

4. Environmental Setting

The purpose of this section is to provide a “description of the physical environmental conditions in the vicinity of the Project, as they exist at the time the Notice of Preparation (NOP) is published, from both a local and a regional perspective” pursuant to CEQA Guidelines Section 15125(a). In addition to the summary below, detailed environmental setting descriptions are provided in each subsection of Section 5 of this Draft EIR.

4.1 PROJECT LOCATION

Three of the new Arrow stations are located in the city, which include: 1) New York Street/Esri Station near the intersection of Redlands Boulevard and New York Street across from the existing Esri campus, 2) Downtown Station north of the Santa Fe Depot between Eureka Street and Orange Street, and 3) University Street Station adjacent to the University of Redlands at the south end of campus near North University Street (see Figure 3-2, *Local Vicinity*, and Figure 3-3, *Aerial Photograph*).

The proposed Transit Villages Specific Plan (TVSP, or Specific Plan) area generally includes the parcels located within approximately one-half mile, or a 10-minute walk, of the three new Arrow stations in the city. The entire TVSP area, which covers approximately 947 acres (approximately 1.5 square miles) is generally bounded to the west by Kansas Street, Redlands Boulevard, Alabama Street, and Tennessee Street; to the north by the I-10, Colton Avenue, and Sylvan Boulevard; to the east by Judson Street; and to the south by Citrus Avenue, Central Avenue, Redlands Boulevard, Olive Avenue, Brookside Avenue, Ash Street, Pine Avenue, Tennessee Street, and State Street. The TVSP area also includes the parcels along both sides of Orange Street between Colton Avenue and Lugonia Avenue (see Figure 3-4, *Specific Plan Station Areas*).

4.2 PROJECT SITE DESCRIPTION

The TVSP area is approximately 947 acres of land that is divided into three planning areas referred to as transit villages, which generally circle each new Arrow station, as shown on Figure 3-4. The New York Street/Esri Transit Village area is generally west of Texas Street and Center Street. The Downtown Transit Village area is generally bounded to the east by Church Street, and to the west by Texas Street, and includes the parcels along both sides of Orange Street between Colton Avenue and Lugonia Avenue. The University Street Transit Village area is located east of Church Street and west of Judson Street, which are further described below.

- **New York Street/Esri Transit Village.** The area around this station is currently car oriented. Large blocks generally comprise the area with commercial and light industrial buildings set back away from the street behind parking lots or landscaped front yards. The I-10 and SR-210 interchange is to the northwest of this transit village. Freeway access is provided at Alabama Street and Tennessee Street. Alabama Street, Tennessee Street, and Texas Street pass beneath the I-10, connecting the transit village area to the neighborhoods north of the freeway. The transit village is traversed east-west by the railways, which run along the north side of Redlands Boulevard, until New York Street, where they branch off from one another as they proceed eastward.

Sidewalks line roadways. There are limited street trees, although trees in some areas are planted in front yards of adjacent properties. There are no existing bicycle facilities within this village area aside from the western segment of the Orange Blossom Trail (a Class 1 bicycle facility).

The Arrow station will be located along the north side of Redlands Boulevard at New York Street. To the south of the station site is Esri’s campus headquarters and to the southeast (across the roadway

intersection) from the station site is Jennie Davis Park, a 5.2-acre neighborhood park with picnic and playground facilities. Land uses to the west of the Esri campus and south of the railway consists primarily of light industrial warehouse buildings.

North of the railway, existing development consists of car-oriented uses, strip mall shopping centers, fast-food restaurants, hotels, and recreational facilities. North of the I-10 are commercial and single-family residences. Buildings within this area range from one to three-story buildings. Many of the one-story light industrial and retail buildings are tall one-story buildings facing the street. The parcels surrounding the station are largely vacant.

- **Downtown Transit Village.** This area includes the city's urban core and Santa Fe Depot. The station site will be north of the Santa Fe Depot. Blocks located east of Orange Street within downtown are small and promote walkability with commercial and mixed-use buildings built adjacent to, and accessed directly from, the sidewalk. Blocks west of Orange Street are larger and less pedestrian-friendly with buildings and site designs that are more car-oriented, with buildings located behind street-facing parking lots. Access to the I-10 is via Sixth Street, Orange Street, and Eureka Street. Streets that pass underneath the freeway include Texas Street, Eureka Street, Orange Street, Sixth Street, and Church Street.

State Street, which is lined with buildings that face and are accessed from the sidewalk and shaded by Ficus trees, is the city's prime pedestrian-friendly street. Sidewalks within the Downtown Village are typically eight feet wide and located adjacent to the curb. Additionally, bicycle facilities exist along segments of Colton Avenue and Citrus Avenue.

Many parcels west of the Downtown Station are vacant. Additionally, vacant packinghouse buildings lie to the north and south of the Santa Fe Depot. Most of the buildings within this transit village are one- and two-story in height. However, some buildings are taller, such as the Citibank building, which is six stories tall. In addition, many of the old packinghouse buildings surrounding the Santa Fe Depot are one-story buildings with tall interiors.

There are two parks within this transit village, Terrace Park and the northeastern tip of Smiley Park. Terrace Park is a linear park built along the south side of Colton Avenue between Orange Street and Church Street. The portion of Smiley Park within the transit village consist of the lawns, paths, and benches that surround the historic Police Annex building. The rest of Smiley Park that is not within the TVSP area, includes the Redlands Bowl amphitheater, the Lincoln Memorial Shrine, the A.K. Smiley Library, shuffleboard courts, and a restroom building.

- **University Street Transit Village.** This area includes the portion of the University of Redlands campus located south of Sylvan Boulevard and Sylvan Park, which is 18-acres. Access to the I-10 is provided via University Street and Cypress Avenue. Church Street, University Street, and Citrus Street pass underneath the freeway providing access to other areas in the city.

Many streets within this village area, particularly those surrounding the station area, do not have sidewalks. Sidewalks within the residential neighborhoods tend to be separated from the curb by continuous planters planted with trees. The Orange Blossom Trail, a Class I bicycle trail to the east, provides limited bicycle connectivity in the village area.

Land uses located north of the I-10 and west of University Street include Sylvan Park, single-family residences, and some multi-family buildings. The southeast portion of the village primarily consists of multi-family buildings. Most of the buildings within this transit village area are one- and two-story in height. Single-family residences are mostly one-story and multi-family buildings are two stories. Most of the land surrounding the station site is vacant.

Existing General Plan and Zoning Designation

The City of Redlands General Plan 2035 (GP2035) designates the TVSP area with a mix of land uses including: Medium Density Residential (up to 15 dwelling units per acre), High Density Residential (up to 27 dwelling units per acre), Office, Commercial, Commercial/Industrial, Industrial, Public/Institutional, and Parks.

Most of the New York Street/Esri Transit Village area consists of non-residential land use designations except for the multi-family residential area in the southern portion of the village. The Downtown Transit Village area is also primarily non-residential, with multi-family allowed along the eastern edge. Land use designations in the University Street Transit Village are primarily medium and high density residential, except the institutional designations associated with the University of Redlands campus to the north of the station site. The General Plan Transit Villages Overlay provides for residential/mixed uses within a half-mile of each station (see Figure 3-5, *General Plan Land Use Designation*).

The GP2035 Livable Community Element includes a Transit Villages section that provides for the Transit Villages Overlay Zone (TVOZ), which applies to areas within a half-mile radius of the five rail stations that were anticipated in the GP2035, which includes the three new Arrow stations. The TVOZ includes strategies for transportation system enhancements including vehicle, pedestrian, and bicycle connectivity to each station and mixed-use development. Land use designations in the TVOZ include modified residential land use designations for low medium-, medium-, and high-density residential, commercial, commercial/industrial, office, public/institutional, park, and agriculture that are designed to provide for higher intensities and compact development patterns within the TVOZ than elsewhere in the city (see Figure 3-6, *General Plan Transit Villages*).

Existing residential zoning within the TVSP area is primarily Multi-Family Residential (R-2 and R-3); however, there are two small areas with existing single-family zoning. The parcels on 11th Street between the I-10 and Colton Avenue in the Downtown Transit Village are zoned Single-Family Residential (R-1) and the parcels in the University Street Transit Villages bounded by the I-10, East Cypress Avenue, and East Citrus Avenue are zoned Suburban Residential (R-S). See Figure 3-7, *Existing Zoning Districts*.

Non-residential zoning in the TVSP area include Industrial (I-P), Light Industrial (M-1), Planned Industrial (M-P), Administrative and Professional Office (A-P), Neighborhood Stores (C-1), General Commercial (C-3), Highway Commercial (C-4), Commercial (C-M), Educational (E), Transitional (T), Open Land (O), Floodplain (FP), East Valley-General Commercial (EV/CG), and East Valley-Public Institutional (EV/PI).

