City of Murrieta 2011a).

The MFR currently has five fire stations and is the primary provider of fire suppression, pre-hospital emergency medical care, disaster preparedness coordination, hazard mitigation, and fire prevention services in the City (City of Murrieta 2018a). Table 4.11-1 identifies each of the fire stations and their locations.

Table 4.11-1. Murrieta Fire and Rescue Stations and Locations

Station	Location	Approximate Distance to Project Site (roadway miles)
Fire Department Administration	41825 Juniper Street	4.8
Fire Station No.1	41825 Juniper Street	4.8
Fire Station No.2	40060 California Oaks Road	2.9
Fire Station No.3	39985 Whitewood Road	4.3
Fire Station No.4	28155 Baxter Road	1.6
Fire Station No.5	38391 Vineyard Parkway	5.8

Source: City of Murrieta 2018a.

The project site is located within the primary response area for Fire Station No. 4, located approximately 1.6 miles (driving distance) north of the project site. Fire Station No. 4 would be the first responder for all fire-related incidents at the project site. Fire Station No. 4 apparatus and staffing includes one engine company with three personnel (captain, engineer, firefighter/paramedic), one cross-staffed Type III engine, and one battalion chief (Jensen, pers. comm. 2019a).

In the event of a large fire, the four other fire stations in the City would respond as well, assuming resources are available and not responding to other emergencies. The City participates in the California Master Mutual Aid Agreement, as well as an Automatic Aid Agreement with the California Department of Forestry and Fire Protection (CAL FIRE) and Riverside County Fire Department, which would allow these outside jurisdictions to provide aid and expedite service in an emergency event.

Initial response in the event of a large fire in a residential area would include four engines, a ladder, and the battalion chief; and in a commercial area would include four engines, a ladder, the battalion chief, and two Medic-Patrol Type VI apparatus staffed with two personnel each. It should be noted that simultaneous calls for service and for medical emergencies would impact the resources being sent on any call type and could deplete the response force for any additional calls for service in the City (Jensen, pers. comm. 2019a).

The MFR response time goals are based off the National Fire Protection Association 1710 goal of 6 minutes and 20 seconds, and the Community Risk Assessment-Standards of Cover goal of 10 minutes. The MFR evaluates response times based on the 90th percentile performance mark by considering the overall performance of each station. Station No. 4 currently has a 90th percentile performance response time of 9 minutes 54 seconds. Based on the 90th percentile performance measurement, Station No. 4 met the National Fire Protection Association response time goal 56.1% of the time, and the Community Risk Assessment-Standards of Cover response time goal 90.3% of the time (Jensen, pers. comm. 2019a). Stations in the outlying regions, such as the eastern portion of the City along Winchester Road and in the area between Winchester and Interstate 215 north of Clinton Keith Road, experience longer average response times. A sixth fire station in this area is contemplated to help achieve the target response time (City of Murrieta 2011a). The addition of a sixth station could alleviate some calls to Station No. 4 and result in improved response times for Station No. 4.

Emergency Services

Emergency 911 services are provided by the Murrieta Police Department (MPD) as a joint police/fire dispatch center, dispatching Murrieta fire, police, paramedics, and ambulance services. The dispatch center is interconnected with the fire apparatus via systems that allow for backup forms of communication between the dispatch center, vehicles, and personnel.

Firefighter/paramedics are cross-trained to provide services for medical emergencies. All fire suppression personnel are firefighter/paramedics and those that are not paramedics are National Registry Emergency Medical Technicians. Firefighters, engineers, and captains are trained as paramedics. The MFR's engine companies are equipped for paramedic service.

The MFR maintains an Urban Search and Rescue team of professional firefighter/paramedics that are certified by the Federal Emergency Management Agency. They serve the larger community as part of California Task Force 6, supervised by the Riverside City Fire Department and composed of representatives from several Inland Empire fire agencies. The Urban Search and Rescue team members regularly train with other agencies for rapid deployment to local, regional, and national incidents (City of Murrieta 2011a).

Police Protection

The MPD provides police protection services within the City. Besides responding to incidents involving safety and law enforcement, the MPD actively promotes safety through education programs, community partnerships, and the provision of advice on incorporating Crime Prevention Through Environmental Design (CPTED) principles into development projects (City of Murrieta 2011a).

The built environment can present opportunities for crimes to occur or can discourage crimes. For instance, design can influence the amount of surveillance provided by residents or passersby, and whether there is an easy escape for someone who commits a crime. Design of public spaces and the relationships between buildings and public

space are important considerations in CPTED. CPTED is a set of approaches to the design of the built environment that seek to minimize opportunities for crime.

Led by Chief Sean Hadden, the MPD currently has 93 sworn officers and is anticipated to grow to 103 sworn officers over the next calendar year (Hadden, pers. comm. 2019). The Operations Division consists of the patrol unit, K-9 unit, off-road motorcycle enforcement unit, SWAT unit, armored rescue vehicle, traffic bureau, parole/probation compliance team, homeless outreach team, and field police service technicians. The Support Division consists of the detective bureau, special enforcement team, juvenile investigations team, school resource officers, dispatch records, and code enforcement (City of Murrieta 2018b).

Call priorities are assigned from greatest urgency (Priority 1) through non-emergency (Priority 3) calls. Priority 1 calls are emergency calls that require immediate response in order to preserve life and/or apprehend a felony suspect. Priority 2 calls require immediate response where the need to apprehend suspects is great or apprehension would be imminent. Priority 3 calls require police response in a timely manner. Table 4.11-2 identifies the target response time for each call type and the average response times experienced by the MPD.

Table 4.11-2. Murrieta Police Department Target Response Times

Call Type	Target Response Time	Average Response Time
Priority 1	6 minutes	6 minutes
Priority 2	15 minutes	13 minutes
Priority 3	30 minutes	30 minutes

Source: Hadden, pers. comm. 2019.

As individual projects are proposed within the City, the MPD service levels and staffing requirements would be evaluated to determine if additional staffing and/or facilities would be required.

Schools

The City is served by four public school districts. The primary school district is the Murrieta Valley School District, and residents in the areas east of Interstate 215 and north of Clinton Keith Road are served by the Menifee Union School District, Perris Union High School District, and Hemet Unified School District. As shown in Exhibit 5.19-1 in the Murrieta General Plan Final Environmental Impact Report (EIR), the project site is located in the southern portion of the Menifee Union School District boundary (City of Murrieta 2011a). Table 4.11-3 provides the enrollment capacity and current enrollment at each of the public school districts that serve the City.

