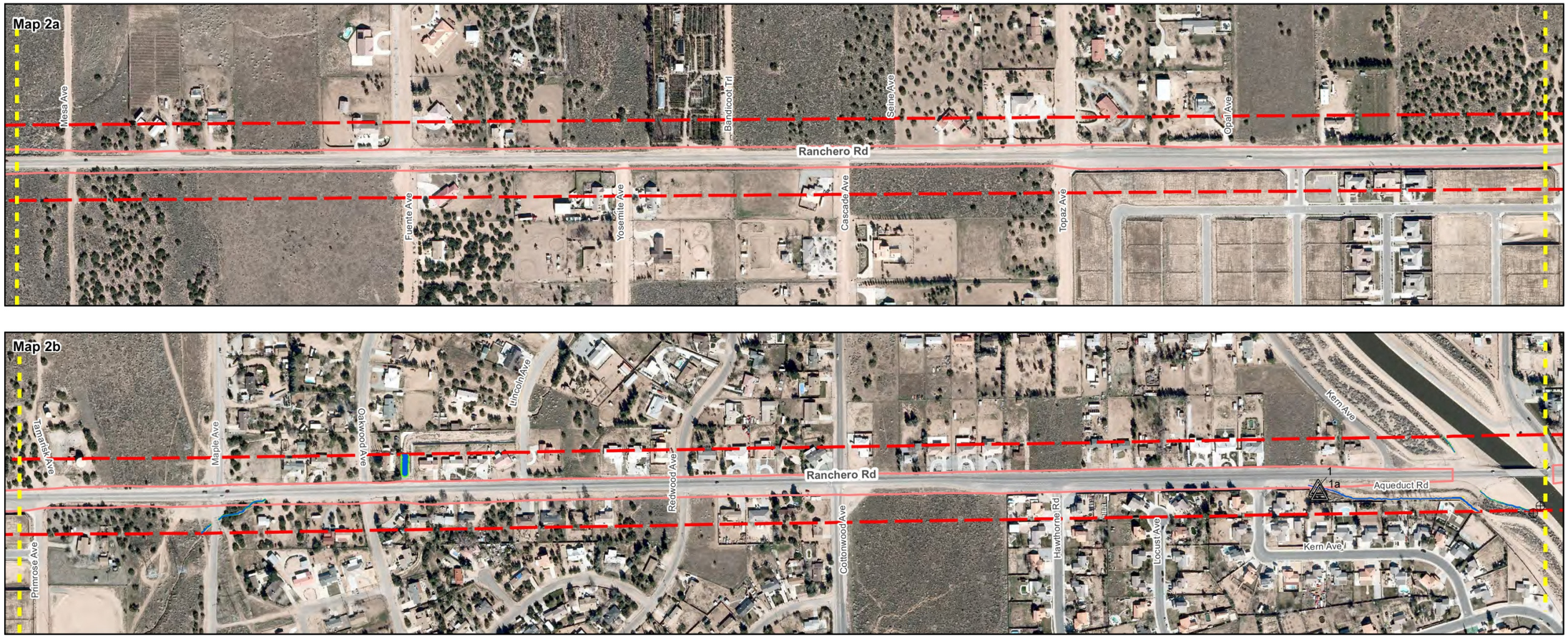

Figure 2.4-5 Impacts to Jurisdictional Waters

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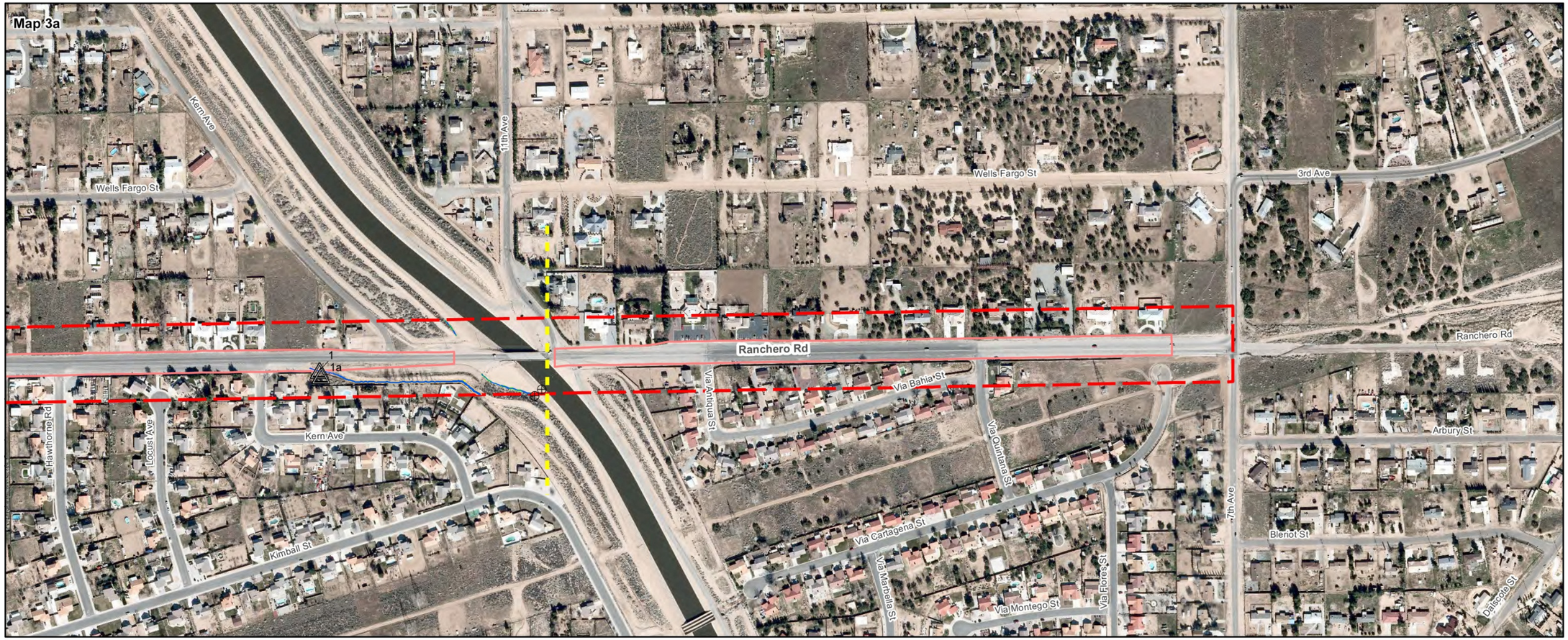

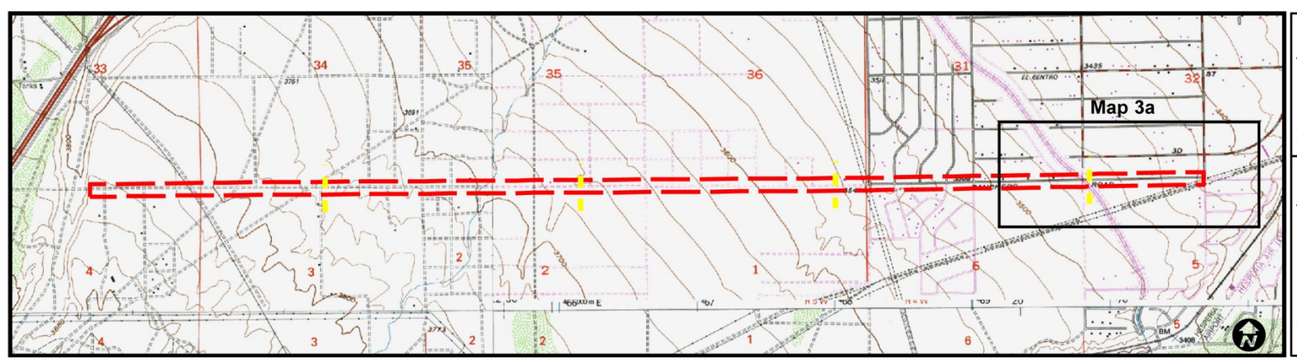

FEATURE SUMMARY [1]

CLASSIFICATION	EXISTING ACREAGE	EXISTING LINEAR FT	IMPACTED ACREAGE	IMPACTED LINEAR FT
ACoE Waters of the U.S.:				
Ephemeral Stream	0.211	1988	0.025	264
Erosional Feature	0.021	231	0.016	174
TOTAL [2]	0.232	2219	0.041	438

CLASSIFICATION	EXISTING ACREAGE	EXISTING LINEAR FT	IMPACTED ACREAGE	IMPACTED LINEAR FT
CDFW Habitat:				
Detention Basin	0.056	Linear Feet Not Applicable	0.031	Linear Feet Not Applicable
Disturbed Wetland	0.018		0.009	
Man-made Ditch	0.138		0.000	
Southern Willow Scrub	0.002		0.000	
Streambed	0.376		0.040	
TOTAL [2]	0.590		0.080	

Other Features

- Soil Point
- Corrugated Steel Pipe
- Matchlines
- Grading Limits
- Survey Area

[1] All mapped features have been clipped to survey area boundary and represent "Existing Acreage". Areas within grading limits represent "Impacted Acreage".

[2] ACoE and CDFW wetland areas may overlap. Acreage summaries must be evaluated independently or topological errors may occur.

Scale in Feet
0 200 400

1 inch = 400 feet
1 inch = 0.08 miles
1 centimeter = 48 meters

Figure 2.4-6 Impacts to Jurisdictional Waters

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2.4.6 Avoidance, Minimization, and/or Mitigation Measures

The proposed project contains jurisdictional waters that would be impacted by the project. In addition, construction of the project would require the removal of native desert vegetation that may provide habitat for certain sensitive species. The following measures would apply to the proposed project to mitigate impacts to less than significant:

- **BIO-1:** Necessary permits from USACE, CDFW, and RWQCB will be obtained prior to construction within jurisdictional areas. Potential impacts to listed species will be mitigated through conservation of core populations in conservation areas.
- **BIO-2:** The following measures will be incorporated into a Stormwater Pollution Prevention Plan (SWPPP) to be prepared for the proposed project in accordance with the General Construction Stormwater Permit:
  - Areas proposed to be used for equipment access (e.g., temporary construction roads) within streambed habitats will be protected from soil compaction and erosion to the extent feasible through the use of BMPs such as geomats or rubber-tired equipment.
  - To eliminate the release of pollutants within sensitive habitats, the project will locate staging areas outside of streambeds and other jurisdictional features.
  - Equipment used in and around waters of the U.S. should be in good working order and free of dripping or leaking engine fluids.
  - All vehicle maintenance, staging, and materials storage will occur at least 300 ft from all waters of the U.S.
  - Any necessary equipment washing will occur where the water cannot flow into the stream channel.
- **BIO-3:** Orange construction fencing and/or brightly colored staking will be used where recommended by the biologist and to delineate environmentally sensitive areas.
- **BIO-4:** A biological monitor will be present during work in the vicinity of environmentally sensitive areas to ensure that direct or indirect impacts to these areas are avoided during construction.
- **BIO-5:** Construction activities, such as clearing and grubbing, will occur outside the bird breeding season (approximately September to February) to minimize impacts to nesting birds. If construction is required to occur during the bird nesting season (March 1 to August 31), then a preclearance nesting bird survey will be conducted by a qualified biologist, and buffer zones around active nests

will be established as appropriate. If the preconstruction survey identifies occupation of nesting birds within the project area, then a 250-foot buffer around the nest shall be maintained until a qualified biologist has determined that the nest is no longer occupied.

- **BIO-6:** A preconstruction survey for burrowing owl shall be conducted by a qualified biologist no more than thirty (30) days prior to ground-disturbing activities to determine the presence or absence of burrowing owls on the site. If there are resident owls found during the preconstruction survey, then the City of Hesperia will develop a Burrowing Owl Mitigation and Monitoring Plan (BOMMP) and work with CDFW to determine and implement measures to minimize impacts.
- **BIO-7:** To the extent feasible, impacted desert trees (i.e., Joshua trees) or plants more than 6 ft in height or with stems more than 2 inches in diameter would be transplanted or stockpiled for future transplanting within the area directly impacted by project construction and site clearance.
- **BIO-8:** Provide replacement landscaping or vegetation to disturbed areas consistent with the natural surroundings, and in accordance with City Code Section 16.24.150 and County Codes 88.01.050 (Tree or Plant Removal Permits) and 88.01.060 (Desert Native Plant Protection).

2.5 Cultural Resources

This section presents an overview of the efforts conducted to identify and evaluate the potential for impacts caused by the proposed project on significant prehistoric and historical archaeological sites, built-environment resources, and paleontological resources. As used in this section, "cultural resources" refers to both archaeological and built-environment resources, and paleontological resources.

Information provided in this section is derived from the *Cultural Resources Study for the Proposed Ranchero Road Improvements Project* (2011). Between August and October, 2009, ECORP Consulting, Inc., (ECORP) under contract with Parsons, performed a cultural resources study for the proposed project along an approximately 5-mile-long segment of Ranchero Road in Hesperia, San Bernardino County, California. The City proposes to widen Ranchero Road from approximately 2,200 ft east of Mariposa Road to Seventh Avenue.

The purpose of the cultural resources study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any historic buildings or archaeological resources that may exist in or adjacent to the project area, as mandated by CEQA.

To identify and evaluate such resources, ECORP conducted a historical/ archaeological resources records search, pursued historical background research, consulted with Native American representatives, and carried out an intensive-level field survey of the project area.

2.5.1 Environmental Setting

2.5.1.1 Study Area

The study area for the cultural technical study was prepared using the latest edition of engineering plans overlaid by San Bernardino County tax assessor parcel maps. The purpose of the study area is to ensure identification of significant historical, architectural, and archaeological resources listed in or eligible for inclusion in the California and/or National Registers that may be directly or indirectly affected by the proposed project.

More specifically, the project study area encompasses the existing road ROW, as well as numerous adjacent parcels that are situated along the north and south sides of Ranchero Road between Coriander Drive (Ryeland Road) and Seventh Avenue. This segment of Ranchero Road is a modern, two-lane roadway. It features one signal light

at the new Oak Hills High School, and curbs and sidewalks along some segments, but most of the project route lacks signal lights and street-side improvements. The north and south sides of Ranchero Road feature various characteristics, depending on the exact location; some portions are lined by wide, paved shoulders, while other segments are unimproved and bordered by bare soil. Currently, pedestrian and bicycle traffic along these unimproved stretches are subject to travel along an uneven, often brush-covered, dirt and gravel surface next to oncoming traffic. The project area lies in a semi-rural setting and is bounded mostly by residential development, as well as vacant, undeveloped parcels.

The project area is situated to the north of the San Bernardino Mountains in the southern portion of Victor Valley, which forms the southern margin of the Mojave Desert. The surrounding region often experiences extreme temperatures, reaching over 100 degrees in summer and dipping to near freezing in winter. The project area is situated along a primary east-west transportation corridor in the southwestern portion of Hesperia, along the boundary between the City and the neighboring unincorporated community of Oak Hills. This segment of Ranchero Road links the area's residents to the new Oak Hills High School at Cataba Road, as well as I-15 via Mariposa Road.

2.5.1.2 Archaeological Resources

Prehistoric Setting and Ethnography

The prehistory of inland southern California is less thoroughly understood than that of the adjacent desert and coastal regions; however, a chronology of the prehistory of the proposed project area has been developed and includes four periods. There are four specific time periods that are prevalent to the area. Those time periods are the Desert Culture Period, which occurred from 12,000 to 10,000 B.C., the Western Hunting Culture or Lake Mojave Period, which occurred from 9,000 to 5,000 B.C., the Pinto Period, which occurred from 5,000 to 2,500 B.C., and the Protohistoric Period, which occurred from 2,500 B.C. to A.D. 1796. Additionally, after 1796, the indigenous Native American presence in the area included the Serrano peoples (City of Hesperia, 2010b: CN-35-36).

Within the City's General Plan study area, approximately 330 sites and finds have been discovered, with 19 more resources pending review. Eight of those sites/finds are listed on the National Register list, California Landmarks list, or the California Points of Historic Interest list (City of Hesperia, 2010b). Each of these periods has an

established set of characteristics that enables resources and artifacts to be associated with their appropriate period in prehistory.

Archival evidence suggests that the project Area of Potential Effects (APE) is situated within territories that were occupied by the Serrano Indians. The Serrano was a Native American group that occupied the area throughout the 1700s and was decimated by the Spanish in the early 1800s; however, some Serrano survived, with descendants currently living on the Morongo and San Manuel reservations. Villages of the Serrano included a ceremonial house with individual families inhabiting willow-framed huts with tule hatching. The clan exhibited a sophisticated technology devoted to hunting small animals and gathering roots, tubers, and seeds. Refer to the *Cultural Resources Study for the Proposed Ranchero Road Improvements Project* (2011) for additional information on the prehistoric setting and ethnography.