The Downtown Specific Plan (Specific Plan No. 45), located in the proposed Downtown Village, governs the parcels in the downtown area, which is divided into Town Center, Town Center-Historic District, and Service-Commercial District. The objective of the Downtown Specific Plan is to create a compact, pedestrian-oriented environment.

4.1 AESTHETICS

State Scenic Highway

There are no officially designated state scenic highways traversing the TVSP area; however, State Route 38 is an eligible, albeit not officially designated, state scenic highway. State Route 38 traverses the Downtown Transit Village area as Orange Street north of the I-10 to Lugonia Avenue. State Route 38 then continues outside of the TVSP area easterly as Lugonia Avenue, which then turns into Mentone Boulevard and Mill Creek Road as the highway continues into the San Bernardino Mountains.

City Scenic Roadways

The City has designated numerous roadway segments as scenic highways, drives, and historic streets subject to special development standards (GP2035 EIR, p. 3.1-11). City-designated scenic roadways include Brookside Avenue, Olive Avenue, Center Street, Highland Avenue, Sunset Drive, Cajon Street, Mariposa Drive, and Dwight Street. Additionally, the City is considering designating Riverview Drive, Live Oak Canyon Drive, San Timoteo Canyon Road, Sylvan Boulevard, Nevada Street, and Pioneer Road.

Visual Character of the Project Site

Existing setting of the New York Street/Esri Transit Village area. The area around this station is car-oriented. Large blocks generally comprise the area with commercial and light industrial buildings set back away from the street behind parking lots or landscaped front yards. The I-10 and SR-210 interchange is to the northwest of this transit village. The transit village is traversed east-west by the railways, which run along the north side of Redlands Boulevard, until New York Street, where they branch off from one another as they proceed eastward.

The Arrow station will be located along the north side of Redlands Boulevard at New York Street. To the south of the station site and Redlands Boulevard is Esri's campus headquarters, and to the southeast (across the intersection) from the station site is Jennie Davis Park, a 5.2-acre neighborhood park. Land uses to the west of the Esri campus (across Tennessee Street) consist primarily of light industrial warehouse buildings and commercial services or office uses. To the south of the Esri campus is a neighborhood of apartments and multifamily buildings.

North of the railway, existing development consists of car-oriented uses, strip mall shopping centers, fast-food restaurants, hotels, and recreational facilities. North of the I-10 are commercial and single-family residences. Buildings within this area range from one to three-story buildings. Many of the one-story light industrial and retail buildings are tall one-story buildings facing the street. The parcels surrounding the station are largely vacant.

Existing setting of the Downtown Transit Village area. This area includes the City's urban core and the historic Santa Fe Depot. The station site will be at the north side of the Santa Fe Depot (for the new Arrow platform) and immediately west of the Depot (for the new Metrolink platform). Blocks located east of Orange Street within Downtown are small and promote walkability, with commercial and mixed-use buildings built adjacent to and accessed directly from the sidewalk. Blocks west of Orange Street are larger and less pedestrian-friendly with buildings and site designs that are more car-oriented, with buildings located behind street-facing parking lots.

Many parcels west of the Downtown Station are vacant as well as a few vacant remnant packinghouse buildings to the north and south of the Santa Fe Depot. Most of the buildings within this transit village are one- and two-story in height. A notable exception is the Citibank building, which is six stories tall. In addition, many of the old packinghouse buildings surrounding the Santa Fe Depot are one-story buildings with tall interiors.

Existing setting of the University Transit Village area. This area includes the portion of the University of Redlands campus located south of Sylvan Boulevard and Sylvan Park (which is 18-acres). Land uses located north of the I-10 and west of University Street include Sylvan Park, single-family residences, and some multi-family buildings. The southeast portion of the village primarily consists of multi-family buildings. Most of the buildings within this transit village area are one- and two-story in height. Single-family residences are mostly

one-story and multi-family buildings are two stories. Most of the land immediately surrounding the station site is vacant and unimproved.

Visual Character of Adjacent Areas

The existing visual character of the area surrounding the TVSP area is urban. There is no consistent architectural or visual theme within the surrounding area. However, multiple areas surrounding the TVSP area include historic and scenic districts, such as the Smiley Park Neighborhood District and Scenic District and the East Fern Avenue Historic and Scenic District, located south of the Downtown Village area.

Areas to the north of the TVSP area generally include industrial uses, commercial buildings, single-family residences, and the University of Redlands. Areas to the east of Project Area, directly east of Judson Street, include one-story single-family residences and a mobile home park. Areas south of the TVSP area include one- to two-story single-family residences, Redlands High School, multi-family residential units, Smiley Park, and commercial uses. Areas west of the TVSP area include multi-family residences, commercial uses, and industrial uses.

Light and Glare

The TVSP area is mostly developed with a limited number of vacant parcels and include multiple sources of nighttime lighting. Additionally, the TVSP area is surrounded by sources of nighttime lighting that includes streetlights along roadways, illumination from vehicle headlights, offsite exterior residential, commercial, and industrial lighting, and interior illumination passing through windows. Sensitive receptors relative to lighting and glare include residents, motorists, and pedestrians passing through the TVSP area.

Glare in the vicinity of the TVSP area is generated by building and vehicle windows reflecting light. Substantial sources of glare within the TVSP area include windows of taller buildings, such as the six-story Citibank building. However, the majority of buildings within the TVSP area are shorter one- to two-story buildings that are constructed of non-reflective materials and are not surfaced with a substantial number of windows adjacent to one another that would create a large reflective area.

4.2 AIR QUALITY

Climate and Meteorology

The TVSP area is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is a 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and all of Orange County.

The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of Southern California combine to make the Basin an area of high air pollution

potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions which produce ozone.

Existing Conditions

SCAQMD maintains monitoring stations within district boundaries, Source/Receptor Areas (SRAs), that monitor air quality and compliance with associated ambient standards. The TVSP area is located within SRA 35, East San Bernardino. The East San Bernardino monitoring station is located approximately 0.5 mile east of the TVSP area and reports air quality statistics for O₃ and PM₁₀. The East San Bernardino Valley monitoring station does not provide information for CO, NO₂, and PM_{2.5}, as such, statistics were obtained from the Central San Bernardino 2 monitoring station. The Central San Bernardino monitoring station is located within SRA 34 that is located 4.6 miles northwest of the TVSP area. The most recent 3 years of data is shown on Table 5.2-2 and identifies the number of days ambient air quality standards were exceeded in the area. Additionally, data for SO₂ has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO₂ concentrations.

In 2020, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone and PM₁₀ at most monitoring locations. No areas of the SCAB exceeded federal or state standards for NO₂, SO₂, CO, sulfates, or lead.

The TVSP area consists of approximately 947 acres of land that surrounds three proposed Arrow stations. The area is current developed with a mix of commercial, industrial, and residential uses. Air quality emissions are currently generated by operation of these existing uses and the related vehicular trips.

Sensitive Land Uses

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these uses have increased susceptibility to respiratory distress. In addition, residential uses are considered more sensitive to air quality conditions than commercial and industrial uses, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Existing sensitive receptors within and in the vicinity of the TVSP area consists of residences.

4.3 CULTURAL RESOURCES

Archaeological Resources

A total of 54 cultural studies have been performed within a 0.5-mile radius of the TVSP area. Of these, 34 have been conducted within the TVSP area, with only one of the reports having been conducted within the

last five years. The records search conducted for the Project identified one previously recorded prehistoric archaeological resource, one historic archaeological resource with a prehistoric component, and twenty-four historic archaeological resources within TVSP area.

Historic Setting

An asistencia was established in Redlands in 1819 to help facilitate the Mission San Gabriel Arcángel's control and colonization of the surrounding rancheria. Missionaries instructed Serrano, Gabrielino, and Cahuilla workers to build the Mill Creek Zanja, a 12-mile long irrigation ditch routing water from Mill Creek to Guachama Rancheria, which served as the area's first stable water resource. In 1842, the Lugo family, including José del Carmen Lugo, José María Lugo, Vicente Lugo, and Diego Sepulveda, received a land grant, Rancho San Bernardino, which encompassed the San Bernardino and Yucaipa valleys, including present day City of Redlands.

In 1881, E.G. Judson and Frank E. Brown formed the Redlands Water Company and began construction of a water canal to supply future citrus groves. During the development, the pair noticed the red-colored adobe soil and gave the new town its name, Redlands. Three years later, Brown built the Bear Valley Dam and reservoir, securing a steady supply of water for the town and associated citrus groves. With a stable water source and booming railways, the City of Redlands experienced a development boom with the creation of paved streets, sidewalks, sewage, and electricity systems. The City was officially incorporated in 1888. For 75 years, citrus growing was the main economic source for the City. The citrus industry eventually declined and agricultural areas were replaced with subdivisions. The former 15,000 acres of citrus groves, spanning the entirety of the city, have been reduced to only one grove left today, the Redlands Foothill Grove (CUL, 2022).