Table 4.11-3. City of Murrieta School Districts and Enrollment

School Name	School Address	Capacity	Total Enrolment (2016–2017)
Murrieta Valley School District			
Alta Murrieta Elementary School	39475 Whitewood Road	1,200	810
Antelope Hills Elementary	36105 Murrieta Oaks Ave	1,000	841
Avaxat Elementary School	24300 Las Brisas Road	1,125	753
Daniel L. Buchanan Elementary School	40121 Torrey Pines Road	1,450	943
Cole Canyon Elementary School	23750 Via Alisol	1,200	1,063

Table 4.11-3. City of Murrieta School Districts and Enrollment

School Name	School Address	Capacity	Total Enrolment (2016–2017)
E. Hale Curran Elementary School	40855 Chaco Canyon Road	1,125	563
Lisa J. Mails Elementary	35185 Briggs Road	975	923
Monte Vista Elementary School	37420 Via Mira Mosa	1,325	975
Murrieta Elementary School	24725 Adams Ave.	1,025	807
Rail Ranch Elementary School	25030 Via Santee	925	618
Tovashal Elementary School	23801 Saint Raphael	900	764
Dorothy McElhinney Middle School	35125 Briggs Road	1,701	1,325
Shivela Middle School	24515 Lincoln Avenue	1,674	1,423
Thompson Middle School	24040 Hayes Avenue	1,620	1,671
Warm Springs Middle School	39245 Calle de Fortuna	1,809	877
Murrieta Mesa High School	24801 Monroe	2,214	2,290
Murrieta Valley High School	42200 Nighthawk Way	3,429	2,481
Vista Murrieta High School	28251 Clinton Keith Road	3,564	3,574
Murrieta Canyon Academy	24150 Hayes Ave	Data Unavailable	267
Menifee Union School District			
Oak Meadows Elementary School	28600 Poinsettia Street	1,034	893
Bell Mountain Middle School	28525 La Piedra Road, Menifee	1,546	1,214
Perris Union High School District			
Paloma Valley High School	31375 Bradley Road, Menifee	2,500	3,124
Hemet Unified School District			
Winchester Elementary School	28751 Winchester Road, Winchester	650	480
Rancho Viejo Middle School	985 North Cawston Avenue, Hemet	1,400	1,284
Tahquitz High School	4425 West Commonwealth, Hemet	2,400	1,634

Sources: City of Murrieta 2011a; Ed-Data 2016–2017.

The California State Allocation Board Office of Public School Construction regulates enrollment projections for the state's public school districts. The State Allocation Board defines a number of options to generate student enrollment projections and provides an approved methodology for determining the elementary, middle, and high school students that would be generated by new residential units. This methodology is based on historical student generation rates of new residential units constructed within the school district during the previous 5 years.

When multiple districts with multiple yield factors are analyzed, a region's projected enrollment may be calculated using the statewide average yield factors as provided by the State Allocation Board. These estimates are a result of statewide sampling that incorporates widely varying dwelling unit types, households, and other demographic characteristics across the state. This methodology is appropriate for considering any residential units that may be constructed as a result of increased employment at any of the retail and commercial businesses, as those employees may require varied dwelling unit types ranging from affordable housing to high-end single-family units.

Parks

In June 2009, the City adopted an updated Murrieta Parks and Recreation Master Plan (Parks Master Plan). The purpose of the Parks Master Plan is to provide a realistic guide for the creative, orderly development and management of recreation facilities and programs for the City, now and into the future. The Parks Master Plan is an implementation tool providing strategies for addressing the goals and policies of the City of Murrieta 2035 General Plan (General Plan).

The Parks Master Plan lists six categories of City parks: City-wide parks, community parks, neighborhood parks, neighborhood play areas, special use parks, and nature parks. Private recreation facilities in Murrieta include three homeowners' association parks and recreation facilities in the gated communities of Bear Creek and Warm Springs, including a members-only golf course in Bear Creek. The Parks Master Plan does not count private facilities toward the City's goals for parks and recreation (City of Murrieta 2009). The City has over 465 acres of parkland located in 50 parks and recreational facilities (City of Murrieta 2018c).

Within approximately 6 miles of the City boundaries, Murrieta residents have access to open space in the Santa Ana Mountains and three aquatic recreational areas: Lake Elsinore, a natural freshwater lake in the City of Lake Elsinore, and Lake Skinner and Diamond Valley Lake, reservoirs operated by the Metropolitan Water District of Southern California. All three water bodies and the surrounding areas are open for a variety of recreational uses including fishing, boating, camping, horseback riding, and hiking.

The Parks Master Plan calls out trails as a key issue in the recreation facility recommendations, specifically, the development of an effective, connected, multi-use trail system for walking, jogging, hiking, biking, and equestrian uses. The Parks Master Plan recommends that increased trail connectivity and opportunities should be emphasized, focusing on corridors and links to adjacent natural open space, parks, schools, and commercial areas (City of Murrieta 2009). Adjacent to the City are numerous planned County trails with access to hiking areas such as the Santa Rosa Plateau Ecological Reserve. There are also trails in the nearby Cleveland National Forest (City of Murrieta 2011a).

4.11.2 Relevant Plans, Policies, and Ordinances

Federal

There are no applicable federal plans, policies, or ordinances.

State

California Code of Regulations, Title 24 California Building Standards Code

California Building Code

Part 2 of Title 24 of the California Code of Regulations, the California Building Code (CBC), contains minimum standards for construction and the built environment intended to safeguard public health, safety, and general welfare. The CBC incorporates by adoption the International Building Code but has been modified for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local city and county building officials for compliance with the CBC.

Typical requirements of the CBC include provisions for building materials, accessibility and means of ingress/egress, energy efficiency, fire protection, and lifesaving systems. The project would be required to comply with the standards set forth in the CBC in order to maintain a safe commercial environment and one that does not hinder the ability of local public services, such as fire and police, to serve the project site and surrounding area.

California Fire Code

Part 9 of Title 24, the California Fire Code (CFC), contains fire safety–related building standards. The CFC incorporates by adoption the International Fire Code with necessary California amendments. The CFC establishes minimum requirements to safeguard the public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises, and to provide safety and assistance to fire fighters and emergency responders during emergency operations. The CFC includes general provisions for fire protection features and systems, ingress/egress, and building materials, as well as provisions specific to certain uses and building types.

The CFC and Office of the State Fire Marshal provide regulations and guidance for local agencies in the development and enforcement of fire safety standards. The CFC is updated and published every 3 years by the California Building Standards Commission. The 2016 CFC took effect on January 1, 2017. The City of Murrieta adopted the 2016 CFC with local amendments in August 2018.

State Responsibility Area Fire Safe Regulations

The basic wildland fire protection standards of the California Board of Forestry are found in CAL FIRE's Fire Safe Regulations. They have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction, and development in State Responsibility Areas. Title 14, Natural Resources, regulates that the future design and construction of structures, subdivisions, and developments in a State Responsibility Area shall provide basic emergency access and perimeter wildfire protection measures.

California Health and Safety Code

State fire regulations are set forth in Section 13000 et seq. of the California Health and Safety Code, including regulations for building standards (also set forth in the CBC), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

California Occupational Safety and Health Administration

In accordance with CCR, Title 8, Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Equipment, the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials; fire hose size requirements; restrictions on the use of compressed air; requirements for access roads; and guidelines for testing, maintaining, and using all firefighting and emergency medical equipment.

Mutual Aid Agreements

The California Disaster and Civil Defense Master Mutual Aid Agreement, as provided by the California Disaster Act, provides statewide mutual aid between and among local jurisdictions and the state. The statewide mutual aid system exists to ensure that adequate resources, facilities, and other supports are provided to jurisdictions

whenever resources prove to be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed.

Local

City of Murrieta 2035 General Plan

The General Plan Safety Element includes goals and policies that address fire protection services and identify the need to provide adequate resources to respond to health and fire emergencies with the City, including adequate staffing of fire response personnel and trained medical technicians. The goals and policies from the Safety Element that may be applicable to the proposed project are included below (City of Murrieta 2011b):

Goal SAF-5 Damage from fire hazards is minimized through preventive measures, education, and fire protection services.