Historic Setting

The history of the proposed project area is divided into three periods: Spanish Period (1769-1822), Mexican Rancho Period (1822-1846), and American Period (1846-present). Each of these periods has an established set of characteristics that enables resources and artifacts to be associated with the appropriate historical period.

Historic and Architectural Resources within the Study Area

A cultural resources records search was conducted at the Archaeological Information Center of the San Bernardino County Museum on August 25, 2009. Results of the records search determined that previous cultural resources studies identified three linear historical sites that cross the project boundaries at different locations. The search also determined there are 23 additional recorded sites located outside the project boundaries but within a 1-mile radius. The three potentially affected sites are described as follows:

- Site CA-SBR-2910H is a recorded segment of the National Old Trails Highway previously determined eligible for listing in the National Register. This was the original highway that linked Chicago with Los Angeles, and it was officially signed as Route 66 in 1926. A likely dirt or oiled segment of the original route is reported to have once crossed Ranchero Road, but it has not been formally recorded in the field. Its location and presence is presumed based on historical documentation and maps of the area.
- Site CA-SBR-4251H is a segment of the former 10-mile-long Baldy Mesa Pole Line that was constructed in the early 20th century. This transmission line

distributed electrical power from Victorville to Cajon and once crossed Ranchero Road near the Lassen Avenue intersection; however, cultural resource surveys have determined that segments of the line have been removed in the project vicinity, leaving only a dirt service road as a remnant of this resource (Reynolds 1980; Petersen 1991:1; Becker and Phillips 1993).

- Site CA-SBR-10316H is a segment of the 238-mile-long "Tower Line" built in 1911 by the South Sierra Power Company to transmit electricity from Bishop to San Bernardino. It was determined eligible for listing in the National Register in 1995 based upon its historical significance as an engineering structure. The power line reportedly crosses Ranchero Road near the Maple Avenue intersection. While the line still exists, towers and equipment have all been replaced and upgraded over the years (Sheets and Linder 2005; Ahmet 2008).

In addition to the resources identified during the cultural resources records search, the California Aqueduct is located within the project study area and has been determined eligible for listing in the National Register. The California Aqueduct was constructed beginning in 1960 and ending in 1974. The Ranchero Road Bridge that crosses the aqueduct was built in 1971 (Caltrans, 2009). According to the California Department of Parks and Recreation, *Building, Structure and Object Record* identifies the California Aqueduct and its bridges as eligible for listing in the California Register of Historical Resources (California Register) under Criterion 3, "Distinctive characteristics of a type, period, region, or method of construction, work of an important creative individual, or possess high artistic values."

Recently, Caltrans has determined that the California Aqueduct and the bridges that cross the aqueduct are eligible for National Register. Caltrans determined that the California Aqueduct is eligible for the National Register at the state level of significance under Criterion A (events that have made a significant contribution to the broad patterns of our history) as the largest and most significant of the water conveyance systems developed as part of the State Water Project (SWP). In addition to its eligibility under Criterion A, the California Aqueduct is also eligible under Criterion C for its complex design necessary to redistribute water throughout the state of California on such a massive level. The National Register describes Criterion C as "Distinctive characteristics of a type, period, or method of construction, work of a master, high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction."

Since the completion of the aqueduct is less than 45 years old, Caltrans also evaluated the resource under Criterion Consideration G for properties less than 50 years of age. The California Aqueduct was a planned comprehensive water redistribution system that helped shape the development of much of California following the mid-20th century. The American Society of Civil Engineers lists the California Aqueduct as one of only 10 internationally ranked "Monuments of the Millennium" for its remarkable engineering aspects, as well as for the positive impact it had on regional economic trade and development.

An intensive field survey of the project site was conducted on September 25, 2009. The survey included an inspection of all buildings on parcels along Ranchero Road. The locations of the three recorded cultural resources were visited during the survey to examine their current condition and assess the likelihood of them being adversely affected by the proposed project. At two of the sites, CA-SBR-2910H and CA-SBR-4251H, there was no evidence of any former roadway or power line, respectively. The power line facility at Site CA-SBR-10316H is extant; however, none of the steel towers are located within the project area, and the proposed project as currently planned has no potential to affect the resource.

Four buildings within the project area date from the 1950s; therefore, they were assessed for potential historical significance. According to the Cultural Resources Study prepared for the proposed project, none of these buildings qualify as an "important example" of its type, period, region, or method of construction, or express any ideals or design concepts more fully than the many other surviving buildings of similar design and vintage in the Hesperia area (California Register Criterion 3); hence, the four historic-period buildings recorded in the project area neither appear eligible for listing in the California Register nor meet CEQA's definition of an "historical resource."

The four buildings identified as a result of the survey conducted are not considered to be historical resources for the purposes of CEQA; therefore the proposed project would not substantially adversely affect a potential historical resource. The California Aqueduct is a historical resource for the purposes of CEQA. The construction of the proposed project will avoid construction related activities within the California Aqueduct, which includes avoiding construction on the Ranchero Road Bridge, spanning over the California Aqueduct. Based upon the results of the records search and cultural resources survey conducted for this project, it is anticipated the proposed

project has no potential for substantially adversely affecting historic architectural resources.

Archaeological Resources within the Study Area

The aforementioned records search conducted on August 25, 2009, indicated that there is one recorded archaeological site within the project boundaries. Site 36-020709 is a moderate-sized lithic scatter consisting of numerous stone flakes, debitage, cores, a pestle fragment, and pieces of marine shell. Stone artifacts recorded at this site are reportedly located just over 65 ft from the pavement of Ranchero Road, while the reported marine shell location is well outside the project boundaries (Malan and Cerreto, 2008). In addition, the records search identified ten isolated occurrences (i.e., localities with fewer than three associated artifacts) outside the project area.

The field survey for Site 36-020709 found no evidence of archaeological resources either within or immediately adjacent to the project boundaries. This survey included careful inspection of numerous naturally formed, rounded, and subangular cobbles and pieces of manufactured road gravel along the roadway. Dense vegetation was present during the survey, but no marine shells, midden soils, or other indications of cultural use of the area were observed.

Native American Consultation

On August 19, 2009, a letter was sent to the Native American Heritage Commission (NAHC) in Sacramento notifying them of the proposed project. The NAHC was asked to conduct a search of the Sacred Lands File (SLF) to identify any known sensitive or sacred Native American resources located in or near the project area, and to identify Native American groups and representatives in the region with traditional and/or historical ties to the project area. Following the Commission's recommendations, ten Native American representatives were contacted by mail on August 31, 2009 in order to solicit local Native American input regarding any possible cultural resource concerns of the proposed project. In a letter dated September 4, 2009, Charles F. Wood, Chairman of the Chemehuevi Indian Tribe, requested notification if Native American artifacts are found and further recommended contacting the San Manuel Band and other tribes in the immediate area.

Based on the results of information collected, it is anticipated that there is a low potential of affecting archaeological resources within the proposed project area; however, because the proposed project site has only been partially disturbed by past

road grading work, there is a potential to unearth cultural resources resulting in a significant impact to archaeological resources. If potential archaeological resources are unearthed during construction, then the Contractor will stop work in the vicinity of the find until a qualified archaeologist records and evaluates the resources found.

2.5.1.3 Paleontological Resources

Paleontological Setting

According to the City of Hesperia's Conservation Element, "The City has potential for paleontological finds. Finds are typically fossils and could be human and animal bones, shells, casts, and tracks. The area once potentially contained extinct animals such as the mammoth, a large camel, an extinct llama, and an extinct horse. Potential exists in areas containing older alluvial deposits. There are no known paleontological resources identified within the project area, and the sediments that could potentially support fossil preservation is lacking" (City of Hesperia, 2010b: CN-35).

According to research conducted in the San Bernardino County Museum, Hesperia is known to contain fossil remains within geologic formations known as the Crowder Formation, the Phelan Peak Formation, the Shoemaker Gravels, and Noble's older alluvium. Based on the records search that was conducted for a nearby project, several fossil remains have been recorded within the City limits, including a Mastodon tooth that was recorded near the project area (SWCA, 2007).

As mapped by Morton and Miller (2006), the project site is underlain by recent alluvial fan and wash deposits (Qyf_3 and Qyw_2) of late and middle Holocene age. The Holocene age alluvium and wash deposits consist of modern sediments derived from the Mojave River drainage and they are not fossil bearing; therefore, they are assigned a low paleontological sensitivity rating.

According to the preliminary geotechnical report prepared for this project (Kleinfelder, 2009), approximately 3 to 4 ft of fill soils were observed in all the borings taken from the project site. In one boring (B-7), 7 ft of fill was encountered. Most of the fill soils were likely generated during construction of Ranchero Road. Below this depth is a mixture of native soils, including loose to very dense sand, sand with silt, and silty sand with trace gravel.

Paleontological Resources within the Study Area

Based on results of other relevant studies for the project area, most of the project site is underlain with materials that have a low potential for containing paleontological resources. Field borings have determined that most of the site contains at least 3 ft of

fill material. In areas of the site where these conditions exist, there would be no impact to paleontological resources; however, for areas of the site requiring deep excavations (greater than 3 ft) into Pleistocene-age deposits, there is the potential for significant impacts without proper mitigation.

2.5.1.4 Human Remains

Human Remains Setting

Based on the review of the 1902 USGS topographic map, it does not appear that any formal cemeteries are located within the proposed project area. In addition, Native American tribes, including Chemehuevi, Fort Mojave, Morongo, San Fernando, San Manuel, and Serrano tribes, were contacted about the project. Charles F. Wood, Chairman of the Chemehuevi Indian Tribe, requested notification if human remains are found. A records search was also completed and indicated a low probability of encountering human remains including Native American grave sites.

Human Remains within the Study Area

Based on the information discussed above, it is anticipated that there is a low probability to disturb any human remains. Most of the study area has been disturbed and is covered with several feet of fill material; nevertheless, there is a possibility for encountering human remains, resulting in a potentially significant impact. The City will incorporate a work stoppage measure, as described in CR-2, to ensure that potential project impacts remain less than significant.

2.5.2 Regulatory Setting

This report was prepared to comply with requirements of CEQA and the *State CEQA Guidelines* (Office of Planning and Research, 2010) as they apply to cultural resources. Under CEQA, it is necessary for a lead agency to evaluate proposed projects for the potential to cause significant effects on "historical resources." Historical resources are defined in California PRC §21084.1 as:

> …a resource listed in, or determined eligible for listing in, the California Register of Historical Resources. Historical resources included in a local register of historical resources..., or deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1, [is] … presumed to be historically or culturally significant for purposes of this section, unless the preponderance of the evidence demonstrates that the resource is not historically or culturally significant.

CEQA equates a "substantial adverse change" in the significance of a historical resource with a significant effect on the environment (PRC §21084.1). Thresholds of substantial adverse change are established in PRC §5020.1 as demolition, destruction, relocation, or "alteration activities that would impair the significance of the historic resource."

If a proposed project could be expected to cause a substantial adverse change in a historical resource, then environmental clearance for the project would require the evaluation of alternatives and/or implementation of mitigation measures to reduce or avoid impacts. If a project is expected to result in an effect on historical resources, then CEQA Guidelines require analysis of a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project and avoid or substantially lessen any significant effects on the historical resource. If the proposed project would result in impacts that would adversely affect the values of an archaeological resource that is either listed in or determined eligible for inclusion in the California or National Registers, then such impacts would be considered significant.

2.5.2.1 City of Hesperia

Relevant policies from the City of Hesperia's Conservation Element (2010) include:

- CN-5: The City shall establish policies and procedures in compliance with state and federal laws and regulations to identify and properly protect found historical, cultural and paleontological artifacts and resources.
- CN-5.1: Encourage the preservation of historical, paleontological, and cultural resources.
- CN-5.2: In those areas where surveys and records indicate historical, cultural, or paleontological resources may be found, undertake appropriate surveys and record searches to determine the presence of such resources, if any.
- CN-5.3: Inventory and evaluate all historical, paleontological, and cultural resources discovered according to CEQA regulations and the California Office of Historic Preservation.
- CN-5.4: Coordinate with the Archeological Information Center at the San Bernardino County Museum in reviewing potential records and in preserving such artifacts as may be found.
- CN-5.5: Through CEQA and other environmental procedures, notify appropriate Native American representatives of possible development and comply with all

state and federal requirements concerning the monitoring and preservation of Native American artifacts and places.

The assessment of impacts to cultural resources has been conducted in accordance with the City goals and policies listed above. Project avoidance and minimization measures will help preserve the historical, paleontological, and cultural resources located along the project corridor, if found. Appropriate surveys and record searches have been conducted to determine the presence of known and foreseeable resources that might be impacted by the project. As part of the cultural resources technical study, the project team has coordinated with the San Bernardino County Museum's Archaeological Information Center. Finally, consistent with CEQA guidelines, Native American representatives have been contacted and informed of the project as part of the project's Notice of Preparation (NOP) process.

2.5.2.2 San Bernardino County

Relevant policies from San Bernardino County's Conservation Element (2007) include:

- CO-3.1: Identify and protect important archaeological and historic cultural resources in areas of the County that have been determined to have known cultural resource sensitivity.
  - CO-3.1.1: Require a cultural resources field survey and evaluation prepared by a qualified professional for projects located within the mapped Cultural Resource Overlay area.
  - CO-3.1.2: Mitigation of impacts to important cultural resources will follow the standards established in Appendix K of the CEQA Guidelines, as amended to date.
- CO-3.2: Identify and protect important archaeological and historic cultural resources in all lands that involve disturbance of previously undisturbed ground.
- CO-3.4: The County will comply with Government Code Section 65352.2 (SB 18) by consulting with tribes as identified by the California Native American Heritage Commission (NAHC) on all General Plan and specific plan actions.
  - CO-3.4.4: In areas of potential but unknown sensitivity, field surveys prior to grading will be required to establish the need for paleontological monitoring.
- CO-3.5: Ensure that important cultural resources are avoided or minimized to protect Native American beliefs and traditions.

- CO-3.5.1: Consistent with SB 18, as well as possible mitigation measures identified through the CEQA process, the County will work and consult with local tribes to identify, protect and preserve "traditional cultural properties" (TCPs). TCPs include manmade sites and resources, as well as natural landscapes that contribute to the cultural significance of areas.
- CO-3.5.3: The County will work in good faith with the local tribes, developers/applicants, and other parties if the local affected tribes request the return of certain Native American artifacts from private development projects. The developer is expected to act in good faith when considering the local tribe's request for artifacts. Artifacts not desired by the local tribe will be placed in a qualified repository as established by the California State Historical Resources Commission. If no facility is available, then all artifacts will be donated to the local tribe.
- CO-3.5.5: Because contemporary Native Americans have expressed concern over the handling of the remains of their ancestors, particularly with respect to archaeological sites containing human burials or cremations, artifacts of ceremonial or spiritual significance, and rock art, the following actions will be taken when decisions are made regarding the disposition of archaeological sites that are the result of prehistoric or historic Native American cultural activity:
  - The NAHC and local reservation, museum, and other concerned Native American leaders will be notified in writing of any proposed evaluation or mitigation activities that involve excavation of Native American archaeological sites, and their comments and concerns solicited.
  - The concerns of the Native American community will be fully considered in the planning process.
  - If human remains are encountered during grading and other construction excavation, work in the immediate vicinity will cease and the County Coroner will be contacted pursuant to the state Health and Safety Code.
  - In the event that Native American cultural resources are discovered during project development and/or construction, all work in the immediate vicinity of the find will cease and a qualified archaeologist meeting U.S. Secretary of Interior standards will be hired to assess the find. Work on the overall project may continue during this assessment period.
  - If Native American cultural resources are discovered, the County will contact the local tribe. If requested by the tribe, the County will, in good faith, consult on the discovery and its disposition with the tribe.

Aligned with County Policy CO-3.1.1, a cultural resources field study was conducted for the project in an effort to identify and protect important archaeological and historic cultural resources within the proposed project's vicinity. Furthermore, potential impacts to Native American TCPs have been minimized through early coordination with tribal representatives. Although not anticipated, if cultural resources are discovered on County parcels, the guidelines presented in CO-3.5.5 above will be adhered to.

2.5.3 Criteria for Determining Significance

2.5.3.1 CEQA Guidelines

The following evaluation criteria for cultural impacts are drawn from Appendix G of the CEQA guidelines. The proposed project would result in a significant impact to cultural resources if it:

a) Causes a substantial adverse change in the significance of a historical resources as defined in §15064.5.
b) Causes a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
c) Directly or indirectly destroys a unique paleontological resource or site or unique geologic feature.
d) Disturbs any human remains, including those interred outside of formal cemeteries.