Historic Resources

There are 182 historic properties located within the TVSP area, with most of the eligible historic properties located in Downtown Redlands. The California Office of Historic Preservation's Built Environment Resources Directory (BERD) for San Bernardino County, the City of Redlands' General Plan EIR (2017a), the City of Redlands' Downtown Specific Plan (2017b), the City of Redlands' List of Historic Resources (2019), the National Register (NR), the California Register of Historic Places (CR), California Historic Landmarks, and California Point of Historical Interest identify 114 historic properties within the TVSP area. Of these historic resources, 25 historic properties are listed in the National Register (NR) and/or the California Register (CR), three properties appear eligible for NR or CR, and 63 properties are recognized as historically significant by the City of Redlands. Eleven properties have been determined ineligible for listing or designation and 13 properties have not been evaluated for NR or CR or need evaluation. In addition, there are two historic districts located within the TVSP area, the Smiley Park Historic District and Santa Fe Depot Historic District.

4.4 ENERGY

Electricity

The Southern California Edison Company (SCE) is the electrical purveyor in the City of Redlands. SCE provides electricity service to more than 14 million people in a 50,000 square-mile area of central, coastal and Southern California. California utilities are experiencing increasing demands that require modernization of the electric distribution grid to, among other things, accommodate two-way flows of electricity and increase the grid's capacity. SCE is in the process of implementing infrastructure upgrades to ensure the ability to meet future demands. In addition, as described by the Edison International 2020 Annual Report, the SCE electrical grid modernization effort supports implementation of California Senate Bill 32 that requires the

state to cut greenhouse gas emissions 40 percent below 1990 levels by 2030 and 80 percent from the same baseline by 2050 in order to help achieve carbon neutrality by 2045. It describes that in 2020 approximately 43% of power that SCE delivered to customers came from carbon-free resources (SCE 2020).

The Project site is currently served by the electricity distribution systems that exists along the roadways throughout the TVSP area.

Natural Gas

The Southern California Gas Company (SoCalGas) is the natural gas purveyor in the City of Redlands and is the principal distributor of natural gas in Southern California. SoCalGas estimates that gas demand will decline at an annual rate of 1 percent each year through 2035 due to modest economic growth, mandated energy efficiency standards and programs, renewable electricity goals, and conservation savings linked to advanced metering infrastructure (CGEU 2020). The gas supply available to SoCalGas is regionally diverse and includes supplies from California sources (onshore and offshore), Southwestern U.S. supply sources, the Rocky Mountains, and Canada (CGEU 2020). SoCalGas designs its facilities and supplies to provide continuous service during extreme peak demands and has identified the ability to meet peak demands through 2035 in its 2020 report (CGEU 2020).

The TVSP area is currently served by the natural gas distribution system that exists within the roadways throughout the TVSP area.

4.5 GEOLOGY AND SOILS

Paleontological Resources

The TVSP area is situated at the foot of the San Bernardino Mountains, a part of the Transverse Ranges Geomorphic Province. The mountains within the province, including the San Gabriel and San Bernardino mountains to the north and northeast, were uplifted by tectonic activity, and provide a major sedimentary source for the alluvium basins of the adjacent areas.

The geologic units underlying the TVSP area are mapped as younger and older Quaternary surficial deposits, more specifically very young wash deposits, active (Qvyw), young axial-valley deposits, Unit 3 (Qya3), old alluvial-fan deposits, Unit 3 (Qof3), and very old axial-valley deposits, Unit 3 (Qvoa3). Very young surficial deposits are the result of recently transported and deposited sediment into channels and washes on surfaces of alluvial fans, alluvial plains, and on hill slopes. Older surficial deposits contain sedimentary units that are moderately consolidated and slightly to moderately dissected. Alluvial-fan deposits (Qof series) are gravelly sand and silt sediments. Very old surficial deposits are sedimentary units that are moderately to well consolidated to lithified, and moderately to well dissected. Valley-filling deposits (Qvoa series) are dominated by sand with minor gravel alluvial deposits and includes residuum or pedogenic-soil profile developed on the San Timoteo Formation beds. The Plio-Pleistocene San Timoteo Formation is located south of the TVSP area in more elevated terrain and may underlie younger and older Quaternary deposits in the TVSP area (MCC 2022).

4.6 GREENHOUSE GASSES

Gases that trap heat in the atmosphere are called GHGs. The major concern with GHGs is that increases in their concentrations are contributing to global climate change. Global climate change is a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts

attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long-term global temperature increases.

The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because different GHGs have different warming potential, and CO₂ is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO₂ equivalents (CO₂e). For example, SF₆ is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF₆, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG, with 22,800 times the global warming potential as CO₂. Therefore, an emission of one metric ton (MT) of SF₆ could be reported as an emission of 22,800 MT of CO₂e. Large emission sources are reported in million metric tons (MMT) of CO₂e. The principal GHGs are described below, along with their global warming potential.

Carbon dioxide: Carbon dioxide (CO₂) is an odorless, colorless, natural GHG. Carbon dioxide's global warming potential is 1. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (manmade) sources are from burning coal, oil, natural gas, and wood.

Methane: Methane (CH₄) is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years, and its global warming potential is 28. Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Nitrous oxide: Nitrous oxide (N₂O) (laughing gas) is a colorless GHG that has a lifetime of 121 years, and its global warming potential is 265. Sources include microbial processes in soil and water, fuel combustion, and industrial processes.

Sulfur hexafluoride: Sulfur hexafluoride (SF₆) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas that has a lifetime of 3,200 years and a high global warming potential of 23,500. This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Their global warming potential ranges from 7,000 to 11,000. Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are a group of GHGs containing carbon, chlorine, and at least one hydrogen atom. Their global warming potential ranges from 100 to 12,000. Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.

Some of the potential effects in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more forest fires, and more drought years. Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects:

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and

- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

GHGs are produced by both direct and indirect emissions sources. Direct emissions include consumption of natural gas, heating and cooling of buildings, landscaping activities and other equipment used directly by land uses. Indirect emissions include the consumption of fossil fuels for vehicle trips, electricity generation, water usage, and solid waste disposal.

Existing Project Site Conditions

The TVSP area consists of approximately 947 acres of land that surrounds three proposed Arrow stations. The area is current developed with a mix of commercial, industrial, and residential uses. The primary GHG emissions in the TVSP area are from on-road transportation; building energy; and waste.

4.7 HAZARDS AND HAZARDOUS MATERIALS

In the 2015 Redlands Hazard Mitigation Plan, the probability of future hazardous materials release within the city was determined to be High, with Medium Impact. The California Department of Toxic Substances Control (DTSC) and State Water Resources Control Board (SWRCB) track and identify sites with known or potential contamination. The DTSC Envirostor hazardous waste facility and cleanup sites database identifies sites that have known contamination or potentially contaminated sites requiring further investigation, as well as facilities permitted to treat, store, or dispose of hazardous waste. The SWRCB GeoTracker database tracks hazardous materials sites that impact groundwater or have the potential to impact groundwater.

Data for the analysis was downloaded from Envirostor and GeoTracker databases on February 22, 2022. A total of 25 sites were identified as permitted hazardous waste facilities, land disposal sites, or USTs by DTSC, the EPA, or SWRCB. Three sites were identified by DTSC as cleanup sites having known or potential hazardous substance release; 23 were identified as such by SWRCB. Sites within the TVSP area are listed below in Table 4-1.