- **Policy SAF-5.3** Continue to coordinate fire protection services with Riverside County, CAL FIRE, and all other agencies and districts with fire protection powers.
- **Policy SAF-5.4** Ensure that outlying areas in the City can be served by fire communication systems as new development occurs.

Goal SAF-6 The Murrieta Fire and Rescue provides a timely response to fire and other emergencies.

- **Policy SAF-6.1** Respond to 90 percent of medical and fire incident calls within 6½ minutes from dispatch.
- **Policy SAF-6.2** Ensure that each Paramedic Assessment Engine Company provides the capacity to treat moderate or greater injuries, transport patients to hospitals, advance a hose line for fire control, and to effect a rescue of trapped occupants.
- **Policy SAF-6.3** Provide adequate levels of fire suppression personnel for all areas.
- **Policy SAF-6.5** Locate, staff, and equip Fire Department units to provide service to all areas within the City within a maximum of 12 minutes total response time for 90 percent of all mass casualty incidents or major structure fires.
- **Policy SAF-6.8** Maintain and implement a Fire Department Strategic Plan to address staffing and facility needs, service goals, deployment strategies, and other department goals.
- **Policy SAF-6.9** Strive to achieve an Insurance Services Office (ISO) Public Protection Classification of 3 in areas with fire hydrants and 9 in areas that are not connected to an existing water district supply system.

Goal SAF-9 High-quality and timely police services are provided to all residents and businesses in Murrieta.

Policy SAF-9.1 Seek to reach and maintain police officer and civilian support employee staffing levels to effectively and efficiently address the public safety needs, measured through established response times, crime statistics, crime clearance rates, and community quality of life issues.

Policy SAF-9.2 Endeavor to respond within six minutes for all Priority 1 calls, 15 minutes for Priority 2 calls, and 35 minutes for Priority 3 calls.

Policy SAF-9.3 Consider options for locating field stations throughout the City to improve response times for Priority 1 calls and foster relationships with local residents.

Policy SAF-9.4 Maintain and implement a Police Department Strategic Plan to address staffing and facility needs, service goals, deployment strategies, and other department goals.

Goal SAF-10 The Police Department coordinates with neighborhoods and community members to enhance safety and continually improve services.

Policy SAF-10.1 Collaborate with school districts, businesses, nonprofit organizations, and community members, including neighborhood watch groups, to maintain safety throughout the City.

Goal SAF-11 Design of the physical environment promotes community safety and reduces opportunities for criminal activity.

Policy SAF-11.1 Involve the Police Department in the development review process to address safety concerns, access issues, and potential traffic conflicts, and identify opportunities to apply CPTED principles.

Policy SAF-11.3 Coordinate efforts between the Police Department and Planning Department to develop guidelines for implementation of (Crime Prevention Through Environmental Design) CPTED principles.

Policy SAF-11.4 Continue to ensure that each development or neighborhood in the City has adequate emergency ingress and egress.

City of Murrieta Municipal Code

The City Municipal Code contains many policies governing the safety and security of the City, as carried out by the public services provided by police and fire departments. Title 8 establishes regulations related to health and safety. Title 9 establishes regulations related to public peace, morals, and welfare. Title 15 and Title 16 contain regulations related to buildings, construction, and development, including fire code standards.

City of Murrieta Development Impact Fee

New developments are subject to the payment of a Development Impact Fee (DIF), which would help cover the cost of new or expanded public facilities. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development (City of Murrieta 2018d). The

current fee schedule for the City indicates the fee for commercial development is $11.49 per square foot, with allocations distributed to law enforcement, fire protection, road infrastructure, storm drainage, and general facilities. Commercial development is not charged a fee for parks, libraries, or the community center.

County of Riverside General Plan

The County General Plan Safety Element provides a framework by which safety considerations are introduced into the land use planning process, identifies hazards mitigation strategies and policies for new and existing development, and strengthens hazard preparedness in the County. The following policy from the Safety Element may be applicable to the proposed project (County of Riverside 2016):

Policy S 1.4 Implement the County of Riverside Multi-Jurisdictional Hazard Mitigation Plan.

The following policies from the County General Plan Multipurpose Open Space Element pertain to open space, parks, and recreation, and may be applicable to the project (County of Riverside 2015):

Policy OS 20.2 Prevent unnecessary extension of public facilities, services, and utilities, for urban uses, into Open Space-Conservation designated areas.

Policy OS 20.3 Discourage the absorption of dedicated park lands by non-recreational uses, public or private. Where absorption is unavoidable, replace park lands that are absorbed by other uses with similar or improved facilities and programs.

Policy OS 20.4 Provide for the needs of all people in the system of the County recreation sites and facilities, regardless of their socioeconomic status, ethnicity, physical capabilities or age.

Policy OS 20.5 Require that development of recreation facilities occurs concurrent with other development in an area.

Policy OS 20.6 Require new development to provide implementation strategies for the funding of both active and passive parks and recreational sites.

4.11.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to public services are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to public services would occur if the project would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
    a. Fire protection.
    b. Police protection.
    c. Schools.

d. Parks.

e. Other public facilities.

4.11.4 Impacts Analysis

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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?

Less-than-Significant Impact. The need for new or expanded public services (such as fire protection facilities) is typically associated with a population increase. The proposed project does not involve construction of new residential development, which is typically associated with a direct increase in population. The project is anticipated to employ a total of 285 full-time employees during operation. Conservatively assuming that all new employees would move to the City, this number is consistent with the growth projections anticipated by the City and the Southern California Association of Governments, as discussed in Section 4.10, Population and Housing. Project employment could result in slight residential population growth within the MFR's jurisdiction; however, the proposed project would not induce substantial unplanned population growth (see Section 4.10 of this EIR for details). Ultimately, the increase in on-site activity and slight population growth could result in increased calls for fire protection services to the project area.

As previously discussed, the City is currently served by five existing fire stations, the closest of which is Fire Station No. 4, located at 28155 Baxter Road, approximately 1.6 miles (driving distance) north of the project site. The annual emergency calls received by MFR as a whole, and specifically by Station No. 4, from 2014 to 2018 are shown in Table 4.11-4.

Table 4.11-4. Annual Call Volume

Year	Call Volume
Murrieta Fire and Rescue – All Stations	
2014	7,734
2015	8,326
2016	8,470
2017	9,072
2018	9,456
Station No. 4 Annual Call Volume	
2014	865
2015	991
2016	1,012
2017	1,224
2018	1,510

Source: Jensen, pers. comm. 2019b.

Total call volume, as documented by MFR, has increased annually as the City's population has also increased. Total annual calls for 2019 are anticipated to reach over 10,000 calls. Given that the potential population growth anticipated

to result from implementation of the project would be well within the expected population and employment growth for the City and the region, it is not expected that the population increase resulting from the project would result in a significant increase in calls to MFR.

As previously discussed, Fire Station No. 4 currently has a measured 90th percentile performance response time of 9 minutes 54 seconds, meeting the National Fire Protection Association response time goal 56.1% of the time, and the Community Risk Assessment-Standards of Cover response time goal 90.3% of the time (Lantzer, pers. comm. 2019). In the event that Fire Station No. 4 could not meet the immediate needs of a call for services independently or does not have capability to address the full extent of a larger incident, the four other fire stations in the City, followed by CAL FIRE and/or the closest available fire stations in neighboring jurisdictions, could respond or provide support through the Mutual Aid Agreements with the City.