2.5.3.2 Archaeological and Built-Environment Resources

California Register of Historical Resources

For a property to be eligible for listing in the California Register of Historical Resources,[1] it must be found by the State Historical Resources Commission, or as a result of a historic resource survey, to be significant under one of four criteria and must retain sufficient integrity to impart its significance.

National Register of Historic Places

The National Register is the nation's official list of districts, sites, buildings, structures, and objects worthy of preservation. Overseen by the National Park Service (NPS), under the Department of the Interior, the National Register was authorized under the National Historic Preservation Act of 1966, as amended. Its listings

[1] PRC §5024.1 and 5024.1 (g).

encompass all National Historic Landmarks, as well as historic areas administered by NPS.

For a property to be listed in or determined eligible for listing in the National Register, it must be demonstrated to possess "the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association." Properties completed less than 50 years ago must be "exceptionally important" (criteria consideration G) to be considered eligible for listing.

Paleontological Resources

Paleontological resources are nonrenewable scientific and educational resources. PRC § 5097.5 and Appendix G (Environmental Checklist Form) of the CEQA Guidelines prohibit the removal or destruction of vertebrate paleontological sites or any other paleontological feature situated on public lands without prior approval of the public agency in control of those lands.

2.5.4 Construction Impacts

2.5.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction-related impacts to cultural resources would occur.

2.5.4.2 Build Alternative

Construction activities, including associated staging areas, are not anticipated to produce impacts to cultural resources. The California Aqueduct and the bridge structure along Ranchero Road were recently identified as potentially eligible for listing as a historic resource on the National Register of Historic Places by Caltrans. However, construction of the proposed project would avoid construction-related activities within the California Aqueduct, including construction on the Ranchero Road Bridge, spanning over the California Aqueduct. The transport of construction equipment across the Ranchero Road Bridge will not exceed the 66.2 metric ton operating load capacity of the existing bridge structure as determined by the Caltrans Division of Maintenance; therefore, no impacts to the bridge structure are anticipated as a result of constructing the Build Alternative.

Though the record search and archaeological survey failed to indicate the presence of known buried archaeological and cultural resources, construction monitoring would

minimize potential effects to buried cultural resources in the unlikely event cultural resources are encountered during construction activities. During excavation activities, undocumented and unknown cultural materials might be uncovered. In this event, minimization measures will be implemented to ensure impacts to cultural resources are minimized.

2.5.5 Permanent Impacts

2.5.5.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no permanent impacts to cultural resources would occur.

2.5.5.2 Build Alternative

No impacts are expected during operation of the proposed project on historical, archaeological, or paleontological resources. The California Aqueduct is the only eligible historic property/historical resource located within the project corridor; however, there would be no construction activities within this historical resource. No other historical resources were identified, and the project would have no impact on historical resources. Additionally, no human remains are expected to be affected by the project.

Potential Impacts to Historical Resources

The cultural study conducted for the proposed project identified four post-World War II-era single-family residences recorded within the Project area, but none of them qualifies as a "historical resource," as defined by CEQA. The California Aqueduct was recently identified as potentially eligible for listing as a historical resource by Caltrans; however, construction of the proposed project and its operation would not affect this resource. Ranchero Road, along the aqueduct bridge, would remain a two-lane facility; however, the proposed project would widen Ranchero Road at each end of the bridge to four lanes. It is anticipated that traffic congestion along the bridge would worsen compared to the widened portion of Ranchero Road because of the reduced traffic-carrying capacity.

No other potential "historical resources" were identified within or immediately adjacent to the project boundaries during the course of this study. Based on the results of the present study, the proposed project would not cause a substantial adverse change to any known historical resources as defined by CEQA, and no further

cultural resources study is recommended unless project plans change to include any additional areas not covered by this study (ECORP, 2011a).

Potential Impacts to Archaeological Resources (including human remains)

The results of the records search and field survey indicate that the archaeological sensitivity of the project area is low; however, if any archaeological materials are encountered during ground-disturbing construction activities, all activities must be suspended in the vicinity of the find until the deposits or features are recorded and evaluated by a qualified archaeologist. If determined eligible for the California Register by the City, based on the evaluation by the archaeologist, ground-disturbing construction activities cannot recommence until mitigation measures have been implemented.

The NAHC conducted a SLF search within the study area, and Native American cultural resources were not identified in the area specified (June 2012). If human remains of any kind are found during construction, the requirements of CEQA Guidelines Section 15064.5(e) and Assembly Bill (AB) 2641 shall be followed (ECORP, 2011a).

Potential Impacts to Paleontological Resources

As mapped by Morton and Miller (2006), the project site is underlain by recent alluvial fan and wash deposits (Qyf_3 and Qyw_2) of late and middle Holocene age. The Holocene age alluvium and wash deposits consist of modern sediments derived from the Mojave River drainage and they are not fossil bearing; therefore, they are assigned a low paleontological sensitivity rating. Field borings have determined that most of the site contains at least 3 ft of fill material. In areas of the site where these conditions exist, there would be no impact to paleontological resources; however, for areas of the site requiring deep excavations (greater than 3 ft) into Pleistocene-age deposits, there is the potential for significant impacts without proper mitigation.

2.5.6 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required for built-environment resources; however, the following minimization measures are recommended to reduce potential project impacts to historical, archaeological, and paleontological cultural resources. Implementation of the prescribed minimization measures will reduce impacts to a level of less than significant.

- **CR-1:** If any archaeological materials are encountered during ground-disturbing construction activities, all activities must be suspended in the vicinity of the find until the deposits or features are recorded and evaluated by a qualified archaeologist. If determined eligible for the California Register by the City, based on the evaluation by the archaeologist, ground-disturbing construction activities cannot recommence until mitigation measures have been implemented.
- **CR-2:** If human remains of any kind are found during construction, the requirements of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 shall be followed. According to these requirements, all construction activities must cease immediately, and the San Bernardino County Coroner and a qualified archaeologist must be notified. The Coroner will examine the remains and determine the next appropriate action based on his/her findings. If the Coroner determines the remains to be of Native American origin, he/she will notify the NAHC. The NAHC will then identify the most likely descendants (MLD) to be consulted regarding treatment and/or reburial of the remains. If an MLD cannot be identified, or the MLD fails to make a recommendation regarding the treatment of the remains within 48 hours after gaining access to the remains, the project proponent shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.
- **PALEO-1:** Prior to the start of any project-related construction, the City shall ensure that a designated paleontological resource specialist is available for field activities and prepared to implement the mitigation monitoring and reporting plan (MMRP) conditions. The designated paleontological resource specialist will be responsible for implementing all paleontological mitigation and for using qualified personnel to assist in this work.
- **PALEO-2:** Prior to the start of construction, a Paleontological Resource Monitoring and Mitigation Plan drafted by the designated paleontological resource specialist will be submitted to the City for approval. The plan will identify general and specific measures to minimize potential impacts to sensitive paleontological resources. The project paleontological resource specialist will implement the Paleontological Resource Monitoring and Mitigation Plan as needed. The Paleontological Resource Monitoring and Mitigation Plan will include, but not be limited to, the following components:
  - A discussion of the sequence of project-related tasks, such as any preconstruction surveys, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and recovery,

identification and inventory, preparation of final report, and transmittal for curation;

- Identification of the person(s) expected to assist with each of the tasks identified within this condition, and a discussion of the mitigation team leadership and organizational structure, and the interrelationship of tasks and responsibilities;
- Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;
- An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined;
- A discussion of the equipment and supplies necessary for the recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum that meets the Society for Vertebrate Paleontology standards and requirements for the curation of paleontological resources; and
- Identification of the institution (expected to be the San Bernardino County Museum) that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements of specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.

- **PALEO-3:** Prior to the start of construction, the designated paleontological resource specialist will prepare a staff training program for review and approval by the City and/or County. The paleontological resource specialist will conduct a training session for the project owner, project managers, construction supervisors, equipment operators, and all new employees as appropriate. The training program will address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.
- **PALEO-4:** During construction, the designated paleontological resource specialist or paleontological monitor will be present at all times he/she deems appropriate to monitor construction-related grading, excavation, trenching, and/or

augering in areas with a high potential for paleontological resources to occur. Paleontological monitoring will include inspection of exposed rock units and microscopic examination of matrix to determine if fossils are present. Upon the advice of the paleontological monitor, the Construction Manager will have the authority to temporarily divert excavations or drilling away from exposed fossils to efficiently and professionally recover the fossil specimens and collect associated data.

- **PALEO-5:** The City and/or County, through the designated paleontological resource specialist, will ensure recovery, preparation for analysis, analysis, identification and inventory, preparation for curation, and delivery for curation of all significant paleontological resource materials collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.
- **PALEO-6:** The City will ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist following the analysis of any recovered fossil materials and related information. The Paleontological Resources Report will be submitted to the City for approval. The report will include a description and inventory list of recovered fossil materials, a (confidential) map showing the location of paleontological resources found in the field, determinations of sensitivity and significance, and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

2.6 Geology and Soils

This section addresses potential impacts to geology and soils within the project area that could result from implementation of the proposed project. The information indicated below is based on the Geotechnical Design Report completed for the proposed project (Kleinfelder, 2010).

2.6.1 Environmental Setting

The existing Ranchero Road consists of a two-lane asphalt paved roadway within the project limits. UPRR tracks cross over Ranchero Road in the western portion of the alignment. There is an existing single-span bridge along Ranchero Road consisting of two traffic lanes that cross over the California Aqueduct in the eastern portion of the alignment. Several cross streets, residential buildings and commercial properties are located on either side of Ranchero Road along the entire project alignment. There is an existing school building to the north of Ranchero Road between Christina Road and Coyote Trail.

2.6.1.1 Regional Geology

The project site is located within the western Mojave Desert, which is part of the greater Mojave Desert Geomorphic Province, a broad interior region of isolated mountain ranges separated by desert expanses. The western Mojave is a wedge-shaped area bordered on the southwest by the San Gabriel and San Bernardino mountains and on the northwest by the Tehachapi Mountains. These surrounding mountains range up to 10,080 and 7,900 ft in altitude, respectively, while the interior desert has relatively low relief. The only major drainage channel within the desert region is the Mojave River, which is an intermittent river that flows from the San Bernardino Mountains northward, then eastward to its termination at Soda Lake near Baker, California.

The structural geology and fault patterns within the western Mojave Desert are relatively uniform and internally consistent, and they are comprised of a series of northwest-southeast trending faults, in contrast to the fault patterns north and south of the province. Major faults in the area include the San Andreas and Garlock fault zones to the southwest and northwest, respectively, the northwest-trending Helendale, Lockhart, and Lenwood faults to the northeast, and the North Frontal fault zone to the southeast. Lithologically, the region is characterized by alluvial-filled basins overlying Paleozoic and Mesozoic igneous and metamorphic basement rocks. The basement rocks are exposed at the surface in isolated mountain ranges throughout the desert.

Locally, the project site is located on the Victorville fan, which is a broad older alluvial fan that was formed by deposition of fluvial sediments and debris flows formed along the northern front of the San Gabriel Mountains. This alluvial fan coalesces with other fans along the mountain front and locally has been incised by Oro Grande Wash adjacent to the site and Manzanita Wash farther to the west. The head of the Victorville fan near the Cajon Pass has been eroded by streams that drain southeast-south and have captured stream flow from the mountains; Oro Grande Wash no longer receives mountain runoff. The thickness of alluvial fan deposits and depth to bedrock beneath the site is estimated to be approximately 3,000 ft.

2.6.1.2 Soil Survey Mapping and Soil Conditions

The project site is underlain by one soil type as described by the USDA Soil Conservation Service. This soil type is Hesperia loamy fine sand of the regional Hesperia-Lucerne association. The soil is described as having formed in alluvium derived from granitic rock.

Based on soil borings completed as part of the project's geotechnical review, subsurface soil conditions generally consist of approximately 3 to 4 ft of artificial fill soils underlain by native alluvial soils deposits. Most of the fill soils likely were generated during roadway construction because they are similar in composition to the alluvial fan deposits.

2.6.1.3 Regional Faulting and Seismicity

The project site is in the highly seismic southern California region within the influence of several fault systems that are considered active or potentially active. The geology and fault patterns within the western Mojave Desert are generally comprised of a series of northwest-southeast trending faults. An active fault is defined as a fault that has exhibited movement within Holocene time (the last 11,000 years). A potentially active fault is defined as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago). These active and potentially active faults could produce seismic shaking at the site. The project site is expected to experience moderate to high ground acceleration as a result of moderate to large magnitude earthquakes. The most significant geologic hazard to the project is the potential for moderate to severe seismic shaking, which is likely to occur during the design life of the proposed project.

The project site is located within the influence of several sufficiently active and well-defined fault systems that are capable of producing damaging seismic shaking along the project alignment. It is anticipated that the project site will periodically experience

ground acceleration as a result of moderate to large magnitude earthquakes. The Cleghorn-North Frontal Fault, which is located closest to the site, is considered to have the greatest potential impact on the site due to anticipated peak ground accelerations during a maximum credible earthquake event. Characteristics of regional faults are summarized in Table 2.6-1.

Table 2.6-1 Regional Fault Characteristics

Fault Name	Fault Length (kilometers)	Approximate Distance to Site (kilometers)	Magnitude of Maximum Earthquake*	Slip Rate (millimeters per year)	Recurrence Interval (years)
North Frontal Fault Zone – Western	51	7.8	7.2	1.0	1,314
Cleghorn	25	17	6.5	3.0	216
Helendale – S. Lockhart	97	23	7.3	0.6	5,000
San Andreas – all Southern Segments	510	15	8.1	24-34	704
San Andreas – San Bernardino	107	15	7.5	24.0	433
San Andreas 1857	345	16	7.8	34.0	206
San Andreas – Mohave	103	16	7.4	30.0	549
San Jacinto – San Bernardino	40	30	6.7	12.0	100
Cucamonga	28	30	6.9	5.0	650
North Frontal Fault Zone – Eastern	27	46	6.7	0.5	1,724
San Jacinto – San Jacinto Valley	20	47	6.9	12.0	83
Lakewood – Lockhart – Old Woman Springs	145	47	7.5	0.6	5,000
Sierra Madre	57	50	7.2	2.0	384

* Moment Magnitude is an estimate of an earthquake's size by utilizing rock rigidity, amount of slip, and area of rupture.

Source: Kleinfelder, 2009.

According to the City of Hesperia's 2010 General Plan, faults identified as either active or potentially active by the State have not been identified within the project corridor. The closest zoned faults include the North Frontal Fault approximately 2 miles east of Hesperia, and the San Andreas Fault, which is located at its closest approximately 4 miles to the southwest

In addition to the known faults, recent research indicates that "blind faults" (i.e., faults that apparently have not broken the surface and display little or no surface expression) may underlie the Los Angeles Basin and adjacent areas to the west. With the current understanding of the regional tectonic setting, blind faulting is not believed to be present.

Wind Erosion

Erosion of soils by winds is a pervasive issue throughout much of San Bernardino County, especially during Santa Ana wind periods, posing hazards to health and property by increasing the chances of fire and disrupting transportation and utility services (San Bernardino County, 2007). The dry surface sediments and soils are easily displaced by these strong winds, often causing soil erosion that contributes to losses of top-soil and impacts to air quality and visibility within the region. Because much of this erosion is due in part to human causes, the County has instituted erosion policies to prevent irresponsible grading, use of off-road vehicles, and other indiscriminate disruption of fragile ecological surfaces. This information is covered further in Section 2.6.2, Regulatory Setting.

2.6.1.4 Secondary Seismic Hazard Conditions

Secondary seismic effects include liquefaction, earthquake-induced settlements, lateral spreading, and slope instability.

Liquefaction

Liquefaction is a process whereby water-saturated materials, including soil, sediment, and certain types of volcanic deposits, lose strength and may fail during strong ground shaking. Liquefaction is defined as "The transformation of loose water-saturated granular material, such as sand or silt, from a solid state into a liquid state. A type of ground failure that can occur during an earthquake" (San Bernardino County 2007). Areas of liquefaction susceptibility within the County are illustrated in the Liquefaction Hazard Overlay map, as described later in this section. According to this map, the portion of Ranchero Road within County boundaries is not identified as being a zone of suspected liquefaction susceptibility.

Earthquake-Induced Settlement and Lateral Spreading

Settlement and spreading can occur along the project corridor when the ground surface is offset along a rupturing fault during an earthquake event. According to the City of Hesperia General Plan, to avoid these potential hazards, "critical facilities should not be placed across the trace of any faults without first conducting site-specific studies to evaluate the location and activity of the fault in question" (City of Hesperia, 2010b: SF-6-7).