Table 4-1: Hazardous Materials Sites

Site Name	Site Type	Database	Status	Location
Teledyne Battery Products	HAZ WASTE - RCRA, LUST Cleanup Site	DTSC, SWRCB	Closed	840 W Brockton Ave
So Cal Gas/Redlands I	Voluntary Cleanup	DTSC	Active	501-525 W. Redlands Blvd
Edison/Redlands II	Voluntary Cleanup	DTSC	Active	501-525 W. Redlands Blvd
California Target ENTP. #943	LUST Cleanup Site	SWRCB	Closed	1580 Redlands Blvd
Redlands Corporate Yard	LUST Cleanup Site	SWRCB	Closed	1270 Park Ave
Argon Fuel	Cleanup Program Site	SWRCB	Open	1205/1255 Redlands Blvd

Redlands Oil Company (former)	Cleanup Program Site	SWRCB	Closed	395 Texas Street
Stop N' Go	LUST Cleanup Site	SWRCB	Closed	765 W Redlands Blvd
Redlands Redevelopment Agency	LUST Cleanup Site	SWRCB	Closed	325 N Eureka St
Redlands Battery	LUST Cleanup Site	SWRCB	Closed	305 W Colton Ave
City of Redlands 31 and 205 West Stuart Ave Property	LUST Cleanup Site	SWRCB	Open	31 W. Stuart Ave
GTE	LUST Cleanup Site	SWRCB	Closed	11 4 th St
9 West Colton Avenue Property	Cleanup Program Site	SWRCB	Open	9 W. Colton Ave
Chevron #9-7222	LUST Cleanup Site	SWRCB	Closed	1256 Orange St
Rich Oil Co., Inc	LUST Cleanup Site	SWRCB	Closed	1029 Orange St
Arco Petroleum Products #9716	LUST Cleanup Site	SWRCB	Closed	902 Orange St
Thrifty Oil #346	LUST Cleanup Site	SWRCB	Closed	902 Orange St
Tosco/76 Station #6019	LUST Cleanup Site	SWRCB	Closed	901 N. Orange Ave
Stater Bros. Site	Cleanup Program Site	SWRCB	Closed	11 E. Colton Ave
Mobil #08-EV5	LUST Cleanup Site	SWRCB	Closed	604 Orange St
Orange Plaza Cleaners	Cleanup Program Site	SWRCB	Closed	450 Orange St
Redlands Shell	LUST Cleanup Site	SWRCB	Closed	127 Redlands Blvd East
Conoco Phillips	LUST Cleanup Site	SWRCB	Closed	201 Redlands Blvd East
Performance Auto Arco #6052	LUST Cleanup Site	SWRCB	Closed	520 E. State St 539 E. Redlands Blvd

Sources: DTSC, 2022; SWRCB 2022

4.8 HYDROLOGY AND WATER QUALITY

Watershed

The proposed Transit Villages Specific Plan (TVSP, or Specific Plan) area covers approximately 947 acres (approximately 1.5 square miles) and is generally bounded to the west by Kansas Street, Redlands Boulevard, Alabama Street, and Tennessee Street; to the north by the I-10, Colton Avenue, and Sylvan Boulevard; to the east by Judson Street; and to the south by Citrus Avenue, Central Avenue, Redlands Boulevard, Olive Avenue, Brookside Avenue, Ash Street, Pine Avenue, Tennessee Street, and State Street. The TVSP area is located within the Santa Ana River Watershed. The watershed is located south and east of Los Angeles and includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of San Bernardino County, and a small portion of Los Angeles County. The watershed is

bounded on the south by the Santa Margarita watershed, on the east by the Salton Sea and Southern Mojave watersheds, and on the north and west by the Mojave and San Gabriel watersheds. Disputes over use of water led to the subdivision of the watershed into the Upper and Lower Santa Ana River Watersheds. The TVSP area is in the Upper Santa Ana River Watershed.

The Upper Santa Ana River Watershed consists of many tributaries flowing to the Santa Ana River. These tributaries range from natural streams to concrete-lined channels. Many of the streams flow through heavily developed areas. The San Bernardino County Flood Control District (SBCFCD) operates and maintains many of the tributary systems that are deemed “regional” (750 cubic feet per second (cfs) or greater flow and/or 640 acres or greater of watershed as well as portions of the Santa Ana River). Smaller-scale control facilities are generally operated by local jurisdictions. This watershed is in an arid region and therefore has little natural perennial surface water. Surface waters start in the upper erosion zone of the watershed, primarily in the San Bernardino and San Gabriel mountains. This upper zone has the highest gradient and soils and geology that do not allow large quantities of percolation of surface water into the ground. A variety of downstream water storage reservoirs (Lake Perris, Lake Mathews, and Big Bear Lake) and flood control areas (Prado Dam area and Seven Oaks Dam area) have been created to hold surface water.

The Santa Ana River watershed is regulated by the Santa Ana RWQCB. The Santa Ana RWQCB manages a large watershed area, which includes most of San Bernardino County to the east and then southwest through northern Orange County to the Pacific Ocean. The Santa Ana RWQCB's jurisdiction encompasses 2,800 square miles.

Groundwater Basin

The TVSP area is located in the Bunker Hill Subbasin of the Upper Santa Ana Groundwater Basin. The Bunker Hill Basin encompasses approximately 120 square miles of the Upper Santa Ana River watershed. It lies within San Bernardino County. The Bunker Hill Basin has approximately 5,976,000-acre feet of storage capacity and as of 1998, the total amount of water in storage in the Bunker Hill Subbasin was 5,890,300 acre feet. The Bunker Hill Subbasin contains several contamination plumes. The Redlands plume, located between Judson Street and Mountain Avenue in Redlands, is primarily composed of trichloroethylene (TCE), with lower levels of (tetrachloroethylene) PCE and dibromochloropropane (DBCP), and contaminates approximately 150,000 acre-ft of groundwater. The basin was adjudicated by the Western Judgment in 1969.

Water Quality

Water Quality Impairments: Section 303(d) of the federal CWA requires states to identify water bodies that are “impaired,” or those that do not meet water quality standards and are not supporting their beneficial uses. Total Maximum Daily Loads (TMDLs) are then designed to serve as pollution control plans for these specific pollutants.

The Santa Ana River Watershed drains to the Santa Ana River, extends approximately 100 miles beginning at the crest of the San Bernardino Mountains and ending at the coast near Huntington Beach. Tributaries of the Santa Ana River within the Upper Santa Ana River Watershed include Mill Creek, City Creek, Plunge Creek (a tributary of City Creek), Mission Zanja Creek (located upstream of San Timoteo Creek), San Timoteo Creek, East Twin Creek, Warm Creek, and Lytle Creek. The following tributaries have been placed on the 303(d) list for the identified impairments.

Table 4-2: 303(d) Water Quality Impairments

Water Body	Impairments
Big Bear Lake	Mercury, Noxious Aquatic Plants, Nutrients, PCBs
Grout Creek	Nutrients
Knickerbocker Creek	Pathogens
Lytle Creek	Pathogens
Mill Creek, Reach 1	Pathogens
Mill Creek, Reach 2	Pathogens
Mountain Home Creek	Pathogens
Mountain Home Creek, East Fork	Pathogens
Rathbone (Rathbun) Creek	Cadmium, Copper, Nutrients, Sediment/ Siltation
Santa Ana River, Reach 6	Cadmium, Copper, Lead
Santa Ana River, Reach 4	Pathogens
Santa Ana River, Reach 3	Copper (wet weather only), Lead, Pathogens
Summit Creek	Nutrients

Two TMDLs have been adopted to address the above impairments in the Upper SAR: TMDLs for Bacterial Indicators in the Middle Santa Ana River Watershed (February 3, 2005), which addresses pathogens in the Santa Ana River, Reach 3, and Nutrient TMDL for Dry Hydrological Conditions for Big Bear Lake (April 21, 2006), which addresses nutrients in Big Bear Lake.

The City of Redlands has adopted the EPA's National Pollutant Discharge Elimination System (NPDES) regulations, which aims to reduce pollutants in urban runoff and stormwater flows. The Santa Ana RWQCB issued the County a Municipal Separate Storm Sewer System (MS4) Permit (Order No. R8-2010-0036), which establishes pollution prevention requirements for planned developments. The County participates in an Area-wide Urban Stormwater Runoff Management Program to comply with the MS4 Permit requirements. Runoff from the development upland site is managed and regulated under the NPDES MS4 Permit and associated Storm Water Management Program.

Groundwater Supply

The Redlands Planning Area domestic water sources consist of both surface (about 50 percent of total supply) and groundwater (about 50 percent of total supply). The City of Redlands uses 15 wells that pump directly into the system or into reservoirs. Because of contamination, the City has wells that are not used for domestic purposes and are instead used for irrigation. It is anticipated that the contaminant levels will not decrease for many years due to the slow movement of water through the basin. Groundwater from the Bunker Hill Subbasin provides approximately half of Redland's water supply (13,601 acre-feet [AF] in 2020). A small portion (1,531 AF in 2020) of groundwater is also pumped from the Yucaipa Subbasin. The remaining supply comes from the Santa Ana River, Mill Creek, and the State Water Project (SWP). The basin was adjudicated by the Western Judgment in 1969 to regulate the amount of groundwater that can be pumped from the basin. Western Judgment allocated the Non-Plaintiffs' (agencies within San Bernardino County including Redlands) rights 167,238 acre-feet per year (AFY), which equates to 72.05 percent of the safe yield. San Bernardino agencies are allowed to extract more than 167,238 AFY from the SBB, as long as they import and recharge a like amount of supplemental water into the basin. The Western-San Bernardino

Watermaster provides an annual accounting of both the plaintiff and non-plaintiff extractions and a comparison to the safe yield. The Judgment requires the non-plaintiffs to provide replenishment water whenever the cumulative extractions exceed the cumulative safe yield.