The project would result in an increase in the intensity of use on the project site, which could result in increased calls for service to the fire department. However, the proposed project would be designed and constructed in accordance with all applicable provisions of the fire code, which would reduce the likelihood of fire ignition on the project site. Applicable provisions of the fire code include requirements for adequate fire flows, width of emergency access routes, turning radii, automatic sprinkler systems, fire alarms, and floor-to-sky height limits along emergency access routes. The proposed building materials and design features would include would include fire-rated split-face concrete masonry unit and textured insulated metal panel exterior walls, seam metal roofing, plaster, and other fire-resistant materials to be implemented on the Costco warehouse building and the Vineyard II retail buildings; a National Fire Protection Association 13 Commercial Fire Sprinkler System and fire rated exterior doors, along with asphalt roadways and parking; and a fully irrigated landscape with drought-tolerant, fire-resistive plantings. Further, per Section 15.24.290 of the Murrieta Municipal Code (as well as CFC Chapter 49 Section 4906 and 4907; California Public Resources Code, Section 4291; and California Government Code Section 51182), a 100-foot fuel modification zone (FMZ) is required around structures in fire hazard areas, to the extent possible (i.e., not beyond the property line).

Based on the site plan, the majority of the project site achieves 100 feet or more of on-site FMZ in the northern portion of the site, which consists of asphalt roadways and parking stalls and a fully irrigated landscape with City and MFR-approved plant species. However, conceptual building footprints partially protrude into the 100-foot FMZ along the northern boundary. More specifically, the northwestern portion of the Costco warehouse development provides 64 feet of achievable on-site fuel modification. However, as further analyzed in Section 4.17, Wildfire, for the areas of the project site where 100 feet of on-site FMZ is not achievable due to site constraints (i.e. the northwestern portion of the Costco site), the proposed building construction design features would provide adequate separation and radiant heat protection from a wildfire. The MFR is responsible for ensuring that new development complies with the CBC, Chapters 7 and 7A, and the CFC (24 CCR Part 9). Buildings would be required to install fire prevention devices, such as fire alarms and sprinklers, in order to improve emergency-related problems for the proposed development. As part of the standard development practices, the site plan would be reviewed by MFR prior to construction.

The proposed project would be subject to the payment of a DIF. The City's DIF provides funding for capital costs necessary to ensure that MFR is able to continue to provide service at acceptable levels. New development contributes its fair share of the cost for such facilities and equipment through payment of the DIF. The DIF amount is determined through evaluation of the need for new public service facilities as it relates to the level of service demanded by new development, which varies in proportion to specific land uses. A portion of the DIF would be used exclusively toward capital improvements, such as the construction of fire department facilities. According to the City's 2018–2019 fee schedule, the DIF for commercial development is $11.49/square foot, with $0.31/square foot specific to fire services (City of

Murrieta 2018d). Additionally, the proposed project would be consistent with or would not hinder implementation of the City General Plan goals and policies pertaining to fire protection services listed in Section 4.11.2, Relevant Plans, Policies, and Ordinances.

As discussed, the project site is located within the MFR's response area, and the department would provide service to the project site (Jensen, pers. comm. 2019a). As noted above, response times for Fire Station No. 4 are not meeting goals consistently. However, with the nearby services of Fire Station No. 4 and other fire stations in the City and neighboring jurisdictions, it is not anticipated that the project would result in need for a new or physically altered fire station. In addition, the project would implement fire safety measures consistent with the CFC into building design, such as sprinklers, emergency access, and fire alarms. Moreover, the project would pay its fair-share of the City's DIF to cover costs associated with public services, including fire and police protection, and would also generate revenues to the City's General Fund (in the form of property taxes, sales revenue, etc.) that could be applied toward the provision of firefighting resources and related staffing, including capital improvements such as the construction of fire department facilities, as deemed appropriate. In any case, the need for additional fire protection services is not an environmental impact that CEQA requires a project proponent to mitigate. See *City of Hayward v Board of Trustees of The California State University* (2015) 242 CalApp.4th 833. "[T]he obligation to provide adequate fire and emergency medical services is the responsibility of the City. (Cal. Const., art. XIII, § 35, subd. (a)(2) ['The protection of the public safety is the first responsibility of local government and local officials have an obligation to give priority to the provision of adequate public safety services']). " Payment of the DIF would ensure the project contributes its fair share towards future facility improvements, expansion, or construction. Therefore, the project would not result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts.

Police protection?

Less-than-Significant Impact. As with fire services, increases in activities, visitors, employees, and events at the project site as a result of the proposed project could increase the frequency of emergency and non-emergency calls to the MPD from the project site, as compared with existing conditions. For example, the proposed project would introduce a commercial retail component to the project site, which would create the potential for crimes such as theft and robbery. Increased calls to the MPD and/or increased need for MPD support at the project site would have the potential to increase the need for police services.

A need for new or expanded public services, such as police facilities, is typically associated with a population increase. The proposed project does not include the construction of new homes. While the proposed project would lead to increased employment on the site, it was determined that the proposed project would not induce substantial unplanned population growth (see Section 4.10 of this EIR). Furthermore, the proposed project would incorporate operational practices and design elements to increase on-site safety and to reduce the potential for crime to occur. During construction, the contractor would implement temporary security measures including security fencing, lighting, locked entry, and private security officers. During operation, practices to increase safety could include security lighting, alarms, and security cameras. Project design would also employ defensible design, lighting, landscaping, and open fencing. These techniques would minimize spaces that are hidden from public view, which would help prevent loitering and crime. Building entries, parking areas, and walkways would be sufficiently lit, which would facilitate safe pedestrian movement. These design and operational practices would lessen the demand for police protection services at the project site by reducing the potential for crime to occur.

Police units are continuously mobile, and service calls are responded to by the nearest available mobile unit. As previously discussed, the MPD's average response times are currently at or better than the department's target response times. As discussed in Section 4.10, the City is expected to continue to experience population growth, and the MPD is anticipated to grow accordingly, with an increase of 10 additional sworn officers in 2019. Further, the police service ratio (number of officers per 1,000 residents) is anticipated to increase to 1 by December 2020, up from a service ratio of 0.81 in January 2019 (Hadden, pers. comm. 2019). Therefore, it is not anticipated that the project would hinder the MPD from continuing to meet or exceed target response times and provide adequate service levels.

Additionally, the proposed project would be consistent with or would not hinder implementation of the City General Plan goals and policies pertaining to police protection services listed in Section 4.11.2. As substantiated in this analysis, the proposed project is not anticipated to adversely affect service ratios or response times for police services such that new or expanded police facilities would be required. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities, or the need for new or physically altered police facilities; impacts would be less than significant.

Schools?

Less-than-Significant Impact. The project involves the development of a Costco Wholesale Warehouse and the Vineyard II retail development. The project does not include a residential component, and therefore would not directly generate new student enrollment. However, the project would generate approximately 285 new employment opportunities, which could indirectly generate population growth in the City and thus student enrollment. As shown in Table 4.11-3, as of 2017 the majority of schools in each school district are currently operating at or under capacity, with the exception of four schools. The four schools operating over capacity are located within the Murrieta Valley Unified School District and the Perris Union School District. As shown in Exhibit 5.19-1 in the Murrieta General Plan Final EIR, the project site is located in the southern portion of the Menifee Union School District boundary (City of Murrieta 2011a), which does not include schools operating over capacity. Further, the area where the project site is located (north of Clinton Keith Road and east of Interstate 215) is served by multiple school districts, including the Menifee Union School District, Perris Union School District, and Hemet Union School District (City of Murrieta 2011a). Each of the school districts that serve the City annually assesses the need for new or expanded school facilities and takes into consideration new development projects and approximate student generation.