Slope Instability

According to the San Bernardino County General Plan, the County has many locations that comprise a portion of the Transverse Ranges. They are characterized by steep slopes, sharp narrow ridges, steep-walled incised canyons, valleys, and major faults. This setting can produce numerous landslides and mudslides, especially when combined with other adverse geologic conditions and heavy precipitation (San Bernardino County 2007: VIII-3-4); however, the proposed project corridor does not fall near any of those areas identified as critical zones of concern.

Collapse Potential

Collapse potential tests were performed on four soil samples selected from various depths below the existing ground surface. These tests indicate collapse potential ranging from 0.9 to 2.9 percent at applied vertical stress of 2,000 pounds per square ft (psf). Based on the test results, the soils along the alignment have "moderate" collapse potential.

2.6.2 Regulatory Setting

2.6.2.1 City of Hesperia

The City of Hesperia's 2010 General Plan includes several policy directives related to geology, soils, seismicity, and secondary effects.

- SF-1: Goal – Minimize injury, loss of life, property damage, and economic and social disruption caused by seismic shaking and other earthquake-induced hazards, and by geologic hazards such as slope instability, compressible and collapsible soils, and subsidence.
  - SF-1.3: City Staff or City representatives will conduct routine inspection of grading operations to ensure site safety and compliance with approved plans and specifications.

2.6.2.2 San Bernardino County

The San Bernardino County General Plan includes policies and mitigation to reduce or minimize the effects associated with ground shaking on residents and habitable structures. Policies may be applied to roadway projects, as provided below:

- Goal S-7: The County will minimize exposure to hazards and structural damage from geologic and seismic conditions.
- S-7.1: Policy – Strive to mitigate the risks from geologic hazards through a combination of engineering, construction, land use, and development standards.
- S-7.1.2: Require sites to be developed and all structures designed in accordance with recommendations contained in any required geotechnical or geologic reports, through conditioning, construction plans, and field inspections.
- S-7.1.3: Require that all recommended mitigation measures be clearly indicated on all grading and construction plans.
- S-7.1.4: Require all facilities to meet appropriate geologic hazard specifications as determined by the County Geologist for discretionary and ministerial authorizations.
- S-7.1.5: Because of the potential for displacement along faults not classified as active, the County will reserve the right to require site-specific geotechnical analysis and mitigation for development located contiguous to potentially active faults, if deemed necessary by the County Geologist.
- S-7.4: Policy – Designate areas identified by the Alquist-Priolo Earthquake Fault Zoning Act (PRC, Division 2, Chapter 7.5) on the Hazard Overlay Maps to protect occupants and structures from high level of risk caused by ground rupture during earthquake.
- S-7.4.5: Plan transportation facilities (i.e., roads, freeways, rail, rapid transit) and utility systems to cross active fault traces a minimum number of times and to be designed to accommodate fault displacement without major damage that would cause long-term and unacceptable disruption of service. Utility lines will be equipped with such mechanisms as flexible units, valving, redundant lines, or auto valves to shut off flows in the event of fault rupture.
- S-7.5: Policy – Minimize damage cause by liquefaction, which can cause devastating structural damage and a high potential for saturation exists when the groundwater level is within the upper 50 ft of alluvial material.
- S-7.5.3: Evaluate potential areas of liquefaction susceptibility that are not currently identified on the Geologic Hazard Overlay. Add areas to the Geologic Hazard Overlay based on the evaluation of susceptibility.

2.6.3 Criteria for Determining Significance

The following evaluation criteria for impacts to geology and soils are drawn from Appendix G of the CEQA Guidelines. The proposed project would result in a significant impact to geology and soils if it:

a) Exposes people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42).
   ii. Strong seismic ground shaking.
   iii. Seismic-related ground failure, including liquefaction.
   iv. Landslides.
b) Results in substantial soil erosion or the loss of top-soil.
c) Is 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.
d) Is located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
e) Has 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.

2.6.4 Construction Impacts

2.6.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction-related impacts to geology, soils, seismic, and topography would occur.

2.6.4.2 Build Alternative

Significant impacts resulting from liquefaction, settlement, and expansion are not expected to result from project construction because the proposed project involves widening and realignment of an existing roadway and does not include construction of any structures or substantial excavation or trenching. Furthermore, as described in the geotechnical report, the potential for fault rupture, liquefaction, and landslides is considered low within the study area. The proposed project would involve clearing

and grubbing and grading, which might have minor temporary impacts. Construction activities could result in increased wind and soil erosion; however, in accordance with the statewide General Permit for Storm Water Discharges Associated with Construction, the project would incorporate all applicable construction site BMPs to minimize potential loss of top-soil and/or soil erosion.

Implementation of construction BMPs overseen by a State-licensed professional, in compliance with aforementioned County standards, would reduce potential soil erosion impacts to a less than significant level and is not expected to increase risk or result in hazards associated with slope instability.

2.6.5 Permanent Impacts

2.6.5.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no permanent impacts to geology, soils, seismic, and topography would occur.

2.6.5.2 Build Alternative

Seismic

The proposed project alignment is not located within a State of California designated Earthquake Fault Rupture Zone. The potential for future surface fault rupture along the alignment is considered low. The project would incorporate all geotechnical study recommendations into the project design, as applicable, and it would be constructed with professional oversight to meet all applicable federal, state, and City seismic design criteria.

Most of the project alignment is generally underlain by medium dense to very dense silty sand and sand with trace gravel. Groundwater was not encountered in the borings drilled to a maximum depth of 31.5 ft below the existing ground surface during our site investigation. Our research and experience in the vicinity of the project alignment indicate that the groundwater levels in the vicinity of the alignment are greater than 50 ft below the existing ground surface. Due to the relative density of the soils encountered and lack of groundwater within the upper 50 ft, the project alignment has a “low” liquefaction potential.

Given these considerations, no significant adverse effects associated with strong ground motion, including seismic-related ground failure or landslides, are anticipated.

Soil Erosion and Top-soil Loss

The proposed project would not result in substantial erosion or associated loss of top-soil.

Soil Instability

Based on soil boring and laboratory test data, onsite soils at the project site have a moderate potential for collapse. Construction recommendations, including overexcavation and recompaction, would minimize any potential effects associated with unstable soils. It is not anticipated that groundwater would be encountered during construction of the proposed project. Due to the relative density of the soils encountered and the depth to groundwater, the project has a low liquefaction potential. The proposed project would not cause soils to become unstable.

Expansive Soil

Based on preliminary field investigation and laboratory testing data, soil materials within the upper portions of the project alignment have a very low potential for expansion; however, if expansive soils are encountered during grading activities, then blending of the potentially expansive soils with onsite nonexpansive soils would occur to stabilize the soil. The potential for expansive soils within the project area would not result in substantial risks to life or property.

Waste Water Disposal Considerations

Being a roadway project, improvements to Ranchero Road would not require any hookups to sewer lines or septic systems. There would be no wastewater discharges associated with any required relocation of sewer lines. During construction, the Contractor would maintain portable toilets onsite for use by construction personnel.

2.6.6 Avoidance, Minimization, and/or Mitigation Measures

The following measures would apply to the proposed project to minimize potential impacts:

- **GEO-1**: In accordance with the statewide General Permit for Storm Water Discharges Associated with Construction, the project would incorporate all applicable construction site BMPs to minimize potential loss of top-soil and/or soil erosion.
- **GEO-2**: Implementation of construction BMPs overseen by a State-licensed professional, in compliance with aforementioned County standards, would reduce potential soil erosion impacts to a less than significant level.

2.7 Greenhouse Gas Emissions

According to *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), an individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (see CEQA Guidelines Sections 15064(i)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task. Therefore, the discussion in this section will be limited to a qualitative level of analysis of potential greenhouse gas emissions.

2.7.1 Environmental Setting

Climate change is defined by the City of Hesperia's 2010 General Plan Update as a change in the average weather of the earth as measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC predicted that global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2007).

In California, climate change may result in consequences such as the following (CCCC, 2006; Moser, 2009):

- A reduction in the quality and supply of water to the State from the Sierra snowpack. If heat-trapping emissions continue unabated, more precipitation will

fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.

- Increased risk of large wildfires. If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st Century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to O_3 formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range.
- A rise in sea levels resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen approximately 7 inches. If heat-trapping emissions continue unabated and temperatures rise into the higher anticipated warming range, the sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- Damage to marine ecosystems and the natural environment.
- An increase in infections, disease, asthma, and other health-related problems.
- A decrease in the health and productivity of California's forests.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide (CO_2), methane, NO_X, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, O_3, and aerosols. Natural processes and human

activities emit GHGs. The presence of GHGs in the atmosphere affects the earth's temperature. Without the natural heat-trapping effect of GHG, the earth's surface would be approximately 34°C cooler (CCCC, 2006); however, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface, while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath, which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The calculation of the CO_2 equivalent is a consistent methodology for comparing GHG emissions because it normalizes various GHG emissions to a consistent metric. Methane's warming potential of 21 indicates that methane has a 21 times greater warming affect than CO_2 on a molecule per molecule basis. A CO_2 equivalent is the mass emissions of an individual GHG multiplied by its global warming potential.

GHGs, as defined by AB 32, include the following gases: CO_2, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexaflouride. GHGs, as defined by AB 32 and sources, are summarized in Table 2.7-1.

Emissions Inventory

GHG inventories consider a wide range of human activities. As mentioned above, estimating the amount of GHGs generated by these activities requires using a multiplicity of data sources and a diverse set of methodologies. Emission inventories are by nature the reflection of the best available data and the most applicable methods at the time of their compilation. As data grows and understanding develops, the inventories are updated and improved.

Table 2.7-1 Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous Oxide (NO_X)	NO_X is also known as laughing gas and is a colorless GHG. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (i.e., natural gas fields). Other sources are landfills, fermentation of manure, decay of organic matter, and cattle.
Carbon Dioxide (CO_2)	CO_2 is an odorless, colorless, natural GHG. CO_2's global warming potential is 1. The concentration in 2005 was 379 ppm, which is an increase of approximately 1.4 ppm per year since 1960. CO_2 from fossil fuels contributed 81 percent of GHG emissions in 2004 in California.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chloro-fluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric O_3. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Hydro-fluorocarbons	Hydrofluorocarbons are a group of GHGs containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Per-fluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays approximately 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	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.

Sources: Compiled from a variety of sources, including CEC 2006 and IPCC 2007.

World

In 2006, total worldwide GHG emissions were estimated to be 22,170 million metric tons of carbon dioxide equivalent ($MTCO_2e$), excluding emissions/removals from land use, land use change, and forestry (UNFCCC, 2006).

California

In 2006, California emitted 483.9 million $MTCO_2e$, with transportation as the largest sector, contributing 39 percent of the emissions (CARB, 2009).

City of Hesperia

As indicated in Table 2.7-2, in a "business as usual" scenario, emissions are anticipated to increase from 2009 levels in 2020 and buildout of the General Plan. A business as usual scenario examines the impact of growth without accounting for the strategies contained within the Climate Action Plan (CAP) or the benefits of state regulations and programs that reduce GHG emissions. With the reductions shown in the City's 2010 CAP, by the year 2020, per capita emissions are reduced at least 29 percent below 2020 business as usual levels.

Table 2.7-2 "Business as Usual" Emissions

Item	Greenhouse Gas Emissions ($MTCO_2e$)		
	2009	2020	Buildout
Transportation: Automobiles, Light-Duty Trucks, Medium-Duty Trucks	199,414	249,365	302,008
Transportation: Heavy-Duty Diesel Trucks	200,392	250,587	303,488
Transportation: Other	7,454	9,321	11,288
Natural Gas	34,507	87,734	136,118
Electricity	135,824	233,019	321,378
Solid Waste	28,394	48,713	67,184
Wood-Burning Fireplaces and Stoves	9,528	16,073	22,023
Refrigerants	23,906	59,836	92,825
Total	639,419	954,648	1,256,312
Population	102,896	176,527	243,465
Per Capita Emissions	6.2	5.4	5.2

Notes:
$MTCO_2e$ represents the carbon dioxide equivalent in metric tons. Reductions at buildout are unknown at this time, and 2009 emissions assume no reductions. For purposes of this analysis, it is assumed that buildout is in 2030, though the City anticipates actual buildout to be much later.

Source: Hesperia Climate Action Plan, 2010c.

2.7.2 Regulatory Setting

2.7.2.1 International and National

International and federal agreements have been enacted to deal with climate change issues. In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

On March 21, 1994, the United States joined many countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change (UNFCCC, 2010).

A particularly notable result of the United Nations Framework Convention on Climate Change efforts is a treaty known as the Kyoto Protocol, which went into effect February 16, 2005. When countries sign the Protocol, they demonstrate their commitment to reduce their emissions of GHGs or engage in emissions trading. More than 170 countries are currently participating in the Protocol. Industrialized countries are required to reduce their GHG emissions by an average of 5 percent below their 1990 levels by 2012. In 1998, United States Vice President Al Gore symbolically signed the Protocol; however, for the Protocol to be formally ratified, the United States Congress must approve it. Congress did not do this during the Clinton Administration. President George W. Bush did not submit the Protocol to the Senate to be ratified based on the exemption granted to China. Current President Barack Obama has not taken action regarding the Protocol because it is about to end.

Massachusetts v. EPA (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that EPA regulate four GHGs, including CO_2, under Section 202(a)(1) of the CAA. A decision was made on April 2, 2007, in which the Supreme Court held that petitioners have a standing to challenge EPA and that EPA has statutory authority to regulate GHG emissions from new motor vehicles.

The Consolidated Appropriations Act of 2008 (HR 2764): Passed in December 2007, this law requires the establishment of mandatory GHG reporting requirements. On

September 22, 2009, EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of GHG emissions from large sources and suppliers in the United States and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to EPA.

On April 17, 2009, EPA issued a proposed finding that GHGs pose a threat to public health and welfare. Scientists around the world base EPA's proposed endangerment finding on rigorous, peer-reviewed scientific analysis of six gases that have been the subject of intensive analysis: CO_2, methane, nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The science clearly shows that concentrations of these gases are at unprecedented levels because of human emissions, and these elevated levels are very likely the cause of the increase in average temperatures and other changes in our climate. These findings were signed by the Administrator on December 7, 2009. On December 15, 2009, the final findings were published in the Federal Register. The final rule was effective January 14, 2010.

Congress first passed the Corporate Average Fuel Economy (CAFE) law in 1975. The purpose of CAFE is to increase the fuel economy of cars and light trucks, thereby reducing energy consumption. The CAFE standards have become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On September 15, 2009, EPA and DOT's National Highway Safety Administration proposed a National Program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States. The combined EPA and National Highway Safety Administration standards that make up this proposed National Program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these proposed standards would cut CO_2 emissions by an estimated 950 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

2.7.2.2 State of California

There has been significant legislative and regulatory activity that affects climate change and GHGs in California, as discussed below.

AB 1493: California AB 1493 (Pavley), enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. The regulation was stalled by automaker lawsuits and by EPA's denial of an implementation waiver. On January 21, 2009, the CARB requested that EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, EPA granted the waiver request, which began with motor vehicles in the 2009 model year.

Executive Order S-3-05: California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S 3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80 percent below 1990 levels (CA 2005)

Executive Order S-13-08: This Executive Order directs the Governor's Office of Planning and Research, in cooperation with the California Resources Agency, to provide land use planning guidance related to sea level rise and other climate change impacts. The order also directs the California Resources Agency to develop a State Climate Adaptation Strategy by June 30, 2009, and to convene an independent panel to complete the first California Sea Level Rise Assessment Report.

SB 375: Passing the Senate on August 30, 2008, Senate Bill (SB) 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires Metropolitan Planning Organizations (MPOs) to include sustainable community strategies in their RTPs for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies. Concerning CEQA, SB 375, Section 21159.28, states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth-inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the CARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

2.7.2.3 City of Hesperia

The City adopted a CAP in 2010 as its primary strategy for ensuring that the buildout of its General Plan would not conflict with the implementation of AB 32.

The purposes of the CAP are as follows:

- Outline a course of action for the City government and the community of Hesperia to reduce per capita GHG emissions 29 percent below business as usual by 2020 and adapt to effects of climate change.
- Provide clear guidance to City staff regarding when and how to implement key provisions of the CAP. The CAP sets out an implementation and monitoring framework for monitoring its strategies.

2.7.3 Criteria for Determining Significance

The following evaluation criteria for GHG emissions are drawn from Appendix G of the CEQA guidelines. The proposed project would result in a significant impact to GHGs if it:

- GHG-1: Generates GHG emissions, either directly or indirectly, that they may have a significant impact on the environment.
- GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

2.7.4 Construction Impacts

2.7.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction-related impacts to GHG emissions would occur.