Storm Drainage Facilities

The TVSP area is approximately 947 acres of land that is divided into three planning areas referred to as transit villages, which generally circle each new Arrow station, as shown on Figure 3-4. As shown in Figure 3-3, the TVSP area is developed and urbanized. The existing topography of the TVSP area is relatively flat and, according to the City of Redlands Drainage Master Plan, the area generally drains from the east to the west via the existing storm drain system.

Soil Infiltration

Recharge to the Bunker Hill Subbasin historically has resulted from infiltration of runoff from the San Gabriel and San Bernardino Mountains. The Santa Ana River, Mill Creek, and Lytle Creek contribute more than 60 percent of the total recharge to the groundwater system. The subbasin is also replenished by deep percolation of water from precipitation and resulting runoff, percolation from delivered water, and water spread in streambeds and spreading grounds. The TVSP area is approximately 1.5 miles south of the Santa Ana River and site soils primarily consist of Ramona Sandy Loam, Tujunga Loamy Sand, and Hanford Coarse Sandy Loam. These soils are generally well draining and support stormwater infiltration.

Flood Zone, Tsunami, Seiche

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for the TVSP area (06071C8716H and 06071C8712H) shows that the southern portion of the TVSP area is located within "Zone X," which is an area of minimal flood hazard potential outside of the 0.2 percent annual chance flood. The northern portion of the TVSP area is within "Zone AO", an area of 1 percent annual flood with flood depth of 1 to 3 feet (usually areas of ponding) where Base Flood Elevations have been determined.

A tsunami is a series of ocean waves caused by a sudden displacement of the ocean floor, most often due to earthquakes. The TVSP area is over 50 miles from the Pacific Ocean, and outside of the Tsunami Hazard Zone identified by the California Department of Conservation Tsunami Hazard Area Map.

A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are of concern relative to water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. There are no water bodies in the vicinity of the TVSP area, and no existing risks related to seiche flood hazards exist on or near the site.

4.9 LAND USE AND PLANNING

The City of Redlands General Plan 2035 (GP2035) designates the TVSP area with a mix of land uses including: Medium Density Residential (up to 15 dwelling units per acre), High Density Residential (up to 27 dwelling units per acre), Office, Commercial, Commercial/Industrial, Industrial, Public/Institutional, and Parks.

Most of the New York Street/Esri Transit Village area consists of non-residential land use designations except for the multi-family residential area in the southern portion of the village. The Downtown Transit Village area is also primarily non-residential, with multi-family allowed along the eastern edge. Land use designations in the University Street Transit Village are primarily medium and high density residential, except the institutional designations associated with the University of Redlands campus to the north of the station site. The General

Plan Transit Villages Overlay provides for residential/mixed uses within a half-mile of each station (see Figure 3-5, *General Plan Land Use Designation*).

The GP2035 Livable Community Element includes a Transit Villages section that provides for the Transit Villages Overlay Zone (TVOZ), which applies to areas within a half-mile radius of the five rail stations that were anticipated in the GP2035, which includes the three new Arrow stations (see Figure 3-6, *General Plan Transit Villages*).

Existing residential zoning within the TVSP area is primarily Multi-Family Residential (R-2 and R-3); however, there are two small areas with existing single-family zoning. The parcels on 11th Street between the I-10 and Colton Avenue in the Downtown Transit Village are zoned Single-Family Residential (R-1) and the parcels in the University Street Transit Villages bounded by the I-10, East Cypress Avenue, and East Citrus Avenue are zoned Suburban Residential (R-S). See Figure 3-7, *Existing Zoning Districts*.

Non-residential zoning in the TVSP area include Industrial (I-P), Light Industrial (M-1), Planned Industrial (M-P), Administrative and Professional Office (A-P), Neighborhood Stores (C-1), General Commercial (C-3), Highway Commercial (C-4), Commercial (C-M), Educational (E), Transitional (T), Open Land (O), Floodplain (FP), East Valley-General Commercial (EV/CG), and East Valley-Public Institutional (EV/PI).

The Downtown Specific Plan (Specific Plan No. 45), which is located within the proposed Downtown Village, governs the parcels in the downtown area, which is divided into Town Center, Town Center-Historic District, and Service-Commercial District.

The Project area is surrounded by a variety of GP2035 land use designations and zones including industrial, institutional, agricultural, commercial, and single- and multi-family residential as described below. Views of the surrounding GP2035 land use designations can also be seen on Figure 3-5, and views of the surrounding zoning can be seen on Figure 3-7, *Existing Zoning Districts*.

North: Uses to the north include transitional, commercial, multi-family residential, University of Redlands, and single-family residential.

South: Uses to the south include multi-family residential, University of Redlands, industrial, open space, and administrative buildings.

West: Uses to the west of the Project site include industrial and commercial buildings.

East: Uses to the east primarily consist of single-family residences.

4.10 NOISE

Sensitive Receptors

Noise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: residences, schools, hospitals, and recreation areas. Sensitive receptors are located throughout the TVSP area.

Existing Noise Levels

To assess the existing noise levels, 24-hour noise level measurements were taken at 10 locations near sensitive receivers in the vicinity of the TVSP area as shown in Figure 5.10-1. The field survey noted that noise within the TVSP area is generally characterized by vehicle traffic on area roadways and operation of the rail line and transit stations. A description of these locations and the existing noise levels are provided in Table 4-3. As shown, ambient noise levels range from 62.9 to 73.4 CNEL throughout the TVSP area.

Table 4-3: Existing Ambient Noise Measurement Results

Location	TVSP Land Use		Description	Energy Average Noise Level (dBA Leq)		CNEL
				Daytime	Nighttime	
L1	Village General	(VG)	Located southwest of the New York Street/ESRI Station north of Redlands Boulevard.	69.6	63.6	72.0
L2	Village Center	(VC)	Located near Historic Redlands Train Station at 383-389 Orange Street.	69.9	63.1	71.7
L3	Special District 1	(SD1)	Located west of the University Street Station north Park Avenue near Frederick Loewe Theatre.	57.1	57.6	64.4
L4	Village General	(VG)	Located north of Colton Avenue in the Tri City Shopping Center south of the CVS Pharmacy.	66.4	62.0	69.7
L5	Civic Space	(CS)	Located northwest of the University Street Station near Sylvan Park at 601 North University Street.	64.6	64.0	70.7
L6	Downtown	(DT)	Located north of East Vine Street and south of East Citrus Avenue.	57.6	56.0	62.9
L7	Village Corridor	(COR)	Located near the single-family residence at 1154 Orange Street.	70.2	65.5	73.4
L8	Neighborhood General 2	(NG2)	Located near the single-family residence at 410 East Stuart Street.	63.1	59.3	66.9
L9	Neighborhood General 1	(NG1)	Located near the single-family residence at 801 Stillman Avenue.	65.1	59.2	67.5
L10	Special District 1	(SD1)	Located south of the ESRI campus near the Redlands Adventist Academy at 130 Tennessee Street.	64.4	55.3	65.0

Source: Noise Study, 2022. Appendix G.

San Bernardino International Airport

The San Bernardino International Airport is located approximately 2.4 miles northwest of the TVSP area, which is within the Airport Influence Area. The latest aircraft noise contour boundaries for the airport were published as part of the Eastgate Air Cargo Facility Final Environmental Assessment. The TVSP area is located outside of the airport's 60 dBA CNEL noise level contours in 2024 and is considered normally acceptable by the General Plan Community Noise and Land Use Compatibility guidelines.

4.11 POPULATION AND HOUSING

Population

The California Department of Finance (DOF) estimates that the City of Redlands population is 71,154, representing approximately 3.3 percent of the County's total population. SCAG estimates that the City will have a population increase of 13.6 percent between 2021 and 2045, and the County will have population growth rate of over 29 percent over the same period. Table 4-4 provides population figures for the City of Redlands and the County in 2021, and SCAG projections for year 2045.

Table 4-4: Population Estimates and Projections, 2021–2045

	2021 ¹	2045 ² Projection	2021-2045 Change
City of Redlands	71,154	80,800	13.6%
San Bernardino County	2,175,909	2,815,000	29.4%

¹ California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2021.

² SCAG 2045 Growth Forecasts.

Housing and Households

The DOF estimates that there were 27,214 housing units in Redlands in 2021, which is 3.7 percent of the County total. The City's housing stock is 64 percent single-family residential and is estimated to be 93.4 percent occupied. The DOF estimated persons per household is 2.71.