Since the project area is served by multiple school districts, the region's projected enrollment may be calculated using the statewide average yield factors as provided by the State Allocation Board. This methodology is appropriate for considering any residential units that may be constructed as a result of increased employment at the project site. The statewide average student yield factor for unified school districts is 0.7 students per dwelling unit. Conservatively assuming all 285 new employees would relocate to the area and occupy 285 additional dwelling units, and using the statewide average student yield factor of 0.7 students per dwelling unit, it is anticipated the project could generate up to approximately 199.5 new students (285 new employees × 0.7 students per dwelling unit = 199.5 new students generated).

Per Senate Bill 50 (1998) and per the California Education Code (Title 1, Chapter 6, Section 17620) the governing board of any school district may charge a development fee on any new construction within the boundaries of the district for the purpose of funding the construction or reconstruction of school facilities. As the project is located within the boundaries of Menifee Unified School District, the Menifee Unified School District charges $0.439 per square foot for new commercial development (Menifee Unified School District 2019). Therefore, with payment by

the developers of school fees, the project would offset any potential increase in school enrollment. Further, as discussed in Section 4.10, the analysis conservatively assumes that all 285 new employees would relocate to the City, which is within the City and Southern California Association of Governments' growth projections for the City and region. However, each residential project occupied would also have been required to pay school fees pursuant to Senate Bill 50, which would constitute full mitigation for any impacts should they occur. As such, impacts related to school facilities would be less than significant, and no mitigation is required.

Parks?

Less-than-Significant Impact. The existing parks closest to the project site include Antelope Hills Park, located 0.7 miles southwest of the project site; Los Alamos Hills Sports Park, located 0.95 miles south of the project site; and Oak Terrace Park, located 1 mile southwest of the project site. Increased park use is typically associated with population growth. As discussed in Section 4.10, the project would not induce substantial unplanned population growth in the area, as the project does not involve a housing component or use that would typically result in substantial population growth. The project would generate new employment opportunities, which could indirectly contribute to increased park usage. However, the anticipated employment is well within the employment growth forecast for the City. Therefore, the local parks in the project area are not expected to experience a substantial increase in use as a result of the project. Likely because park use is generally associated with residential uses, the City's fee schedule does not allocate a portion of the DIF paid by commercial development toward park land facilities, while a portion of the DIF paid by residential development projects is allocated toward park land facilities (City of Murrieta 2018d). Conservatively assuming all 285 new employees would relocate to reside in the City, the residential units they occupy would be required to pay into the City's DIF toward park land facilities. Therefore, it is unlikely that the project would result in the need for additional park space, or increased use of existing parks or recreational facilities such that new or expanded facilities would be required. Therefore, impacts to park facilities and services would be less than significant.

Other public facilities?

Less-than-Significant Impact. The project would provide new employment opportunities, and thus could induce a slight population increase in the area, some of whom may use other public facilities. However, any increased use in public facilities by additional employees is expected to be minimal. As previously discussed, the anticipated slight population increase that could result from the project is well within the growth forecast for the City, and therefore the City is otherwise preparing for such growth. Further, the project would be subject to the City's DIF, which allocates the funds collected from new commercial development to law enforcement, fire protection, streets and bridges, traffic signals, storm drainage, and general public facilities. Therefore, with payment of the City's DIF, impacts to other public facilities would be less than significant.

4.11.5 Mitigation Measures

Impacts related to public services would be less than significant and no mitigation measures are necessary.

4.11.6 Level of Significance after Mitigation

Impacts related to public services would be less than significant and no mitigation measures are necessary.

4.11.7 Cumulative Impacts

As indicated above, the project would have a less-than-significant impact with respect to public services. However, a significant adverse cumulative impact related to public services could occur if the service demands of the proposed project were to combine with those of related projects, triggering a need for new or physically altered public service facilities, the development of which could cause significant environmental impacts. A significant adverse cumulative impact could also occur if the proposed project were to make a considerable contribution to a previously existing deficit in public services in the City.

Fire and Police

As discussed in Section 4.11.1, Existing Conditions, the project site is served by the MFR and MPD for fire and police services. The proposed project alone would not have a significant effect on fire or police protection services, and the project would not cause the need for new or physically altered government facilities in order to maintain acceptable levels of service related to fire and police protection. The 10 related projects located in the City (see Table 3-1, Related Projects) would also be served by the MFR and MPD in the project area. The three related projects located outside of the City (located in the Cities of Menifee and Wildomar) would be served by their respective fire and police departments. Both the Cities of Menifee and Wildomar contract with the Riverside County Sheriff's Department for police services and the Riverside County Fire Department and CAL FIRE for fire services. Because multiple fire and police stations are located within and surrounding the City, a variety of City and County facilities would be available to serve the related projects. It is assumed that the related projects would incorporate security measures, such as nighttime lighting, and fire safety measures consistent with the CFC into their building design, such as sprinklers, emergency access, and fire alarms. Further, new development would also generate revenues (in the form of property taxes, sales revenue, etc.) that could be applied toward the provision of firefighting resources and related staffing, as deemed appropriate. Finally, the City General Plan Safety Element (2035) contemplates a future addition of a sixth fire station to serve the eastern portion of the City; however no plans are in place and no site has been secured for this purpose. Further analysis would therefore be speculative and beyond the scope of this document. As the project would have a less-than-significant impact with respect to police and fire services it would not make a cumulatively considerable contribution to any cumulative police or fire services impacts, and no mitigation is required.

Additionally, consistent with the *City of Hayward v. Board Trustees of California State University* (2015) 242 Cal.App.4th 833 ruling and the requirements stated in the California Constitution, Article XIII, Section 35(a)(2), the obligation to provide adequate fire protection and emergency medical services is the responsibility of the City. Through the City's regular budgeting efforts, MFR and MPD's resource needs, including staffing, equipment, trucks and engines, ambulances, other special apparatuses, and possibly station expansions or new station construction, would be identified and allocated according to the priorities at the time.

Parks, Schools and Other Public Facilities

Cumulative impacts to schools would be offset by the payment of the developer school fee per Senate Bill 50 and per the California Education Code (Title 1, Chapter 6, Section 17620), which allows school districts to charge fees on new development within the district's boundaries. Further, increased use of parks and other public facilities, such as libraries, are generally attributed to residential development, as reflected in the City's fee schedule. As previously discussed, the project does not include residential uses. Cumulative projects in the City would be required to pay into the City's DIF program, which allocates funds to law enforcement, fire protection, streets and

bridges, traffic signals, storm drainage, general facilities, park land facilities, the community center, and the public library. Further, six of the related projects include residential components, and therefore would contribute to parks, schools, libraries, and other public facilities through the DIF program. Therefore, through the payment of development impact fees, which is considered an appropriate means of mitigating impacts, cumulative project impacts to public services would be less than significant.

4.11.8 References Cited

City of Murrieta. 2009. *Parks and Recreation Master Plan.* June 2009. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?blobid=3301.

City of Murrieta. 2011a. *Murrieta General Plan 2035 Final Environmental Impact Report.* Prepared by RBF Consulting. Irvine, California: RBF Consulting. July 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5189.