2.7.4.2 Build Alternative

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of emissions generated by onsite construction equipment, emissions arising from traffic delays that may result from construction, and through vehicle trips generated from construction workers traveling to and from the project site. These emissions are produced at different levels throughout the construction phase. The frequency and occurrence of the temporary impacts for the Build Alternative will be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives and improved transportation management plans, the GHG emissions produced during construction of the proposed project would be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Based on these considerations, the construction phase of the Build Alternative would result in less than significant impacts based on proposed avoidance, minimization, and mitigation measures.

2.7.5 Permanent Impacts

2.7.5.1 No Build Alternative

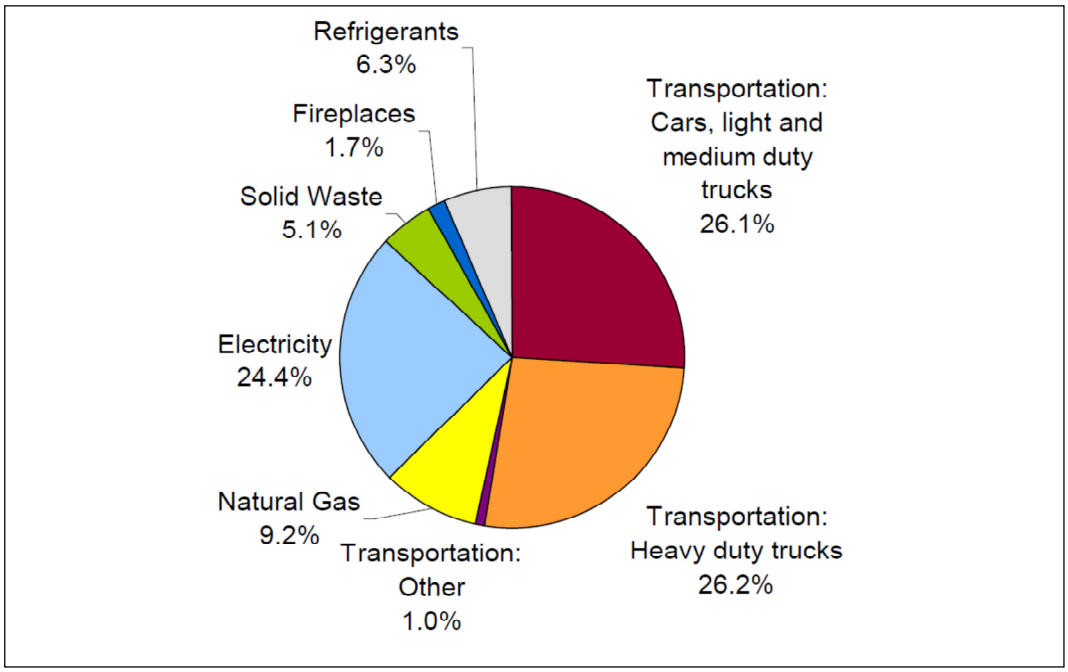
The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no permanent impacts to GHG emissions would occur.

2.7.5.2 Build Alternative

Direct and Indirect Greenhouse Gas Emissions

Operational GHG emissions are associated with vehicle traffic along the roadway within the project corridor. The proposed project is a transportation facility; therefore, GHG emissions would include the direct GHG emissions from vehicle traffic along the proposed project corridor.

One of the main strategies in the City's CAP to reduce GHG emissions is to make Hesperia's transportation and land use systems more efficient. As indicated by Figure 2.7-1, GHGs created by transportation are by far the greatest opportunity for emissions reductions.



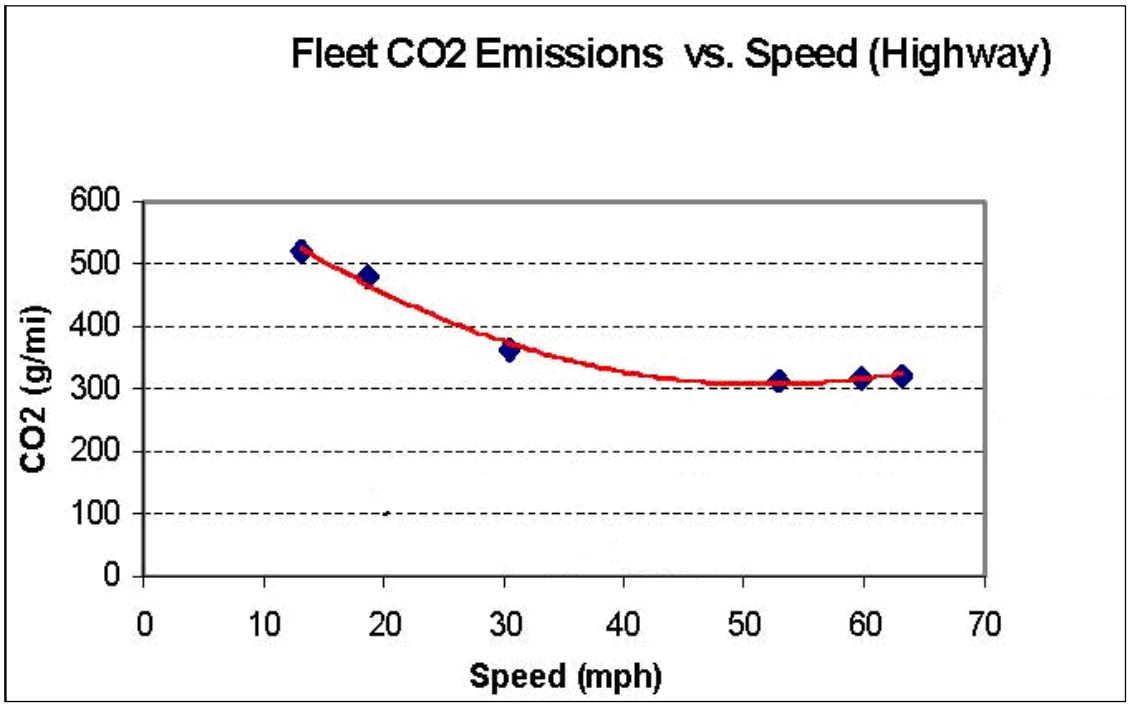
Source: City of Hesperia, 2010c.

Figure 2.7-1 Hesperia Community GHG Business as Usual Emissions

The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 mph) and speeds over 55 mph; the most severe emissions occur from zero to 25 mph (see Figure 2.7-2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

The proposed project is designed to reduce congestion and vehicle time delays along Ranchero Road. A stated project objective is to reduce congestion and improve traffic operations, which is consistent with the objectives of the City's CAP. The Build Alternative is expected to relieve congestion and improve travel times by decreasing the time that vehicles idle at intersections along Ranchero Road. These improvements to traffic and circulation will translate to reduced overall and regional GHG emissions.

The purpose of the proposed project is to reduce traffic delays in the local area; improve mobility by providing direct and dependable access to I-15, which would also improve emergency vehicle response times by eliminating traffic queuing and associated delays; and accommodate existing and planned land uses in Hesperia and the surrounding areas, as defined in their respective General Plans.



Source: Center for Clean Air Policy
http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20(1-13-04).pdf

Figure 2.7-2 Emissions versus Speed

Compliance with Applicable Plans

CEQA guidelines state that a project conforms to applicable state attainment or maintenance plans if the project is consistent with the existing land use plan. The proposed project would entail widening of an arterial roadway. It would not require a change to the City's current General Plan Circulation Element designation, Land Use Plan, or associated zoning, nor would it be expected to cause such changes for parcels along the project corridor.

Hesperia's current Land Use Element dates to 2010, after adoption of MDAQMD's *2008 MDAQMD Federal 8-Hour Ozone Attainment Plan* and *PM_{10} Maintenance Plan and Redesignation Request*. The project is also accurately listed in SCAG's 2011 Federal Transportation Improvement Program (FTIP) and 2012 RTP. For these reasons, the proposed project is deemed consistent with applicable planning, attainment, and maintenance plans based on MDAQMD's criteria for such consistency.

2.7.6 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are necessary.

2.8 Hazards and Hazardous Materials

Hazardous materials are substances that by their nature and reactivity have the capacity for causing harm or health hazards during normal exposure or an accidental release. They are characterized as toxic, corrosive, flammable, reactive, an irritant, or a strong sensitizer. The term "hazardous substances" encompasses chemicals regulated by the DOT's "hazardous materials" regulations and EPA's "hazardous waste" regulations, including emergency response. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment.

Hazardous materials may include pesticides, herbicides, toxic metals, chemicals, volatile chemicals, explosives, and even nuclear fuels or low-level radioactive wastes. In Hesperia, many land uses generate, use, or handle hazardous materials. Small generators of hazardous materials include dry cleaners, automotive repair shops, medical facilities, gas stations, and photo processing centers. Heavy industrial operations can utilize, generate, or store large quantities of hazardous materials.

In 2012, Parsons conducted a Phase I Environmental Site Assessment in accordance with the American Society for Testing and Materials (ASTM) Standard Practice E 1527-05, *Standard Practice for Environmental Site Assessments: Phase I Environmental Assessment Process*. This site assessment included records review, site reconnaissance, file search, and historical records review. The information below includes key findings extracted from this technical study.

2.8.1 Environmental Setting

Available information for the project location and surroundings was collected and evaluated to identify Recognized Environmental Conditions (RECs). According to the ASTM Standard Practice E 1527-05, RECs means "the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property." The term REC includes hazardous substances or petroleum products even under conditions in compliance with applicable laws. The term is not intended to include *de minimis* conditions that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

Based on the definition of a REC in the ASTM Standard Practice E 1527-05, the following RECs have been identified for the project location:

- Aerially deposited lead (ADL) may be present along the shoulders of the project alignment.
- Asbestos-containing materials (ACM) are suspected to be present in bridge joint compound materials along the project alignment.
- Paint used on existing bridges, yellow traffic striping, and pavement marking materials may contain lead-based paint (LBP) or other hazardous materials and may exceed hazardous waste criteria under California Code of Regulations (CCR) Title 22 and require disposal in a Class I disposal site.
- Pole-mounted transformers with polychlorinated biphenyl (PCB)-containing liquids may be present along the project location. The electric utility would be notified of the proposed project, and it is the utility's responsibility to properly manage the pole-mounted transformers if they are to be removed or relocated.
- Herbicides, pesticides, and metals may be present along the railroad ROW. Herbicides and pesticides may also be present at the Oak Hills Nursery (located at 13874 Ranchero Road) and at a peach orchard (located around 13124 Ranchero Road).
- Rail ties and power poles treated with creosote may be present within the project footprint.

2.8.2 Regulatory Setting

Federal and state agencies, as well as local jurisdictions, are responsible for ensuring compliance with regulatory requirements for hazardous waste management. The following laws and regulations pertain to the proposed project.

2.8.2.1 Federal

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The purpose of CERCLA, which is often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA encompasses a "cradle to grave" approach to the management of hazardous wastes. Per the technical study, there are currently no listed RCRA COR ACT sites within the 1-mile search distance from the project location.

2.8.2.2 State of California

The State of California has instituted many policies and regulations to further guide the identification of properties containing hazardous and contaminated substances. Below is a brief summary of each, along with findings conveyed within the project's technical study.

State/Tribal Sites

The Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances, as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. Per the technical study, there are currently no State/Tribal sites within the 1-mile search distance from the project location.

State Spills 90

The California RWQCBs maintain reports of sites that have records of spills, leaks, investigations, and cleanups. Currently, there are no listed State Spills 90 sites within the 0.12-mile search distance from the project location.

State/Tribal Leaking Underground Storage Tanks

The State Water Resources Control Board (SWRCB) maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks (LUSTs). Currently, there are no State/Tribal LUST sites within the 0.5-mile search distance from the project location.

State/Tribal Underground/Aboveground Storage Tanks

The Underground Storage Tanks (REG UST/AST) is a database identifying underground storage tanks (USTs) and aboveground storage tanks (ASTs) in the state of California. This database is maintained by Certified Unified Program Agencies in the state of California.

Currently, there are no State/Tribal UST/AST sites within the 0.25-mile search distance from the project location; however, there is a Chevron station located at the northeast corner of Escondido Avenue and Ranchero Road. This service station has several USTs for all grades of fuel, including unleaded, premium, and diesel. There is also an aboveground pressure tank for propane.

State/Tribal Engineering Controls

The California Environmental Protection Agency's DTSC maintains a list of deed-restricted sites, properties where DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical, or necessary at the site.

Currently, there are no State/Tribal Engineering Controls (EC) sites within the 0.5-mile search distance from the project location.

State/Tribal Institutional Controls

The California Environmental Protection Agency's DTSC maintains a list of deed-restricted sites, properties where DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical, or necessary at the site.

Currently, there are no State/Tribal Institutional Controls (IC) sites within the 0.25-mile search distance from the project location.

State/Tribal Voluntary Cleanup Program

The SMBRPD, also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category includes properties where the VCP is active.

Currently, there are no State/Tribal VCP sites within the 0.5-mile search distance from the project location.

State/Tribal Brownfields

The Brownfield Management System (BMS) is a database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant programs.

Currently, there are no State/Tribal Brownfield sites within the 0.5-mile search distance from the project location.

State Permits

The HE 17/58 database tracks establishment-issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees.

Currently, there was one State Permit site within the 0.25-mile search distance from the project location. Hesperia Water District #19 has been located at 14418 Ranchero Road in Hesperia. The location of this site is indicated in Figure 2.8.1. This site has an inactive permit that was issued by the San Bernardino County Hazardous Materials Division. No violations or enforcement actions have been reported for the permit. Because this facility has had a permit does not constitute this site as an REC for the project location. This site does not constitute an REC for the project location.

State Other

The SMBRPD, also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.

Currently, there are no State Other sites within the 0.25-mile search distance from the project location.

State/Tribal Hazardous Waste Manifest

The California Environmental Protection Agency's DTSC maintains an inventory of hazardous waste manifests. These records are used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

Currently, there is one State/Tribal Hazardous Waste Manifest site within the 0.12-mile search distance from the project location. The Jason Courillo DBA JCM Materials facility is located at 15632 Ranchero Road in Hesperia. This is an active facility with no violations or enforcement actions being reported for the facility. The location of this site is indicated in Figure 2.8-1.

City of Hesperia

Relevant policies from the City of Hesperia's General Plan include:

- Goal SF-4: Reduce the potential for hazardous materials contamination in Hesperia.

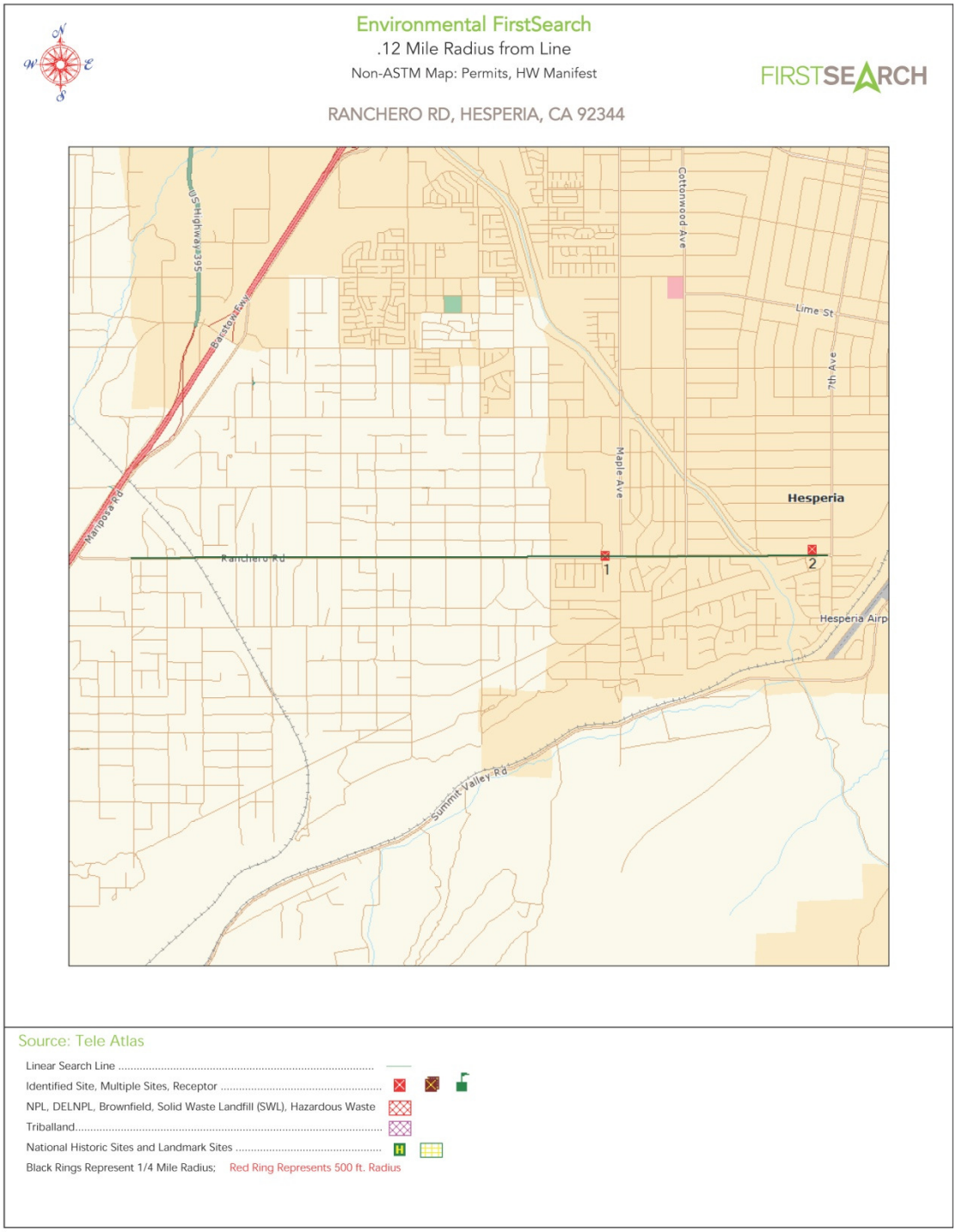


Figure 2.8-1 State/Tribal Hazardous Waste Manifest Sites

2.8.3 Criteria for Determining Significance

The following evaluation criteria for impacts from hazardous materials are drawn from Appendix G of the CEQA Guidelines. The proposed project would be considered to have significant impacts if it:

a) Creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

b) Creates a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c) Emits hazardous emissions or handles hazardous or acutely hazardous materials, substances, or waste within 0.25-mile of an existing or proposed school.

d) Is located on a site identified as a hazardous materials site that would result in creating a significant hazard to the public or the environment.

e) Impairs implementation of or physically interferes with an adopted emergency response plan or emergency evacuation plan.

f) Exposes people or structures to a significant risk of loss, injury, or death involving wildlands fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

2.8.4 Construction Impacts

2.8.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, it would not result in adverse impacts related to hazardous materials and wastes.