Table 4-5: City of Redlands Existing Housing Stock, 2021

Residence Type	Number	Percentage
Single-Family Detached	17,451	64.1%
Single-Family Attached	1,202	4.4%
Two to Four Units	3,144	11.6%
Five Plus	4,331	15.9%
Mobile Homes	1,086	4.0%
Total	27,214	100%
Occupied	25,405	93.4%
Vacancy	1,809	6.6%

California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2021.

According to SCAG's 2020-2045 RTP/SCS, the City of Redlands is projected to add approximately 5,395 households by 2045. This averages approximately 225 new households annually through 2045.

Table 4-6: SCAG Household Projections, 2021–2045

	2021 ¹ Households	2045 ² Households	2021-2045 Increase
City of Redlands	25,405	30,800	21.2%
San Bernardino County	649,259	875,000	34.8%

¹ California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2021.

² SCAG 2045 Growth Forecasts.

Employment

According to SCAG's 2020-2045 RTP/SCS, the number of jobs within the City is projected to increase from 42,600 jobs in 2016 to 56,300 jobs in 2045. This represents an increase of over 32 percent, and an average of 472 jobs annually through the year 2045.

Table 4-7: SCAG Projected Employment Trends 2016-2045

	2016	2045	2016 – 2045 Increase
City of Redlands	42,600	56,300	13,700 (32.2%)
San Bernardino County	791,000	1,064,000	273,000 (34.5%)

Source: SCAG 2045 Growth Forecasts.

In addition, the 2020 Census estimates that 63 percent of the City's residents that are over 16 years of age are in the labor force and have an average 26.9-minute commute. This is similar to San Bernardino County as a whole, where 60.3 percent of residents over 16 years old are in the labor force and the average commute time was 31.6 minutes.

Jobs – Housing Balance

SCAG considers an area balanced when the jobs-housing ratio is 1.36; communities with more than 1.36 jobs per dwelling unit are considered jobs-rich; those with fewer than 1.36 are “housing rich,” meaning that more housing is provided than employment opportunities in the area (SCAG 2004).

As described above, the City currently has approximately 25,405 households and approximately 34,900 jobs (2022 State of California Employment Development Department Labor Force data), which results in a jobs-to-housing ratio of 1.37 jobs per household. SCAG projects a jobs-to-housing ratio of 1.83 in 2045, which indicates that employees would be commuting into the City for employment, and that additional housing would improve the jobs to housing balance within the City. The City is projected to have a higher percentage of jobs to households in comparison to the County, which is projected to have a jobs to housing ratio of 1.22 in 2045. Table 4-8 provides the existing and projected jobs-to-housing ratios for the City and the County.

Table 4-8: Existing and Projected Jobs - Housing Balance in the City and County

	Year	Employment	Households	Jobs-Housing Ratio
City of Redlands	2022 ¹	34,900	25,405	1.37
	2045	56,300	30,800	1.83
San Bernardino County	2022 ¹	940,800	649,245	1.45
	2045	1,064,000	875,000	1.22

Sources: ¹Employment Development Department, 2022.
SCAG 2020

4.12 PUBLIC SERVICES

Redlands Fire Department

The Redlands Fire Department (City Fire) would serve the TVSP area. City Fire provides fire suppression, emergency medical services (paramedic and non-paramedic), ambulance services, hazardous materials (HAZMAT) response, arson investigation, technical rescue, winter rescue operations, hazard abatement, and terrorism and weapons of mass destruction. The Fire Department provides services including fire prevention and suppression, emergency medical services, technical rescue, and hazardous materials response.

The Fire Department consists of approximately 52 total sworn personnel, (including 44 firefighter/paramedics and 16 firefighter/EMTs) and covers an area of 37 square miles. Each year, Redlands averages 264 fires, including 64 vegetation fires, 53 structure fires, 47 vehicle fires, and 100 miscellaneous fires.

Redlands Police Department

Public safety services in the City, including the TVSP area, are provided by the Redlands Police Department (RPD). RPD's main police station is located at 1270 West Park Avenue within the boundaries of the New York Street/Esri Transit Village. The main police station is located at 1270 West Park Avenue, with four other divisions located citywide. The Police Department personnel is made up of approximately 100

volunteers, 80 sworn officers and 58 full and part-time civilians, resulting in a service level of 1.12 officers per 1,000 residents. In 2020, the Department had an average response time of 9.08 minutes for Priority one police service calls and a service ratio of 1.1 officers per 1,000 residents. Although there are no industry standards for response time to emergency calls, according to the Redlands Police Department, a response time of 4.5 minutes is desirable in a city of this size. RPD maintains other locations in the City where it houses other divisions.

Park Services

Existing parks within the City include four pocket parks (1.8 acres), eight neighborhood parks (76.8 acres), six community parks (143.2 acres), and three other parks (202.4 acres) for a total of approximately 424.2 acres (GP2035 EIR, Table 3.13-1). At the estimated 2019 population of 71,513 residents, the ratio of existing parkland acres per 1,000 residents is 5.9, which exceeds the GP2035's parkland/recreational space standard of 5.0 acres per 1,000 residents consistent with state law (Quimby Act). There are several parks within the TVSP area that provide open space and recreational opportunities to surrounding residents, workers, and visitors.

Other Public Services

Other governmental services include the City's library system. The A. K. Smiley Public Library, established in 1894, is a 34,000-square-foot facility located at 125 West Vine Street. In addition to its diverse collection of resource materials, the library system offers services and programs for all ages, including an adult literacy program. It also houses a museum, and the Lincoln Memorial Shrine. At the time the GP2035 was drafted, the library was in need of additional storage space for the museums, and plans were underway for an adjunct building at 700 Brookside Avenue (formerly the Redlands Daily Facts building) for the Redlands Historical Museum (GP2035 EIR, p. 3.13-13).

4.13 RECREATION

Regional

The San Bernardino County Regional Parks Department manages and maintains nine Regional Parks throughout San Bernardino County totaling approximately 9,200 acres. Each park offers diverse outdoor recreation opportunities in settings that range from metro, mountain, and desert scenery. Regional County recreational facilities near the TVSP area include the Santa Ana River Trail and Parkway which is approximately 6.9 miles from the Project site and the Yucaipa regional park which is approximately 10 miles from the Project site.

Local

Existing parks within the City include four pocket parks (1.8 acres), eight neighborhood parks (76.8 acres), six community parks (143.2 acres), and three other parks (202.4 acres) for a total of approximately 424.2 acres (GP2035 EIR, Table 3.13-1). At the estimated 2019 population of 71,513 residents, the ratio of existing parkland acres per 1,000 residents is 5.9, which exceeds the GP2035's parkland/recreational space standard of 5.0 acres per 1,000 residents consistent with state law (Quimby Act). There are several parks within the TVSP area that provide open space and recreational opportunities to surrounding residents, workers, and visitors. Table 4-9, *Existing Parks within the TVSP Area*, shows the existing parks within the TVSP area as well as additional park information.

Table 4-9: Existing Parks within the TVSP Area

Park Type	Park Name	Location (in Redlands)	Park Size	Park Details
Pocket Park	Ed Hales Park	101 E. State St.	0.7 acre	Picnic facilities in the downtown central business district

Park Type	Park Name	Location (in Redlands)	Park Size	Park Details
Neighborhood Park	Smiley Park (Portion)	126 E. Eureka St.	9.2 acres (Only a portion located within TVSP area)	Located at the Redlands Civic Center, this park is home to A. K. Smiley Public Library, the Lincoln Memorial Shrine, and the Redlands Bowl
	Jennie Davis Park	923 W. Redlands Blvd.	5.2 acres	Playground facilities and location of the annual Veteran's Day Parade and Celebration
Community Park	Sylvan Park	University St. between Colton Ave. and Park Ave.	23.3 acres	Open grassy areas, rose garden, picnic areas, a playground, a stage/bandstand area, a skate park, a baseball/softball field, horseshoe pits, bag toss, lawn bowling, and trails.
Other Park	Terrace Park	Between N. Sixth St. and Church St. on Colton Ave.	2.4 acres	Linear park featuring landscaped tree-lined walkway with benches and drinking fountain

Source: City of Redlands, Facilities & Community Services Department

4.14 TRANSPORTATION

Table 4-10, *Existing Major Roadway Characteristics within TVSP Area*, shows the roadway characteristics that are observed within the TVSP area.