City of Murrieta. 2011b. *Murrieta General Plan 2035 – Chapter 12: Safety Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5173.

City of Murrieta. 2018a. "Murrieta Fire & Rescue." Accessed July 2018. https://www.murrietaca.gov/departments/fire/default.asp.

City of Murrieta. 2018b. "Murrieta Police Department." Accessed July 2018. https://www.murrietaca.gov/departments/police/default.asp.

City of Murrieta. 2018c. "Parks & Recreation (CSD)." Accessed July 2018. https://www.murrietaca.gov/departments/cs/default.asp.

City of Murrieta. 2018d. *City of Murrieta Fee Schedule, Fiscal Year 2018–2019*. Accessed January 2019. http://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=12364.

County of Riverside. 2015. C*ounty of Riverside General Plan – Chapter 5: Multipurpose Open Space Element*. Revised December 8, 2015. http://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch05_MOSE_120815.pdf?ver=2017-10-11-102103-833.

County of Riverside. 2016. *County of Riverside General Plan – Chapter 6: Safety Element.* Revised December 6, 2016. https://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch06_Safety_DEC2016.pdf?ver=2017-10-06-093651-757.

Ed-Data (Education Data). 2016–2017. Education Data Partnership: CDE, EdSource, and FCMAT, Comparing School Reports. Accessed on July 20, 2018. https://www.ed-data.org/.

Hadden, S. 2019. Request for Police Department Service Information. Email correspondence between S. Hadden (Chief of Police, Murrieta Police Department) and Dana Link-Herrera (Dudek). January 25, 2019.

Jensen, C. 2019a. Request for Fire Department Service Information. Email correspondence between C. Jensen (Fire Marshal, Murrieta Fire and Rescue), D. Lantzer (Deputy Chief, Murrieta Fire and Rescue), and Dana Link-Herrera (Dudek). February 4, 2019.

Jensen C. 2019b. Call with City of Murrieta to discuss the Public Services Chapter. July 31, 2019.

Lantzer. 2019. Request for Fire Department Service Information. Email correspondence between D. Lantzer (Deputy Chief, Murrieta Fire and Rescue) and D. Link-Herrera (Dudek). February 4, 2019.

Menifee Unified School District. 2019. *Facilities Department - Developer School Fees*. https://www.menifeeusd.org/District/Department/6-Facilities%20Department/1525-DeveloperFees.html

INTENTIONALLY LEFT BLANK

4.12 Recreation

This section describes the existing recreation setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Costco and Vineyard II Retail Development Project (project). Information presented in this section was gathered from a variety of publicly available sources, including the Murrieta General Plan 2035, the City of Murrieta Parks and Recreation Master Plan, and the County of Riverside General Plan.

4.12.1 Existing Conditions

The project site is an approximately 26.3 acre, rectangular-shaped site in the City of Murrieta (City). There are no existing recreational opportunities on site. The project site is surrounded by commercial development, residential development, a high school, and vacant land.

Off-Site Recreational Opportunities

County of Riverside Recreational Facilities

There are a wide range of open space areas, parks, and recreational areas within Riverside County, including Joshua Tree National Park and major state parks such as Anza-Borrego, the Salton Sea State Recreation Area, and Chino Hills State Park. A variety of Riverside County parks serve residents and visitors, including in the desert, mountain, and Colorado River regions. Riverside County maintains 35 regional parks encompassing roughly 23,317 acres. Other local parks fall under the jurisdiction of the Riverside County Recreation and Park Districts and serve the following areas: Beaumont-Cherry Valley; Coachella Valley; Jurupa; and the Valleywide area incorporating San Jacinto Valley, Winchester, Menifee Valley, and Anza Valley (County of Riverside 2015). There are no County of Riverside or other regional parks within the City of Murrieta.

City of Murrieta Recreational Facilities

The City encompasses approximately 1,350 acres of trails, open space, streetscape, slope, and park land (City of Murrieta 2018a). This includes 489.68 acres of parkland within 50 parks as well as additional recreational facilities such as the Senior Center, Youth Center, Community Center, Community Pool, Skate Park, and Equestrian Park (City of Murrieta 2011a; City of Murrieta 2018a). There are six types of parks in the City, including City-Wide Parks, Community Parks, Neighborhood Parks, Special Use Parks, and Native Parks (described in Table 4.12-1, Parks and Recreation Facility Types). The City has also established a Joint Use Agreement with 10 schools in the Murrieta Valley Unified School District, giving the City and the School District first priority to use each other's facilities. Some of the schools function as parks when school is not in session, and others are used by sports organizations (City of Murrieta 2009).

Table 4.12-1. Parks and Recreation Facility Types

Facility Type	Typical Size	Typical Features
City-Wide Parks	More than 50 acres	City-Wide Parks serve larger community populations and provide recreation facilities or open space in significant numbers or sizes. Los Alamos Hills Sports Park is currently the only City-Wide Park.
Community Parks	Up to 50 acres	Community Parks can provide a broad range of both passive and active recreational opportunities, but their primary purpose is to provide active recreational opportunities for use by a larger segment of the population

Table 4.12-1. Parks and Recreation Facility Types

Facility Type	Typical Size	Typical Features
		than neighborhood parks. Community Parks are generally considered to serve several neighborhoods within a 2-mile radius. If a Community Park is located within a residential area, it can also serve a neighborhood park function, and, therefore, is included in the service area analysis for Neighborhood Parks. Recreation centers are important features in some Community Parks. These are building facilities that may contain features such as gymnasiums, multi-purpose rooms, classrooms, and offices for recreation staff. Other facilities often found at Community Parks might include sports fields, sports courts, amphitheaters, and group picnic areas. Large special events such as concerts and festivals might also be held in larger Community Parks. There are seven Community Parks in Murrieta: Alta Murrieta Sports Park, California Oaks Sports Park, Copper Canyon Park, Glen Arbor Park, Hunt Park, Mira Mesa Park, and Pond Park.
Neighborhood Parks	Up to 15 acres	Neighborhood Parks are intended to serve City residents who live close by, but they also contribute to the overall park system available to the entire community. Ideally, everyone in the City would live within convenient walking distance (typically 0.5 miles) of a Neighborhood Park. This is defined as the “service radius” or “service area” of a Neighborhood Park. Neighborhood Parks should address daily recreation needs of the surrounding neighborhood; features of neighborhood parks might include playgrounds, multi-purpose open turf areas, practice sports fields, picnic tables and/or picnic shelters, walking paths, attractive landscaping, and recreation features such as basketball courts. A size of 5 acres or more is considered appropriate to serve a neighborhood of approximately 5,000 within its service area.
Neighborhood Play Areas	Up to 5 acres	Neighborhood Play Areas are intended to serve City residents who live close by, but they also contribute to the overall park system available to the entire community. Ideally, everyone in the City would live within convenient walking distance (typically 0.5 miles) of a Neighborhood Park or Neighborhood Play Area. Neighborhood Play Areas are included in the service radius analysis of Section Three. Neighborhood Play Areas should address daily recreation needs of the surrounding neighborhood; features of neighborhood parks might include playgrounds, vista points, multi-purpose open turf areas, picnic tables and/or picnic shelters, walking paths, attractive landscaping, and recreation features such as basketball courts.
Special Use Facilities	No size specification	Special Use Facilities generally possess a unique character or function focused on a single type of activity. An equestrian facility, disc golf course, off-road cycling course, museum, vista points, or community buildings (without an associated park) might be considered Special Use Facilities. Special Use Facilities are not usually included in the service area analysis for Neighborhood Parks. The 1999 Parks and Recreation Master Plan included joint-use school sites under the Special Use Facility category.