2.8.4.2 Build Alternative

There is a potential for encountering hazardous materials or waste at the project's ground-disturbance locations. Aerially-deposited lead may also be present along the shoulders of the project alignment. Pesticide and herbicide residue may remain along the project corridor in the shallow soil in trace concentrations. Potential pesticide and herbicide residue in trace concentrations is not expected to result in significant impacts. Impacts would be less than significant.

Asbestos-containing materials (ACM) are suspected to be present in bridge joint compound materials along the project alignment. Concrete and asphalt debris piles are located adjacent to the project alignment and may contain hazardous components. Contamination in the concrete and asphalt is expected to be present in relatively low

concentrations. Standard construction practices would reduce impacts from ACM and trace contamination in concrete and asphalt debris to less than significant.

Construction activities themselves could involve the use of hazardous materials. Schools are located within 0.25-mile of the proposed project alignment. As a result, the public, environment, or school attendees may be exposed to hazardous materials if an upset condition were to occur during construction. The use, storage, and transport of hazardous materials would be controlled through standard construction practices to reduce the risk of upset conditions. Impacts would be less than significant based on the low level of existing contamination, minimal disruption caused by construction activities, and avoidance and minimization measures that would be employed.

2.8.5 Permanent Impacts

2.8.5.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, the No Build Alternative would not result in increased exposure to hazards and/or hazardous materials.

2.8.5.2 Build Alternative

As discussed below, the proposed project is consistent with City Goal SF-4 and County Goal OS-2. The project would not increase the generation of hazardous materials within the project area, nor would it increase risks of exposure.

Transport of Hazardous Materials

Trucks hauling hazardous materials would continue to be operated in compliance with local, state, and federal regulations regarding hazardous substance transport. Furthermore, the proposed project would result in improved visual sight distances along Ranchero Road, which are expected to reduce possible instances of collisions and disruption of vehicles that transport hazardous substances along Ranchero Road; therefore, the proposed project would be beneficial compared to the existing condition of the corridor because sight distances and roadway geometry would be improved to enhance safety and diminish the risk of hazardous material disruption and exposure.

Use and Disposal of Hazardous Materials

Facilities that treat, store, and/or dispose of hazardous waste are identified and tracked through the RCRA Program. According to the RCRA Program database search, no sites within a 1-mile radius of the project area were identified. Because no recognized sites exist within the vicinity, the proposed project would not create a significant hazard to the public or the environment through the routine use or disposal of hazardous materials.

Any nearby facilities that utilize Ranchero Road for transport of hazardous materials would have to complete a separate CEQA compliance document for that action.

Foreseeable and Accidental Releases of Hazardous Materials

The proposed project would not create a significant hazard to the public or environment or otherwise increase the risk of releasing hazardous material into the environment. To begin, no sites within a 0.5-mile radius of the project area were identified in the database search of EPA-investigated sites for release or threatened release of hazardous materials in accordance with CERCLA. Construction of the project may involve hazardous materials use, such as paints, thinners, cleaning solvents, oil, and grease; however, these materials will be used for a short duration and will be handled appropriately to avoid and minimize potential impacts. Any operations that would utilize Ranchero Road for the transport of hazardous materials would have to complete a separate environmental study of its potential to create a hazard to the public or the environment.

Hazardous Materials and Proximity to Schools

The nearest school is Oak Hills Christian Preschool located less than 0.01-mile north of the project area at 13032 Ranchero Road. In addition, Oak Hills High School is located 0.04-mile from the project area at 7625 Cataba Road. Despite the proximity of schools to the proposed project corridor, the proposed project is not likely to result in increased exposure of school properties or sensitive receptors to hazardous emissions or hazardous materials that may result from the construction phase of project implementation. The ISA prepared for the proposed project indicates that there are no known properties adjacent to schools that require remediation. During the construction phase of the proposed project, BMPs for handling hazardous materials and waste will be implemented to ensure the safety of the public and nearby schools.

Hazardous Materials Sites in the Project Vicinity

Developed parcels in the project area consist mostly of residential, vacant, and small industrial businesses. Per the Phase I Environmental Site Assessment conducted for this project, the widening of Ranchero Road is not anticipated to increase the risk of hazards in the area. Implementation of the proposed project is not expected to create a significant hazard to the public or environment.

Relationship to Emergency Response and/or Emergency Evacuation Plans

On April 3, 2002, the City adopted an Emergency Operations Plan. The Plan describes the emergency organization, assigns tasks, and specifies policies and procedures for coordination efforts during a local, state, or federal emergency event.

Within the Plan is a section on how to respond to hazardous materials incidents. Construction and operations of the proposed project would be consistent with the City's Emergency Response Plan.

Wildland Fires

According to the City's Emergency Response Plan, potential fire damage is heightened in areas of wild and urban interface. The Summit Valley-Los Flores Ranch area, which is more than 5 miles south of the project, is described as a significant risk location. No wildlands are located near the proposed project area; therefore, the proposed project would not expose people or structures to a significant risk involving wildland fires.

Conclusion on Permanent Impacts of the Build Alternative

Less than significant permanent impacts are expected to result from the Build Alternative. The widening of Ranchero Road as proposed would result in an improved, safer setting to transport hazardous waste materials, enhancing activities already existing within Hesperia. Furthermore, the project would not promote or otherwise encourage the increase of generation of such materials in the vicinity. Finally, the project would conform to the City's Emergency Operations Plan to avoid impacts to emergency responders, evacuation plans, and wildland fire regulations.

2.8.6 Avoidance, Minimization, and/or Mitigation Measures

Although the impacts are not expected to be significant, the following mitigation measures would be followed during project construction.

If soil contamination is suspected (e.g., due to visible discoloration/staining), then construction in the area would cease until soil sampling at the location can be conducted and appropriate health and safety procedures are implemented. If soil contamination is discovered during construction, then it would be properly disposed in accordance with federal and state laws. The following measures will be implemented during construction to offset any potential impacts:

- **HAZ-1:** The construction contractor will be required to prepare and implement a Worker Health and Safety Plan to be approved by the City and the California DTSC before the onset of construction activities.
- **HAZ-2:** Any soils with aerially deposited lead (ADL) contamination shall be managed properly and disposed. During project construction, soil in the project limits may be reused within the ROW. Soil export will be minimized, and excess soil generated during project construction, if any, will be disposed of at a hazardous waste disposal facility.

- **HAZ-3:** Paint used for lane striping shall be tested for lead-based paint (LBP) prior to demolition/removal to determine proper handling and disposal requirements.
- **HAZ-4:** Conduct asbestos-containing materials (ACM) and LBP surveys, if appropriate, before demolition of any structures constructed before 1979 to determine the level of risk posed to construction workers and the public and to identify appropriate protection measures.

2.9 Hydrology and Water Quality

2.9.1 Environmental Setting

Watershed

The proposed project site is located within the jurisdiction of the Lahontan RWQCB, in Hydrologic Sub-Area 628.20, which is part of the Upper Mojave Hydrologic Area. The Lahontan RWQCB designates beneficial uses for waters in the Mojave Watershed, which are identified in the Water Quality Control Plan for the Lahontan Basin (6) (Basin Plan) (RWQCB, 2002). Table 2.9-1 identifies existing designated beneficial uses for the West Fork of the Mojave River, as well as the minor surface waters within the Project area.

Table 2.9-1 Beneficial Uses of Mojave River (West Fork)

Water Body	Beneficial Use															
	MUN	AGR	IND	PROC	GWR	FRSH	POW	REC1	REC2	COMM	BIOL	WARM	COLD	WILD	RARE	SPWN
Mojave River (West Fork)	•	•			•		•	•	•	•		•	•	•		

Definitions for water bodies: Municipal and Domestic Supply (MUN) – Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) – Includes uses for farming, ranching, or horticulture including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

Industrial Process Supply (PROC) – Includes uses of water for industrial activity that depends primarily on water quality.

Groundwater Recharge (GWR) – Includes uses of water for natural or artificial recharge.

Freshwater Replenishment (FRSH) – Includes uses of water for natural or artificial maintenance of surface water quantity.

Hydropower Generation (POW) – Includes uses of water for hydropower generation.

Body Contact Recreation (REC1) – Recreational activities involving body contact with water.

Non-Body Contact Recreation (REC2) – Recreational activities involving proximity to water, but generally no body contact or ingestion of water.

Commercial and Sportfishing (COMM) – Beneficial uses of waters used for commercial or recreational collection of fish or other organisms including, but not limited to, uses involving organisms intended for human consumption.

Preservation of Biological Habits of Special Significance (BIOL) – Includes uses of water that support designated areas or habitats.

Warm Freshwater Habitat (WARM) – Maintenance of warm water ecosystems.

Cold Freshwater Habitat (COLD) – Includes uses of water that support cold water ecosystems.

Wildlife Habitat (WILD) – Uses of water that supports terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Rare, Threatened, or Endangered Species (RARE) – Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Spawning, Reproduction, and/or Early Development (SPWN) – Water used to support aquatic habitats suitable for reproduction and early development of fish.

The largest receiving water body near the project area is Oro Grande Wash (Regional Facility A-01), which is a tributary to the Mojave River located less than 0.5-mile west of the proposed project site western terminus. Oro Grande Wash is not on the 2008-2010 303(d) List of Water Quality Limited Segments (SWRCB, 2010). An eastern branch of Oro Grande Wash (Regional Facility A-04) is located just east of and parallel to I-15. In the southeastern portion of Hesperia, Antelope Valley Wash trends northeasterly before discharging into the Mojave River to the east of the project site. In addition, the California Aqueduct crosses the Ranchero Road study area approximately 0.5-mile west of the project terminus at Seventh Avenue. The aqueduct is also not listed on the 2008 303d List of Water Quality Limited Segments.

The only blue-line stream to cross the Ranchero Road project corridor is an unnamed ephemeral stream at Whitehaven Court. Two other water course crossings within the project limits are shown on the preliminary design drawings as located: (1) west of Cataba Road; and (2) west of Mesa Vista Avenue. Because these drainages are ephemeral, water quality parameters are not known or monitored, but high levels of sediment are anticipated to be present. There are no known drinking water reservoirs, recharge basins, or treatment BMPs within the proposed project site.

According to the *Hesperia Master Plan of Drainage*, five ephemeral streams are within the vicinity of the project limits, which are identified as Streams D-02, H-01, H-05, H-06, and H-07. These streams are all considered regional receiving water bodies for the proposed project.

All runoff in the project area is ultimately conveyed to the Mojave River (West Fork), which is more than 4 miles from the proposed project. The headwaters of the Mojave River are in the San Bernardino Mountains, which annually receive more than 40 inches of precipitation at its highest elevations. Much of the winter precipitation in the San Bernardino Mountains falls in the form of snow, which provides spring recharge to the Mojave River system. Historically, the annual recharge from the headwaters is approximately 75,000 acre-ft. The Mojave River channel, through surface and subsurface flows, transects its watershed a linear distance of approximately 120 miles to its terminus at Silver Dry Lake near the community of Baker. Aside from intense storm events, the Mojave River channel is typically dry downstream of the Mojave Forks Dam, except in select locations where groundwater is forced to the surface by geologic structures (RWQCB, 2002).

There are no groundwater percolation facilities within the project limits. The City of Hesperia Water District pumps water directly from the Alto Subarea subbasin of the Mojave River Groundwater Basin, which is located to the south and east of the project site. While historic discharges of industrial, commercial, and domestic wastewater have degraded the groundwater quality in portions of the Mojave Watershed, the groundwater supplied via the City's distribution system is of excellent quality (City of Hesperia, 2009). Based on the depth of groundwater at 194 ft and the maximum excavation at 20 ft for the proposed project, it is not anticipated that the proposed project would impact the groundwater aquifer.

The topography in the proposed project area is relatively flat, with an average slope of approximately 1.5 percent. Overall, offsite runoff flows northeasterly towards Mojave River. The proposed storm drainage system for this project would include extension of existing CMP drainage culverts under Ranchero Road and construction of overside drains on both sides of the roadway. The diameter of CMP ranges from 60 to 96 inches.

The proposed drainage system would be designed to maintain the historic stream flow pattern to prevent the flooding of Ranchero Road, cross streets, and adjacent lands within the project area. Stormwater would be conveyed to existing culverts via proposed overside drains and discharged to the downstream natural channels.

The Ranchero Road drainage facilities would be designed to accommodate a 10-year return frequency storm per local guidelines. The overside drains would be sized and spaced to prevent spread beyond the shoulder and placed at all low points along the edge of pavement.

The project would be designed to minimize its footprint to preserve as much of the existing vegetation as possible; however, there would still be localized increases in urban runoff within the project vicinity. With the increase in impervious surfaces, an increase in peak flow would occur within the overall flow regime for the project area. With the proposed project, the velocity and volume of water would increase due to added impervious surface area. Existing impervious surface area is estimated to be 22.5 acres. An estimated additional 9.3 acres of impervious surfaces would result from the proposed project. This additional incremental discharge would be controlled through incorporation of Permanent BMPs during the project design to control the additional incremental discharge resulting from roadway improvements. These control practices could include the following measures: preservation of existing

vegetation; velocity dissipation devices; flared culvert end sections; dikes and swales; slope drains and subsurface drains; mulching; and permanent seeding and planting.

2.9.2 Regulatory Setting

Section 401 of the CWA requires water quality certification from the SWRCB or an RWQCB when the project requires a federal permit. Typically, this means a CWA Section 404 permit to discharge dredge or fill into a water of the United States, or a permit from the Coast Guard to construct a bridge or causeway over a navigable water of the United States under the Rivers and Harbors Act.

Along with CWA Section 401, Section 402 establishes the NPDES for the discharge of any pollutant into waters of the United States. EPA has delegated administration of the NPDES program to the SWRCB and the nine RWQCBs. To ensure compliance with Section 402, the SWRCB has developed an NPDES Statewide Storm Water Permit to regulate stormwater and non-stormwater discharges. This same permit also allows stormwater and non-stormwater discharges into waters of the State pursuant to the Porter-Cologne Water Quality Act.

Stormwater discharges from the City's construction activities disturbing 1-acre or more of soil must comply with Construction General Permit (CGP) Order No. 2009-009-DWQ. The CGP, adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates stormwater discharges from construction sites that result in a Disturbed Soil Area (DSA) of 1-acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1-acre must comply with the provisions of the CGP. Construction activity that results in soil disturbances of less than 1-acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop SWPPPs to implement sediment, erosion, and pollution prevention control measures and to obtain coverage under the CGP. In addition to the CGP, implementation of the proposed project must comply with all applicable water quality standards and prohibitions, including provisions of the Lahontan Basin Plan.