Table 4-10: Existing Major Roadway Characteristics within TVSP area

Roadway	Classification	Number of Lanes	Bike Lane?
Redlands Boulevard (E/W)	Boulevard (between Alabama Street and E Citrus Avenue), Major Arterial elsewhere	4-Lane Divided w/Concrete median, except between Center Street and 1 st Street	No
Orange Street (N/S)	Boulevard (between Redlands Boulevard and Union Avenue), Minor Arterial elsewhere	4-Lane Divided w/Painted median	No
Cajon Street (N/S)	Minor Arterial	2-Lane Divided w/Painted median	Class II
Colton Avenue (E/W)	Boulevard (between Redlands Boulevard and 6 th Street)	2-Lane Divided w/Painted median	Class III between Orange Street and Church Street
Brookside Avenue (E/W)	Major Arterial	2-Lane Divided w/Concrete median	Class II
Citrus Avenue (E/W)	Major Arterial west of Orange Street, Minor Arterial East of Orange Street	4-Lane Divided w/Concrete median between Eureka Street and Orange Street, 2-Lane Divided w/Painted median elsewhere	Class III west of Redlands Boulevard, Class II east of Redlands Boulevard
University Street (N/S)	Boulevard between I-10 and Colton Avenue, Minor Arterial south of I-10 and between Colton Avenue and Lugonia	4-Lane Divided w/Painted median	None

Roadway	Classification	Number of Lanes	Bike Lane?
	Avenue, Collector north of Lugonia Avenue		
Tennessee Street (N/S)	Minor Arterial	4-Lane Divided w/Painted median	Class III south of State Street
Olive Avenue (E/W)	Collector	2-Lane Divided w/Painted median	Class II

Existing Transit Service

The TVSP area is served by bus service via Omnitrans, which serves the San Bernardino Valley. Omnitrans Route 8 connects San Bernardino and Yucaipa via Loma Linda, Redlands, and Mentone, including the TVSP area, with buses running every 60 minutes Monday through Sunday, and has stops along Redlands Boulevard and Lugonia Avenue. Omnitrans Route 15 serves the cities of Fontana and Redlands (including the TVSP area) via San Bernardino and Rialto, with buses running every 60 minutes Monday through Sunday, and has stops along Orange Street, Redlands Boulevard, and Eureka Street. Omnitrans Route 19 provides service between Fontana, the San Bernardino Transit Center, and Yucaipa. Route 19 has stops at the Redlands Mall and has buses running every 60 minutes, Monday through Sunday.

Furthermore, the San Bernardino County Transportation Authority's newly built Arrow line connects the City of Redlands to the City of San Bernardino and provides further direct rail trips once a day to the City of Los Angeles. The Arrow line has three stops located at the center of each proposed Transit Village:

- New York/Esri Station: located north of the intersection of Redlands Boulevard and New York Street across from the Esri campus
- Downtown Station: located at the historic Redlands Santa Fe Depo, between Eureka Street and Orange Street
- University Station: located at the University of Redlands at the south end of campus near North University Street

Starting in 2022, during morning and afternoon peak commute hours, trains operate every 30 minutes. During non-commute or off-peak hours, trains operate every 60 minutes. Weekday and weekend service is planned to start at 5 a.m. and run until 10 p.m. In addition to standard passenger rail service, the Metrolink Express train will be extended to serve the Redlands – Downtown Station with limited stop service to and from Los Angeles during peak commute hours.

Existing Bicycle and Pedestrian Facilities

As shown on Table 5.14-1, above, in the TVSP area, Brookside Avenue, Citrus Avenue, Cajon Street, Olive Street, and Colton Avenue, contain bicycle lanes. Furthermore, a Class I bicycle lane currently exists west of Center Street and east of Grove Street within the TVSP area.

Generally, throughout the TVSP area, sidewalks are provided on both sides of the street. University Street currently lacks sidewalks on some segments near the I-10 and Redlands Boulevard currently lacks sidewalks on some segments. Additionally, a multi-use trail, the Orange Blossom Trail, transverses the TVSP area east of Center Street and west of Grove Street. Other multi-use trails exist on Church Street and a portion of Colton Avenue between 6th Street and Church Street.

4.15 TRIBAL CULTURAL RESOURCES

The TVSP area is within a region where the traditional use territories of the Serrano, Cahuilla, and Gabrielino meet. These three cultural groups spoke languages belonging to the Takic branch of the Shoshonean family, a part of the larger Uto-Aztecan language stock.

Serrano

The Serrano people once occupied the Mountain, North Desert, and East Desert Regions of present-day San Bernardino County. Mainly due to the inland territory that the Serrano occupied beyond Cajon Pass, contact between Serrano and Europeans was minimal. As early as 1790, some Serrano people were drawn into mission life. After a failed attack of the Mission San Gabriel in 1811, some Serrano people relocated to Morongo with the Cahuilla tribe. Others followed the Serrano leader Santos Manuel toward the San Bernardino County valley floors and eventually settled to become the San Manuel Band of Mission Indians Reservation.

Cahuilla

The eastern portion of the Valley Region, the southeastern part of the Mountain Region, and the southern portion of the East Desert Region of San Bernardino County were once home to the Cahuilla people. It is thought that the Cahuilla migrated to southern California approximately 2,000 to 3,000 years ago with related sociolinguistic groups, most likely from the southern Sierra Nevada Mountain ranges. The Cahuilla settled in a territory that extended from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and from the San Jacinto Valley to the San Bernardino Mountains.

Gabrielino

The Gabrielino historically occupied the southwestern portion of San Bernardino County, including the Valley Region. The name Gabrielino denotes the people who were under the control of the Spanish from Mission San Gabriel, which included people from the Gabrielino proper as well as other social groups. Many contemporary Gabrielino identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and use the native term Tongva. Historic-era Tongva settlements in the San Bernardino Valley were primarily located at the base of the foothills and along perennial watercourses.

Tribal Cultural Resources

Two prehistoric archaeological resource sites are located within the TVSP area. Furthermore, the Mill Creek Zanja transverses the proposed TVSP area. The historic feature was designated a California Historical Landmark No. 43 in 1932 and placed on the National Register of Historic Places in 1977. The Mill Creek Zanja was built in 1819 to convey water from Mentone to the Asistencia de Mission San Gabriel. Today, it carries drainage water and storm runoff. It is the oldest continuously operating irrigation canal in California, and the oldest civil engineering project in Southern California. It runs through University Street and New York Street.

Through a study for the Passenger Rail Project by ICF International in 2014, a segment of the Mill Creek Zanja was found ineligible for the NR. The portion of the Mill Creek Zanja that is located west of Division Street to the southwest and terminates west of the concrete channel at Ninth Street. This portion is no longer eligible for listing in the NR due to its loss of historic integrity (ICF International 2014). The segment mentioned above does not resemble the Mill Creek Zanja segment to the east which was described in the 1976 Nomination Form and appears it was excluded from the 1976 nomination because of its lack of resemblance (ICF International 2014). In August 2014, SHPO concurred with the determination of National Register

eligibility and Section 106 finding of effect regarding the evaluated segment of the Mill Creek Zanja (MCC 2022)

4.16 UTILITIES

Water

The TVSP area is located within the water service area of the City of Redlands Municipal Utilities and Engineering Department (MUED), which provides retail water service to the majority of the City of Redlands, a portion of the City of Loma Linda, and unincorporated areas of the Donut Hole, Mentone, and most of Crafton.

WVWD participates in the Upper Santa Ana River Watershed Integrated Regional Urban Water Management Plan. This Urban Water Management Plan (UWMP) is a tool that provides a summary of anticipated supplies and demands for the years 2020 to 2045 within the Valley Region of San Bernardino County, including various incorporated cities such as the City of Redlands.

Water Supply and Demand- MUED

The MUED utilizes four primary sources for drinking water supply: groundwater, surface water, imported water, and recycled water. The MUED's water supply is a combination of groundwater from the Bunker Hill Subbasin; groundwater from the Yucaipa Subbasin; surface water from the Santa Ana River; surface water from Mill Creek; imported water from the State Water Project (SWP) Water; and recycled water. As shown on Table 4-11, in 2020 the MUED obtained the majority of its water supply from the Bunker Hill Subbasin.

Table 4-11: MUED Water Supply 2020

Water Supply	Source	Water Quality	Volume (acre-feet)	Percentage
Groundwater	Bunker Hill	Drinking Water	12,088	43%
Groundwater	Bunker Hill	Non-Potable	1,531	5.4%
Groundwater	Yucaipa	Non-Potable	297	1.1%
Surface Water	Santa Ana River	Drinking Water	5,796	20.6%
Surface Water	Mill Creek	Drinking Water	6,045	21.5%
Purchased or Imported Water	SWP-Direct Deliveries	Drinking Water	535	1.9%
Recycled	Recycled Water-Direct	Recycled Water	1,806	6.5%
Total			28,098	100%

Source: 2020 UWMP.

As shown in Table 4-12, the 2020 UWMP estimates that water supplies in the future are anticipated to be obtained through a similar mix of surface water, groundwater, and purchased or imported water. The 2020 UWMP anticipates that the MUED's water supply will increase from 31,039 AF in 2025 to 35,544 AF in 2045 (increase of 4,505 AFY) to meet MUED's anticipated growth in water demands.