Table 4.12-1. Parks and Recreation Facility Types

Facility Type	Typical Size	Typical Features
Nature Parks	No size specification	Nature Parks are mostly undeveloped, and the undeveloped portions contain vegetation, topography, or features that are important to retain in their natural state. Physical public access to natural areas via trails should be encouraged where feasible and appropriate. For the purposes of defining this park type, "natural" refers to vegetation and land forms indigenous to the area; turf, irrigated manufactured slopes, detention basins, weedy disturbed areas, and areas landscaped with ornamental vegetation would be considered part of the developed portion of a Nature Park. Nature Park is a new category of park facility that was previously included under Special Use Facilities.

Source: City of Murrieta 2009

The City has adopted a standard of 5 acres of local parkland per 1,000 residents. According to the City of Murrieta's Parks and Recreation Master Plan (Parks Master Plan), based on the City's standard of 5 acres of parkland per 1,000 residents, in June 2009 the City had a deficit of 34 acres and an anticipated deficit of 133 acres at build out of the City if no new parkland is added and the City continues to grow as anticipated. Further, based on resident surveys, the Parks Master Plan estimated a need for an additional 240.3 acres at build-out of the City to accommodate the City's identified needs for recreational facilities such as sports fields and courts (City of Murrieta 2009). However, the Parks Master Plan does not identify these as significant shortages (City of Murrieta 2009). Further, since the adoption of the Parks Master Plan in 2009, additional parks have been added, are in the design phase, or have been constructed (City of Murrieta 2011a). Nonetheless, the Environmental Impact Report (EIR) for the City's General Plan identifies this deficit as a significant and unavoidable impact to recreational resources (City of Murrieta 2011b). However, the City charges a Parkland Facilities Development Impact Fee (DIF) for residential units, as allowed by the Quimby Act (California Government Code Section 66477), which is used for park and recreational facility improvements. Thus, it is anticipated that more parkland and recreational facility areas would become available within the City, and as new residential developments are built and constructed in the City, such projects would be subject to all provisions of the Quimby Act to set aside land or pay in-lieu fees to provide park and recreation facilities (City of Murrieta 2011b).

Recreational Facilities Near the Project Site

The nearest parks and recreational facilities to the project site are Antelope Hills Park, Oak Terrace Park, and Los Alamos Hills Sports Park (City of Murrieta 2018b).

Antelope Hills Park

Antelope Hills Park is a 1.5-acre park located at 27385 Carlton Oaks Street. The park is 0.70 miles southwest of the project site. Existing recreational facilities and amenities at the park include an amphitheater, barbeques, open grass areas, picnic tables, shelter/shade areas, a playground, water fountains, and basketball courts (City of Murrieta 2011a).

Oak Terrace Park

Oak Terrace Park is a 7.5-acre park located at 27301 Sweetspire Terrace. The park is approximately 1 mile southwest of the project site. Existing recreational facilities and amenities include open grass areas, playground, picnic tables, and water fountains (City of Murrieta 2011a).

Los Alamos Hills Sports Park

Los Alamos Hills Sports Park is Murrieta's only City-Wide Park, with 47 acres of parkland. Located at 37000 Ruth Ellen Way, it is 0.95 miles south of the project site. Existing recreational facilities and park amenities include barbeques, athletic fields (baseball, football, soccer), bike/walking paths, picnic tables, open grass areas, a parking lot, restrooms, shelter/shade areas, multi-purpose trails, water fountains, a concession building, and play areas. Future plans for the park call for a community center and may include a gymnasium and outdoor facilities including a swimming pool and tennis courts (City of Murrieta 2011a).

4.12.2 Relevant Plans, Policies, and Ordinances

Federal

There are no federal plans, policies, or ordinances related to recreation that are applicable to the proposed project.

State

California Government Code Section 66477 (Quimby Act)

Section 66477 of the California Government Code (the Quimby Act) provides cities and counties with the authority to require, by ordinance, land dedications, fee payments, or a combination thereof, for recreation facilities as a condition to the approval of Tentative Maps and Parcel Maps. Section 66477 outlines a number of items that must be contained in the local ordinance, including standards from which calculations can be made for the amount of land or fee that must be given for recreation purposes. In addition, the dedications and fees can only be used for creating or rehabilitating recreational facilities, and the city/county must develop a timeline for the construction of facilities.

Local

City of Murrieta 2035 General Plan

The Murrieta General Plan Recreation and Open Space Element identifies the following Community Priorities related to parkland (City of Murrieta 2011a):

- Protect the natural beauty of the mountains, hills, and waterways.
- Provide abundant parks and facilities for recreational activities, and cultural amenities.
- Provide ample activities for all ages of youth, and jobs for teens.

The following General Plan policies may be applicable to the proposed project (City of Murrieta 2011a):

Policy ROS-1.1 Maintain a minimum standard of 5 acres of local parkland per 1,000 population.

Policy ROS-8.4 When reviewing new development or redevelopment projects, refer to the Trails Plan to determine whether right-of-way is needed for trails on the project site.

Policy ROS-9.2 Encourage new and existing commercial, office, and industrial development to provide outdoor green spaces that may be used by employees.

Policy ROS-9.3 Encourage new development and redevelopment projects to incorporate gardens and green spaces with various cultural influences throughout the community to bridge cultures and provide education opportunities.

Policy ROS-9.4 Encourage green spaces planted with a diverse plant palette in order to promote natural variety, ecosystem services, and enhance the well-being of community residents.

Policy ROS-9.5 Review and modify as necessary, open space requirements for different types of development projects.

The City of Murrieta Parks and Recreation Master Plan

The City of Murrieta Parks and Recreation Master Plan guides the planning for parks, recreation facilities, and programs in the City. The Parks Master Plan provides information about the park and recreation facilities in the City, including a needs assessments and gap analysis, recommendations for meeting current and future park needs, and a financial implementation plan. The Parks Master Plan is drawn from the objectives and policies within the General Plan (City of Murrieta 2009).

County of Riverside General Plan

The County of Riverside General Plan Multipurpose Open Space Element addresses providing recreational opportunities for the residents of Riverside County, as well as protecting and preserving natural resources, agriculture, and open space areas; managing mineral resources; and preserving and enhancing cultural resources (County of Riverside 2015). The following policies related to open space, parks, and recreation may be applicable to the proposed project.

The following policies pertain to open space (County of Riverside 2015):

Policy OS 20.1 Preserve and maintain open space that protects County environmental and other nonrenewable resources and maximizes public health and safety in areas where significant environmental hazards and resources exist.

Policy OS 20.2 Prevent unnecessary extension of public facilities, services, and utilities, for urban uses, into Open Space-Conservation designated areas.

The following policies pertain to parks and recreation (County of Riverside 2015):

Policy OS 20.3 Discourage the absorption of dedicated park lands by non-recreational uses, public or private. Where absorption is unavoidable, replace park lands that are absorbed by other uses with similar or improved facilities and programs.

Policy OS 20.4 Provide for the needs of all people in the system of the County recreation sites and facilities, regardless of their socioeconomic status, ethnicity, physical capabilities or age.