Finally, the SWRCB and the RWQCBs have jurisdiction to enforce the Porter Cologne Act to protect groundwater quality. Groundwater is not regulated by federal law, but it is regulated under the State's Porter-Cologne Act. Some projects may involve placement or replacement of onsite treatment systems (OWTS), such as leach

fields or septic systems, or propose implementation of infiltration or detention treatment systems, which may pose a threat to groundwater quality.

Additionally, the General Plans for the City of Hesperia and San Bernardino County were reviewed to determine the regulatory requirements within the project area. The regulatory setting for hydrology and water quality is discussed below.

2.9.2.1 City of Hesperia

Relevant policies from the City of Hesperia's General Plan include:

- **CN-1.4:** Limit the disturbance of natural water hydrology by minimizing the creation of impervious surface area and continued utilization underground retention/detention facilities to recharge groundwater.
- **CN-2.1:** Minimize impacts to washes that convey drainage by prohibiting development within drainage corridors that are not consistent with the Master Plan of Drainage.
- **CN-2.3:** Protect open space areas used for recharging groundwater basins.
- **CN-3.1:** Monitor the development impacts to these surface water resources within the City.
- **CN-3.2:** Preserve areas within the Oro Grande Wash and un-named wash #1 that exhibit ideal native habitat in a natural state.
- **Goal SF-2:** Minimize injury, loss of life, property damage and economic and social disruption caused by flooding and inundation hazards.
- **SF-2.1:** The City shall continue enforcing the City's Municipal Code provisions for flood hazard reduction (Title 8: Safety, Chapter 8.28: Flood Hazard Protection and Regulations). This code, which applies to new construction and existing projects undergoing substantial improvements, provides construction standards that address the major causes of flood damage, and includes provisions for anchoring, placement of utilities, raising floor elevations, using flood-resistant construction materials, and other methods to reduce flood damage.
- **SF-2.7:** The City will regulate development in drainages, especially in Flood Zones A and AE, pursuant to Federal Emergency Management Agency (FEMA) regulations.

2.9.2.2 San Bernardino County

Relevant policies from San Bernardino County's General Plan include:

- **CI-11.1:** Apply federal and state water quality standards for surface and groundwater and wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project to safeguard public health.
- **Goal CI-13:** The County will minimize impacts to stormwater quality in a manner that contributes to improvement of water quality and enhances environmental quality.
- **CI-13.1:** Utilize site-design, source-control, and treatment control BMPs on applicable projects to achieve compliance with the County Municipal Stormwater NPDES Permit.
- **CI-13.2:** Promote the implementation of low-impact design principles to help control the quantity and improve the quality of urban runoff. These principles include:
  a. Minimize changes in hydrology and pollutant loading; ensure that post development runoff rates and velocities from a site do not adversely impact downstream erosion, and stream habitat; minimize the quantity of stormwater directed to impermeable surfaces; and maximize percolation of stormwater into the ground where appropriate.
  b. Limit disturbance of natural water bodies and drainage systems; conserve natural areas; and protect slopes and channels.
  c. Preserve wetlands, riparian corridors, and buffer zones; and establish reasonable limits on the clearing of vegetation from the project site.
  d. Establish development guidelines for areas particularly susceptible to erosion and sediment loss.
  e. Require incorporation of structural and non-structural BMPs to mitigate projected increases in pollutant loads and flows.
- **Goal D/CI-2:** Ensure that infrastructure improvements are compatible with the natural environment of the region.
- **Goal CO-5:** The County will protect and preserve water resources for the maintenance, enhancement, and restoration of environmental resources.
- **CO-5.4:** Drainage courses will be kept in their natural condition to the greatest extent feasible to retain habitat and allow some recharge of groundwater basins and resultant savings. The feasibility of retaining features of existing drainage

courses will be determined by evaluating the engineering feasibility and overall costs of the improvements to the drainage courses balanced with the extent of the retention of existing habitat and recharge potential.

2.9.3 Criteria for Determining Significance

The following evaluation criteria for hydrology and water quality are drawn from Appendix G of the CEQA guidelines. The proposed project would result in a significant impact to hydrology and/or water quality if it:

a) Violates any water quality standards of waste discharge requirements.

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

c) Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

d) Substantially alters the exiting drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

e) Creates or contributes runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

f) Otherwise substantially degrades water quality.

g) Places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map (FIRM) or other flood hazard delineation map.

h) Places within a 100-year flood hazard area structure which would impede or redirect flood flows.

i) Exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

j) Inundation by seiche, tsunami, or mudflow.

2.9.4 Construction Impacts

2.9.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction impacts to hydrology and water quality are anticipated.

2.9.4.2 Build Alternative

Runoff and Drainage

The greatest potential for water quality impacts from the proposed project would be during construction. The total DSA anticipated for this project is 9.25 acres. Construction of the proposed project may require the use of temporary drainage conveyance systems to decrease the potential for erosion. Additionally, the increase in impervious surface would increase onsite runoff, and it is anticipated that existing storm drain facilities would need to be modified and additional overside drains may have to be added. Because these facilities would be modified to accommodate additional flows, the capacity of the existing storm drain systems would not be exceeded. The effects to the existing storm drain system as a result of the proposed project would be less than significant.

Proposed construction activities would involve stockpiling, grading, excavation, dredging, paving, and other earth-disturbing activities resulting in the alteration of existing drainage patterns. These types of activities would constitute a temporary alteration of drainage patterns. The project-specific SWPPP would include BMPs designed to minimize stormwater and erosional impacts during construction by implementing BMPs such as temporary silt fence, temporary fiber rolls, hydroseeding, street sweeping, and temporary cover. Compliance with the CGP would minimize the potential for construction activities to alter natural drainages via deposition of sediments; therefore, compliance with the CGP would reduce the risk of short-term erosion resulting from drainage alterations during construction to a less than significant impact.

Erosion and Siltation

Erosion and siltation in the project area would be increased during construction of the proposed project due to activities such as clearing, grubbing, and excavation. Detailed construction plans for the proposed improvements have not been completed; therefore, the exact amounts of increased erosion and siltation cannot be estimated. However, permanent erosion control BMPs, such as channel lining, riprap energy

dissipation, and landscaping, will also help minimize the potential for erosion and siltation from this project.

Because the proposed project would disturb more than 1-acre during construction, the General Construction Permit CAS000002 would require preparation of a SWPPP prior to construction. The SWPPP would identify which appropriate construction BMPs would be implemented to avoid adverse water quality impacts during construction. The project would have to comply with the requirements of any other related permits from the RWQCB and the provisions of the General Construction Permit CASD000002 issued for construction projects. The amount of sediment entering the Mojave watershed in the project area is expected to be minimal with implementation of a SWPPP. Permanent erosion control BMPs, such as channel lining, riprap energy dissipation, and landscaping, will also help minimize the amount of sediment from this project.

Water Quality

Several engineering features of the project have the potential to degrade water quality. Examples of these features include paving of existing and new roadbed, adjusting the vertical alignment based on design speed criteria, adjusting cross-street features to conform to new improvements, extending drainage facilities, and relocating utilities. Because the proposed project would result in the disturbance of more than 1-acre of soil during construction, the project will need to comply with the NPDES CGP, which will require the preparation and implementation of a SWPPP that identifies Construction Site BMPs. These BMPs would be implemented to avoid adverse water quality impacts during construction. The project would have to comply with the requirements of any other related permits from the RWQCB and the provisions of the CGP.

The amount of sediment entering the Mojave watershed in the project area is expected to be minimal with implementation of a SWPPP. The SWPPP will identify a combination of soil stabilization BMPs, sediment control BMPS, tracking control BMPs, and wind erosion control BMPs to be implemented. Examples of Construction Site BMPs that are anticipated to be implemented on this project are temporary silt fence, temporary fiber rolls, hydroseeding, street sweeping, and temporary cover. A final determination of the Construction Site BMP strategy will be determined at a subsequent project phase. With the preparation and implementation of a SWPPP, no water quality standards or WDRs would be violated; therefore, construction of the

Build Alternative is not expected to substantially degrade water quality within the Mojave Watershed.

Construction Site Dewatering

The construction and proposed culvert extensions associated with this project may require dewatering. Dewatering may be required after a storm event if runoff becomes pooled in any depressions at the construction site or if groundwater is encountered during excavation activities. Groundwater dewatering discharge could adversely affect surface water quality if effluent that is rich in sediment or contaminated with chemicals is not managed properly. Extracted groundwater may contain pollutants that may be a result of the decomposition of organic materials (e.g., hydrogen sulfide), LUSTs, surface spills, sewage, other passed land uses, or the potential presence of nutrients (i.e., phosphorous and nitrogen compounds). Results from soil boring samples will determine if dewatering is required for areas within the proposed project limits.

Currently, discharges of groundwater from construction and project dewatering to surface waters within the project limits must comply with WDRs issued by the Lahontan RWQCB for limited threat discharges to surface waters (Order No. R6T-2008-0003, NPDES NO. CAG996001). Discharges covered by this permit include, but are not limited to, diverted stream flows, construction dewatering, and dredge spoils dewatering, as well as several other activities. Because all dewatering operations that may be necessary as a result of implementing the Build Alternative would need to comply with Order No. Order No. R6T-2008-0003 (NPDES NO. CAG996001), no impacts to surface water quality resulting from dewatering activities are expected. Furthermore, because the Build Alternative for the proposed project would not utilize groundwater for any purposes, and no runoff would be infiltrated into groundwater basins, no impacts to groundwater quality are expected.

2.9.5 Permanent Impacts

2.9.5.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road. Under the No Build Alternative, no soil disturbance or changes to the existing environment would occur, nor would paved impervious areas increase; therefore, no permanent impacts to water quality would occur.

2.9.5.2 Build Alternative

The proposed project would increase the existing impervious surface area within the project site by 9.3 acres. Because the Upper Mojave Watershed Area is approximately 549,333 acres, the addition of 9.3 acres of impervious surface would not substantially affect the overall amount of runoff or the amount of discharge into natural surface drainages. Additionally, because runoff would be collected and conveyed into a designed drainage network, the proposed project would not significantly alter the existing pattern of natural surface drainage in the project vicinity. With the implementation of Permanent BMPs, the proposed project would not significantly impact water quality because it would not substantially contribute to the exceedance of any adopted water quality standard or conflict with objectives, plans, goals, policies, or implementation of the Lahontan RWQCB's Basin Plan. The subsections below further detail the potential permanent impacts of the Build Alternative to hydrology and water quality.

Impacts to Surface Water

The Upper Mojave Watershed Area is approximately 549,333 acres. The proposed additional impervious area (9.3 acres) within the watershed makes up a small percentage of this area. This is expected to create a minor localized increase in urban runoff within the project vicinity. With the minor increase in impervious surface, an increase in peak flow in the overall flow regime for the project area is anticipated; however, this increase would be addressed by the construction of AC dikes along the outer edges of the proposed roadway to convey stormwater to the overside drain and ultimately convey it to the proposed extended culverts. The currently proposed storm drainage system design includes extension of existing CMP drainage culverts under Ranchero Road and overside drains on both sides of the roadway pavement. Such a design would entail largely maintaining the existing drainage pattern across the subject roadway corridor. Most of the surface water from the project would be diverted to proposed permanent BMPs or designed collection drainage areas along the roadway. Because runoff from the proposed project would be conveyed to stabilized drainage facilities, and the use of Permanent BMPs would be implemented, impacts to surface water would be less than significant.

The final plans that will be prepared during the plans, specifications, and estimate (PS&E) phase will determine the final amount of impervious paved surface areas. Given these considerations, the proposed project would not have a significant impact on local water resources and quality under CEQA.

Water Quality Degradation

Streams crossing Ranchero Road within the project area are not 303(d) listed; hence, these drainages are not subject to any total maximum daily load (TMDL) discharge restrictions. Considering the increasing residential and commercial development in the surrounding community, traffic volume is expected to grow substantially in the future. Consequently, the amount of motor vehicle-related pollutants discharged into the watershed and drainage channels from impervious surfaces would increase with or without implementation of the proposed project. By incorporating temporary and permanent avoidance, minimization, and mitigation measures into the project plans, the increase in motor vehicle-related pollutants from the proposed project would have a less than significant impact on surface water quality under CEQA. In fact, because the project would reduce traffic congestion, pollutants from traffic congestion during peak periods could also decrease. Finally, because the increased area of impervious surface is small compared to the local watershed, the proposed project would not significantly impact local water resources and quality under CEQA.

Groundwater

As mentioned above, groundwater in the project area is at considerable depth, likely on the order of 200 ft below ground surface. While water would be used as a dust palliative and for other purposes during construction, these uses would not adversely affect groundwater supply. Based on the depth to groundwater within the study area and the relatively shallow excavation depths associated with the project, the proposed project would not impact the groundwater aquifer.

Flood Hazard

An online search for FEMA's FIRMs determined that there are no maps for the subject area; hence, no flood hazard zones have been designated for the project area. In summary, the proposed project would not be located in a designated flood zone. Once constructed, the proposed roadway improvements would not impede or redirect flood flows. There are no levees or dams near the project that would be subject to failure and expose people or structures associated with the project to a significant risk of loss, injury, or death involving flooding.

2.9.6 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the mitigation measures described below will reduce all impacts to less than significant. Mitigation measures in the drainages will be developed in conjunction with those developed for jurisdictional wetland impacts. Any discharges of sediment or other wastes, including wastewater, to waters of the United States or

waters of the State must be avoided to the maximum extent practicable. Final design of the project will limit disturbance to natural water bodies and drainage systems, including ephemeral drainage systems, and provide adequate buffers of native vegetation along drainage systems to lessen erosion and protect water quality.

Lining runoff channels with impermeable surfaces, such as concrete or grouted riprap, will be discouraged.

- **HWQ-1:** Concentrated flow conveyance systems (e.g., drainage ditches, dikes, berms) will be designed to ensure that flows to drainage channels will not result in increased erosion, sedimentation, or any contaminant conveyance to the extent feasible. Slope/surface protection systems that utilize hard surfaces, such as concrete or equivalent materials, will be designed to minimize erosion to the extent feasible.
- **HWQ-2:** During construction, waste management BMPs will be implemented. These BMPs consist of procedural and structural BMPs for handling, storing, and disposing of wastes generated by a construction project.
- **HWQ-3:** During construction, soil stabilization BMPs will be incorporated. These BMPs consist of preparing the soil surface and applying soil stabilizing media, such as straw mulch, soil binders, and geotextile mats.
- **HWQ-4:** During construction, non-stormwater BMPs, such as vehicle and equipment maintenance, will be implemented to limit the potential for pollutants to impact surface waters.
- **HWQ-5:** In an effort to uphold water quality standards, the proposed project will require Section 404, 401, and 1602 permits. Construction will not commence within jurisdictional areas until these permits are issued by the respective resource agencies. The conditions of these permits will be incorporated into the project.
- **HWQ-6:** A SWPPP shall be prepared by the Contractor and reviewed by the City for approval prior to commencement of any soil-disturbing activities. The SWPPP shall address all State and federal stormwater control requirements and regulations. The SWPPP shall address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP shall include BMPs to control pollutants, sediment from erosion, stormwater runoff, and other construction-related impacts.
- **HWQ-7:** The City shall file a Notice of Intent (NOI) with the SWRCB at least thirty (30) days prior to any soil-disturbing activities.

- **HWQ-8:** All work will conform to NPDES requirements as described in *NPDES Permit for General Construction Activities* (Order No. 2009-0009-DWQ, NPDES No. CAS000002). These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-stormwater BMPs.
- **HWQ-9:** Construction activities will give special attention to stormwater pollution control during the rainy season, defined as August 1 through October 1, and from November 1 through May 1. No work should be conducted whenever rain is predicted. Water Pollution Control BMPs will be used to minimize impacts to receiving waters. Measures will be incorporated to contain all vehicle loads and avoid any tracking of materials.
- **HWQ-10:** As described by the Mojave Watershed Storm Water Management Plan, the Lahontan RWQCB requires implementation of soil stabilization and sediment control BMPs to protect the Mojave River and its tributaries during thunder and flash flood storms during the rainy season. Soil stabilization and sediment controls will be implemented to protect the Mojave River and, if applicable, all equipment will be removed from waterways prior to flash floods.
- **HWQ-11:** Post-construction maintenance BMPs, including routine maintenance work to keep the project site free of debris, such as litter pickup, toxics control, street sweeping, drainage, and channel cleaning, will be incorporated into the project. Permanent soil stabilization BMPs will be incorporated into project design, such as preservation of existing vegetation, concentrated flow conveyance systems (e.g., drainage ditches, dikes, berms, swales), and slope/surface protection systems that use vegetation. Appropriate BMPs will be selected during final design.
- **HWQ-12:** The proposed project would be designed to prevent the flooding of Ranchero Road, cross streets, and adjacent lands.
- **HWQ-13:** The Ranchero Road drainage facilities would be designed to accommodate a 10-year return frequency storm per local guidelines.
- **HWQ-14:** The City shall continue enforcing the City's Municipal Code provisions for flood hazard reduction (Title 8: Safety, Chapter 8.28: Flood Hazard Protection and Regulations). This code, which applies to new construction and existing projects undergoing substantial improvements, provides construction standards that address the major causes of flood damage, and includes provisions for anchoring, placement of utilities, raising floor elevations, using flood-resistant construction materials, and other methods to reduce flood damage.