Table 4-12: MUED Projected Water Supply (AF)

Water Supply	Source	2025	2030	2035	2040	2045	2045 Percentage
Groundwater	Bunker Hill	12,973	13,922	14,861	15,677	16,484	46.4%
Groundwater	Bunker Hill	3,766	4,015	4,275	4,513	4,760	13.4%
Groundwater	Yucaipa	1,000	1,000	1,000	1,000	1,000	2.8%

Surface Water	Santa Ana River	5,000	5,000	5,000	5,000	5,000	14.1%
Surface Water	Mill Creek	5,500	5,500	5,500	5,500	5,500	15.5%
Purchased or Imported Water	SWP-Direct Deliveries	700	700	700	700	700	1.9%
Recycled	Recycled Water-Direct	2,100	2,100	2,100	2,100	2,100	5.9%
Total		31,039	32,238	33,436	34,490	35,544	100%

Source: 2020 UWMP.

The 2045 projections anticipate that 62.6 percent of supply would be from the groundwater sources, 29.6 percent from surface water, 1.9 percent from imported/purchased sources, and 5.9 percent from recycled water. The UWMP also describes that there has been a historical trend associated with drier years and an increase in water use among agencies. Conservation efforts have proven to be effective in decreasing water use in dry years. Additionally, according to the UWMP, MUED has adequate supplies to serve 100 percent of its customers during normal, dry year, and multiple dry year demand through 2045 with projected population increases and accompanying increases in water demand (UWMP 2020).

Groundwater: Redlands MUED extracts groundwater from the Bunker Hill Subbasin (also known as San Bernardino Basin or SBB) and Yucaipa Subbasin. Extractions from both basins include potable and non-potable water. In 2020, Redlands MUED extracted 13,619 AF of groundwater from the Bunker Hill Subbasin and 297 AF from the Yucaipa Subbasin. The City of Redlands uses 15 wells that pump directly into the system or into reservoirs (UWMP 2020).

Purchased or Imported Water: Imported water from the SWP is available for the MUED to purchase from Valley District when needed. The MUED has purchased supplemental SWP water only in years when surface water flows have not been able to meet demands and on occasion when surface water supplies are turbid and require blending or for other operational purposes. The MUED contributes to regional efforts to recharge the Bunker Hill groundwater basin with SWP water and local surface water in wet years when available so that storage is available for use in dry years when other supplies may be limited (UWMP 2020).

Surface Water: The MUED receives water from the Mill Creek watershed and the Santa Ana River watershed. Water from the Mill Creek watershed is treated at Henry Tate Surface Water Treatment Plant. Water from the Santa Ana River watershed is treated at the Horace P. Hinckley Surface Water Treatment Plant. The MUED has ownership in a variety of private and mutual water companies to supply water to the City's Tate and Hinckley Surface Water Treatment Plants (UWMP 2020).

Recycled Water: The City's Wastewater Treatment Plant has the capability of treating 7.2 million gallons per day (mgd) of wastewater to a Title 22 Recycled Water level. The City's recycled water customers include Southern California Edison, a landfill, and recycled/non-potable water customers in the 1350 pressure zone. Southern California Edison uses recycled water for its Mountain View Power Plant and recycled water customers use recycled water for irrigation.

Water Infrastructure

The City's water treatment plants include the Henry Tate Water Treatment Plant and the Horace Hinckley Surface Water Treatment Plant. The Henry Tate Water Treatment Plant is a conventional water treatment plant built in 1967. The design capacity of the Tate plant is 20 million gallons per day (mgd). The City added enhancements to the Tate WTP to provide more water supply reliability by allowing State Water Project water to be mixed with Mill Creek water for treatment. The Horace Hinckley Surface Water Treatment Plant started operation in 1987 and has a permitted capacity of 14.5 mgd. The 10-year average flow (up to and including 2016) is 6,363 AF at the Henry Tate Plant, and 6,697 AF at the Horace Hinckley

Plant. The TVSP area contains a network of water lines from 1 to 36-inches in diameter, which operate within capacity for existing development within the TVSP area. The City of Redlands maintains approximately 400 miles of pipeline with over 21,500 metered connections that serve potable water (MUED 2022).

Water Use in TVSP Area

Within the TVSP area, there are currently 2,318 multi-family dwelling units, approximately 6.5 million square feet of commercial (or non-residential) uses, and 5.7 million square feet of landscaped areas. Currently, residential uses comprise approximately 40 percent of the water demand in the TVSP area, commercial/non-residential uses comprise approximately 27 percent of the water demand, and landscaping irrigation comprises approximately 33 percent of the water demand. The TVSP area currently has an annual water usage of approximately 1,357 AF (WSA 2022).

Wastewater

Sewer service in the TVSP area is provided by the City of Redlands. The City's Wastewater Treatment Plant is located on the south side of the Santa Ana River Wash at Nevada Street. The City's Wastewater Treatment Plant has a secondary treatment capacity of 9.5 mgd and a tertiary treatment capacity of 7.2 mgd. As of 2021, average flow to the City's Wastewater Treatment Plant was approximately 5.8 mgd (MUED 2021).

In 2020, 6,620 AF of wastewater was treated at the City's Wastewater Treatment Plant. In 2020, 3,813 AF were treated to a secondary level and released to spreading basins east of the City's Wastewater Treatment Plant for percolation into the Bunker Hill groundwater basin, while 1,806 AF were treated to a tertiary level and distributed as recycled water (UWMP 2020).

The wastewater system has one lift station that serves the western-most portion of the city south of Interstate 10 (I-10). The collections system in the City of Redlands consists of approximately 250 miles of pipelines. Within the TVSP area, wastewater pipelines range from 6-inches to 48-inches in diameter.

Stormwater

The City of Redlands' stormwater drainage system serves an area of approximately 37 square miles. The Downtown stormwater drainage system is composed of reinforced concrete pipe (RCP) and corrugated metal pipe (CMP) with diameters ranging from 8 inches to 96 inches, box culverts, covered rubble rock and concrete channels, and concrete and natural drains. Stormwater runoff from the City's drainage systems flows by gravity into the Mission Channel, Morrey Arroyo Creek, and San Timoteo Canyon, and discharges to the Santa Ana River.

Drainage throughout the TVSP area is generally from east to west to one of two main existing major stormwater drainage facilities. The existing stormwater drainage system within the TVSP area lacks capacity, as evidenced by flooding within the Downtown area during storm events. The main cause of flooding within the TVSP area is the lack of capacity in the Zanja, the Redlands Boulevard Storm Drain, and the Oriental Storm Drain. With a stormwater capacity of approximately 2,400 cubic feet per second (cfs), the Redlands Boulevard Storm Drain can receive approximately 4,200 cfs from the Zanja and the Carrot Storm Drain and 4,000 cfs from the Reservoir Canyon and Oriental Storm Drains. These tributaries result in a confluence of stormwater within the Redlands Boulevard Storm Drain near the intersection of Redlands Boulevard and Ninth Street, which can lead to flooding. In 2017, the City adopted the 2017 Master Plan of Drainage.

Solid Waste

Solid waste collection services are provided within the TVSP area by the City of Redlands. The City's Quality of Life Department provides residential waste collection, green waste collection for yard waste, and curbside recycling. Hazardous and electronic waste is managed by the Redlands Fire Department, which operates a household hazardous and electronic waste disposal site on a weekly basis.

Solid waste from the TVSP area is primarily disposed of at the California Street Landfill operated by the City of Redlands Quality of Life Department and the San Timoteo Sanitary Landfill operated by the County, both within the city limits. The California Street Landfill is located at 2151 Nevada Street and encompasses 115 acres and is permitted to operate through 2042. The California Street Landfill design capacity is 11.4 million cubic yards, and its maximum permitted throughput is 829 tons per day. It has a remaining capacity of 5,168,182 cubic yards. In 2020, the California Street Landfill received an average throughput of 146 tons per day (CalRecycle, 2022). Based on the average throughput received per day, the California Street Landfill has an approximate extra capacity of 683 tons per day.

The San Timoteo Sanitary Landfill is located on San Timoteo Canyon Road and is 366 acres in size and is permitted to operate through 2039. It has a permitted capacity of 23,685,785 cubic yards and a maximum permitted daily throughput of 2,000 tons. It has a remaining capacity of 12,360,396 cubic yards. In 2020, the San Timoteo Sanitary Landfill received an average throughput of 772 tons per day (CalRecycle, 2022). Based on the average throughput received per day, the San Timoteo Sanitary Landfill has an approximately extra capacity of 1,228 tons per day.

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