Policy OS 20.5 Require that development of recreation facilities occurs concurrent with other development in an area.

Policy OS 20.6 Require new development to provide implementation strategies for the funding of both active and passive parks and recreational sites.

4.12.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to recreation are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to recreation would occur if the project would:

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.

Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

4.12.4 Impacts Analysis

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?

Less-than-Significant Impact. The project involves the construction and operation of a Costco warehouse and gas station and the Vineyard II Retail Development. As discussed in Section 4.10, Population and Housing, of this EIR, the project is anticipated to employ approximately 285 full-time employees. This EIR conservatively assumes that all 285 employees would be new residents who would relocate to the City and use existing parks and recreational facilities. It is likely that some of these future employees currently reside in the City and are already using City parks and recreational facilities. Nonetheless, the conservative analysis in Section 4.10 found that the project would not induce substantial unplanned population growth, and that growth as a result of the project would be consistent with Southern California Association of Governments (SCAG) overall growth projections for the City. The anticipated population increase as a result of project employees moving to the City represents 3% of the 9,500 employees anticipated to be added to the City's labor force between 2020 and 2040, and 4.6% of the expected population growth in the City during the same time period. As such, it can be expected that the City's plans for the addition of parkland and recreation facilities should be consistent with the demand of an increasing population.

The analysis in the 2009 Parks Master Plan identified a deficit of 133 acres of parkland at build-out of the City if no new parks are added and the City continues to grow as anticipated (City of Murrieta 2009). Table 9-1 of the Murrieta General Plan Recreation and Open Space Element reflects several new parks and recreational facilities that have been added since the 2009 Parks Master Plan. The City has continued to add parkland and has a total of 489.68 acres of parkland in 50 parks (City of Murrieta 2011a), an increase from 467.24 acres in 48 parks in 2009 (City of Murrieta 2009). Given the City's population of 118,125 as of 2019 (see Section 4.10, Population and

Housing), the City should have a total of 590.6 acres of parkland in order to meet its goal of 5 acres of parkland per 1,000 residents. Therefore, the City is currently experiencing a parkland deficit of approximately 100.9 acres. As previously discussed, the EIR prepared for the City's General Plan identified a significant and unavoidable impact to recreational resources (City of Murrieta 2011b). As such, the City is in need of additional parkland regardless of the proposed project. Additionally, according to the City Parks and Recreation Department, existing parkland is supplemented by facilities that are not included in this analysis. The City Parks and Recreation Department identifies 1,350 acres of trails, open space, streetscape, slope, and parkland in the City (City of Murrieta 2018a).

Although the City is currently experiencing a deficit in the desired parkland ratio, this does not indicate that existing facilities have reached capacity for use, and does not suggest that increased use associated with projected project employees would result in substantial physical deterioration of the facilities. If new employees elect to reside in the City, available and proposed housing stock is subject to the payment of DIFs, including local park development fees (i.e., Quimby Act fees). These fees are used by the City for the acquisition and construction of new parklands or maintenance and improvement of existing facilities. Therefore, the housing supply in the City (new or existing) that would support the new residents resulting from the project would be expected to contribute to the City's Quimby Act fees. If all 285 new employees move to the City, the DIF paid by the residential developments in which they reside would contribute to park and recreational facility development and improvements.

Further, the General Plan Recreation and Open Space Element identifies park site opportunities in Exhibit 9-3. There are no park site opportunities identified within or immediately adjacent to the project site (City of Murrieta 2011a).

Therefore, the City's current and ongoing plans for additional parkland, as funded by the City's DIF, would help to offset any increased use of parkland and recreational facilities as a result of the project. Nonetheless, the City has identified a deficit in parkland that would occur regardless of the project. As such, the potential population increase associated with the project and increased use of parks and recreational facilities by project employees is not expected to result in substantial physical deterioration of any one park or recreational facility in the City. Therefore, the project would not contribute to substantial deterioration of existing facilities, and impacts to recreational facilities would be less than significant.

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

Less-than-Significant Impact. The proposed project would not include recreational facilities. As previously discussed, the project would not require the construction or expansion of recreational facilities beyond which the City is already planning. As discussed in Section 4.12.1, Existing Conditions, the parks nearest to the project site are Antelope Hills Park, Oak Terrace Park, and Los Alamos Hills Sports Park (City of Murrieta 2018). Los Alamos Hills Sports Park is Murrieta's largest park (45 acres), with plans for expansion in two additional phases of development. This expansion is planned in accordance with the City's goals to increase parkland acreage, regardless of the proposed project. The project would not include recreational facilities or require the construction or expansion of recreational facilities. Impacts would be less than significant.

4.12.5 Mitigation Measures

The project would result in less-than-significant impacts to recreation, and no mitigation measures are necessary.

4.12.6 Level of Significance After Mitigation

The project would result in less-than-significant impacts to recreation, and no mitigation measures are necessary.

4.12.7 Cumulative Impacts

Cumulative impacts to recreation would result from a combination of projects that induce a substantial and detrimental increased use of parks and recreational facilities. Individually, the project would result in a slight population growth in the City; however, as previously discussed, this growth projection is consistent with SCAG's growth projections for the City and would not result in substantial physical deterioration of existing facilities. A list of approved and proposed projects in the project area was provided by the City of Murrieta and the City of Menifee, as shown in Table 3-2. The list consists of a combination of retail and residential projects.

Of the proposed or approved projects in the area, six consist of residential development. These projects would have the most obvious growth-inducing impacts, and would also be subject to the City's Parkland Facilities DIF for residential units, as allowed by the Quimby Act (California Government Code Section 66477), which is used for park and recreational facility improvements. These contributions would aid the City in creating or improving recreational facilities.

As discussed in Section 4.10, Population and Housing, of this EIR, the cumulative growth induced by these projects would be within the growth projections for the City. The cumulative growth induced by the project combined with other approved and proposed projects is unlikely to result in substantial impacts to recreational facilities or require the construction or expansion of recreational facilities beyond what the City and region are already planning for. In combination with related projects, cumulative impacts to recreation would not be considerable.

4.12.8 References Cited

City of Murrieta. 2009. *Parks and Recreation Master Plan.* June 2009. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?blobid=3301.

City of Murrieta. 2011a. *Murrieta General Plan 2035 – Chapter 9: Recreation and Open Space Element*. Adopted July 19, 2011. https://www.murrietaca.gov/civicax/filebank/blobdload.aspx?BlobID=5177.

City of Murrieta. 2011b. *Murrieta General Plan 2035 Final Environmental Impact Report – Chapter 05-20 Parks and Recreation Facilities*. July 2011. https://www.murrietaca.gov/DocumentCenter/View/765/05-20---Parks-and-Recreation-Facilities-PDF.

City of Murrieta. 2018a. Parks and Recreation Department. Accessed July 2018. https://www.murrietaca.gov/departments/cs/default.asp.

City of Murrieta. 2018b. "Parks Map." Accessed July 2018. https://www.murrietaca.gov/departments/cs/parks_n_trails/parks.asp.

County of Riverside. 2015. C*ounty of Riverside General Plan – Chapter 5: Multipurpose Open Space Element*. Revised December 8, 2015. http://planning.rctlma.org/Portals/0/genplan/general_Plan_2017/elements/OCT17/Ch05_MOSE_120815.pdf?ver=2017-10-11-102103-833.