2.10 Land Use and Planning

This section addresses potential impacts to existing and planned land uses within the project area that could result from implementation of the proposed project.

2.10.1 Environmental Setting

The proposed project area is located within the Victor Valley, which in the past decade has experienced an elevated demand for residential and commercial developments. The Victor Valley area is comprised of the cities of Hesperia, Adelanto, town of Apple Valley, and Victorville, along with various other unincorporated communities such as Phelan and Oak Hills.

The Victor Valley is historically known for its agricultural, industrial, and military land uses; the region has become significantly more urbanized in the last several years. The project corridor is adjacent to parcels that are partially developed and semirural in character with primarily residential, transportation, commercial, and open space uses.

In the last few years, the Victor Valley area has experienced a high rate of growth. The California Department of Finance (DOF) reports that Hesperia experienced a sharp increase in growth between 2000 and 2008, and it was ranked number 33 in population increase over 478 other cities in California. This population growth in Hesperia, from 62,590 to 87,820 persons, correlated to a growth increase of 40 percent within that 8-year timeframe. According to DOF historic demographic data, the growth increase percentage in San Bernardino County in the same period was reported at only 20.2 percent. The SCAG growth model forecasts that the population in Hesperia will grow to 179,383 persons by 2035, which is a projected growth of 204 percent from 2008.

The proposed project site traverses land under the jurisdiction of both the City and the County. Land use density is generally higher within the incorporated portion of the study area to the east of Maple Avenue. Residential uses predominate within the City, with lesser uses for neighborhood commercial, utility corridor, aqueduct, and a private school. The County portion of the study area is partially developed, urbanizing, and semi-rural in character with primarily residential, transportation, and commercial uses. There are numerous vacant parcels within both jurisdictions.

2.10.1.1 Existing Developments

For this analysis, the study area includes existing and proposed developments within 6 miles of the proposed project site. Figure 2.10-1 shows the existing land use within the vicinity of the proposed project. Several established and new developments are near the project area, some of which are currently in construction. These developments or a substantial portion of them are expected to utilize the widened Ranchero Road. Existing developments that would benefit from a widened Ranchero Road are divided into three distinct general development areas and one specific use area as noted below.

Oak Hills – This area contains a sparse distribution of existing homes within an area that was recently annexed by the City and portions that are currently under the jurisdiction of the County. This existing residential sector, which is historically known as the Oak Hills Community, is expected to use the proposed project primarily for access to and from I-15. Based on 2000 Census data, this area contains approximately 2,900 households.

East Ranchero Road/Street – This established residential sector is situated by the Santa Fe Railroad and Maple Avenue/Sultana Avenue to the west. Based on 2000 Census data, this area contains approximately 2,100 households.

Escondido Avenue – This residential sector is considered a new development; several housing tracts were built within the last 6 years and some are under construction.

Hesperia Airport – The Hesperia Airport is just south of Ranchero Street along Seventh Avenue. The Hesperia Airport is privately owned but is available for public use. Based on data provided by AirNav.com (a database that provides information and maintains statistics on various airports nationwide), as of March 2009, 33 aircraft were based in the airfield, and the airport averaged 115 aircraft operations per week.

2.10.2 Regulatory Setting

The land use designations and policies for the study area are provided in the applicable land use plans, including the City of Hesperia General Plan and San Bernardino County General Plan. These plans and their relevant policy provisions are described below.

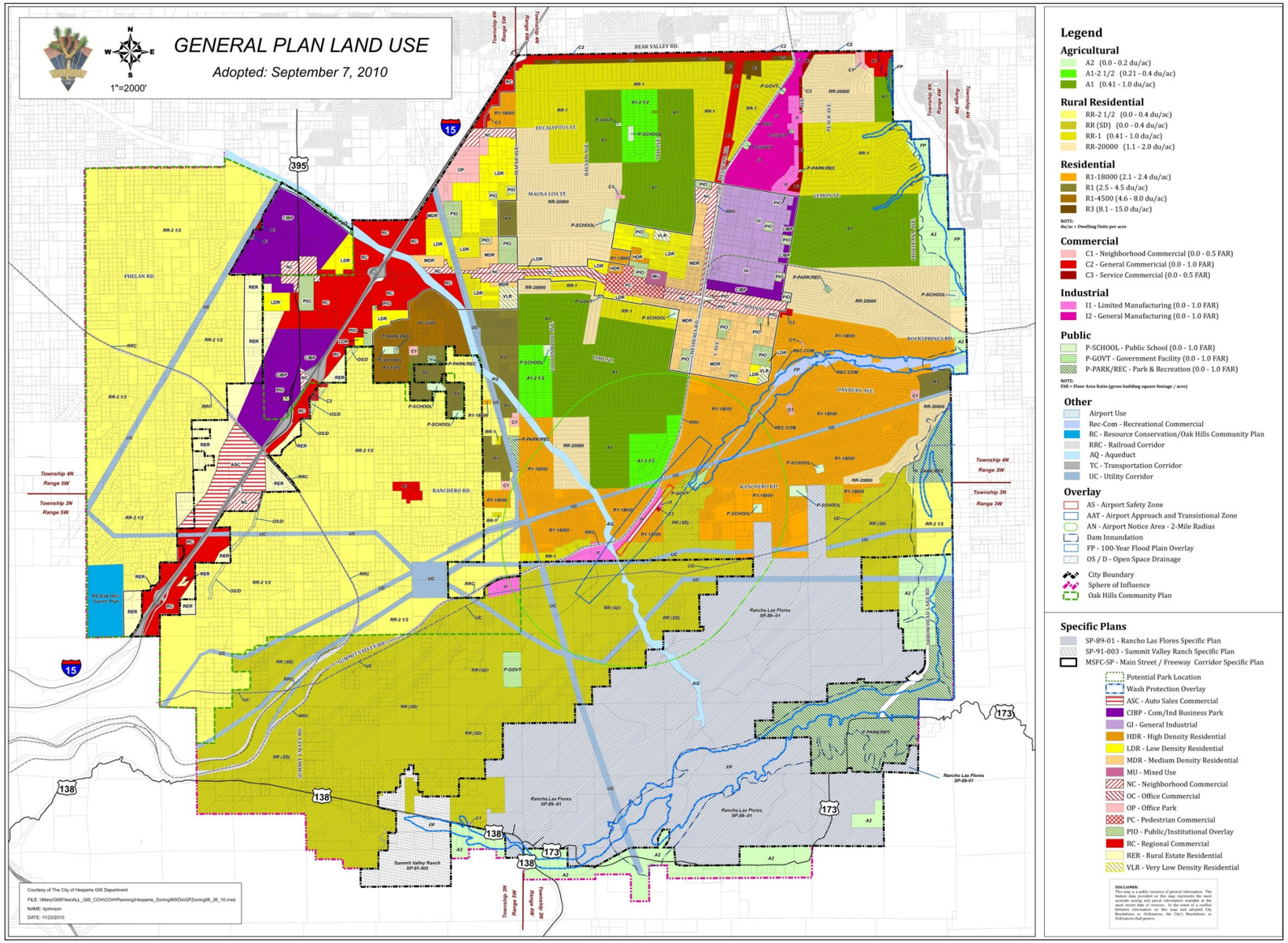


Figure 2.10-1 Existing Land Use

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2.10.2.1 City of Hesperia

General Plan

The City's original General Plan dates back to 1991 and was comprehensively updated in 2010. The General Plan land use designations within the City are generally consistent with existing developed uses. The City's zoning map is consistent with the proposed General Plan Land Use Map within the project area.

The City's General Plan Circulation Element (City of Hesperia, 2010a) map shows Ranchero Road as a Super Arterial with a ROW of 140 ft and a curb-to-curb width of 92 ft from Topaz Road to Seventh Avenue. Escondido and Maple avenues are both designated as Arterials. Ranchero Road is designated as a Special Major Arterial within County jurisdiction with 120-ft ROW and 94-ft curb separation for six lanes and 14-ft-wide center raised median and no shoulder parking. The County designates Escondido Avenue as a Secondary Highway (San Bernardino County, 2005).

City of Hesperia Master Plan of Arterial Highways

The proposed widening of Ranchero Road is included in the City of Hesperia Master Plan of Arterial Highways, which serves as the City's Circulation Element of the General Plan. This circulation plan was developed in conjunction with the land use planning and zoning in the General Plan and serves as the foundation for the City's transportation configuration in all area and regional plans that encompass Hesperia.

The City's Circulation Element of the General Plan shows Ranchero Road as ultimately being widened to six lanes within the project corridor. The Circulation Element classifies Ranchero Road as a Major Arterial from I-15 to the eastern City limits, with six through lanes, 104-ft-width from curb to curb, and a ROW width of 120 ft. Consistent with this description in the Circulation Element, the proposed project would widen Ranchero Road to four lanes, bringing it closer to conformity with the City's ultimate buildout plan. Widening of the alignment to an ultimate six-lane configuration will occur once development and funding permit.

2.10.2.2 San Bernardino County

General Plan

The County's Land Use Element functions as a guide to the ultimate pattern of development for the County of San Bernardino. The Land Use Element is a guide for the County's future development, as it designates the distribution and general location of land uses. There are 18 land use zoning districts that apply only to privately owned lands in the County and not to lands controlled by other jurisdictions. Of the County-controlled

parcels immediately adjacent to Ranchero Road, most are designated as "Rural Living," meant to encourage appropriate rural development where single-family residential use is primary. Four County-controlled parcels are designated as Neighborhood Commercial (CN), a designation meant to provide suitable locations for retail and service commercial establishments in an effort to meet the daily convenience needs of area residences. Two County-controlled parcels currently occupied by Oak Hills High School are designated as Institutional (IN), which is meant to identify existing lands and structures committed to public facilities and public agency uses. Figure 2.10-2 shows the exact locations of these parcels along the corridor.

2.10.2.3 Consistency with Regional and Local Plans

Regional Transportation Plan/Regional Transportation Improvement Program

SCAG is the MPO for the following six counties in southern California: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. SCAG is mandated by the federal government to research and prepare plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates also exist at the State level.

SCAG's activities include maintaining a continuous, comprehensive, and coordinated transportation planning process. To do this, SCAG is responsible for developing and maintaining an RTP and an RTIP. The RTP is a long-term (minimum of 20 years) transportation blueprint that outlines a long-range strategy to meet mobility, financial, and air quality requirements. Every 3 years, SCAG revises the RTP with updated information. The RTP provides population, housing, employment, environmental, and land-use forecasts.

The RTP provides the basic policy and program framework for long-term investment in the region's regional transportation system in a coordinated, cooperative, and continuous manner. Transportation investments in the SCAG region that receive State or federal transportation funds must be consistent with the RTP and must be included in the RTIP when ready for funding. Among the goals adopted by SCAG in the implementation of the RTP and RTIP is to ensure compatibility between land-use, growth patterns, and transportation investments.

The proposed widening of Ranchero Road is included in SCAG's 2012 RTP and the 2008 cost-constrained RTIP. This project is consistent with the description in both planning reports.

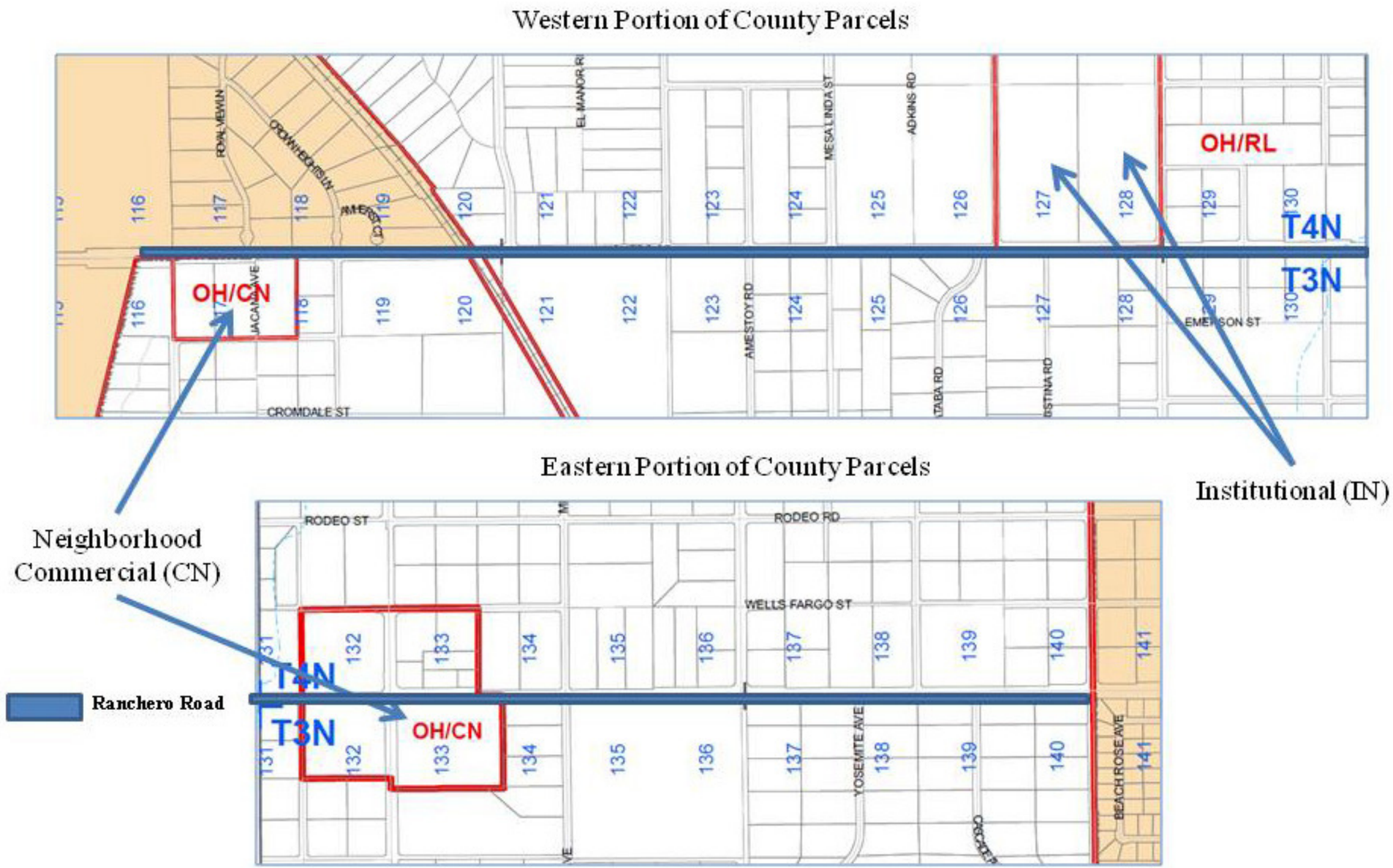

Figure 2.10-2 County-Controlled Parcels within the Vicinity of the Proposed Project

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2.10.3 Criteria for Determining Significance

The following evaluating criteria for land use are drawn from Appendix G of the CEQA guidelines. The proposed project would result in a significant impact to land use and planning resources if it:

a) Physically divides an established community.

b) Conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

c) Conflicts with any applicable habitat conservation plan or natural community conservation plan.

2.10.4 Construction Impacts

2.10.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction impacts to land use and planning would occur.

2.10.4.2 Build Alternative

No adverse land use impacts would be associated with the project during construction because the project would not convert land uses in the project area, nor would it conflict with any land use plans, policies, or regulations. Construction activities would be temporary in nature and would not introduce land uses that are incompatible with existing uses, require changes to existing land use designations, or change local or regional planning document goals or policies. In addition, they would not include activities that would be unacceptable or intrusive on adjacent land uses such that current land uses could not remain. Moreover, BMPs for construction traffic management, noise abatement, and control of air quality and water quality impacts would be implemented during project construction and would address construction-related impacts to area land uses.

2.10.5 Permanent Impacts

2.10.5.1 No Build Alternative

The No Build Alternative would not be consistent with several land use policies of the City's General Plan and the 2012 RTP and 2013 FTIP. This includes a specific Circulation Element policy in support of enhancement of "east-west access throughout the planning area."

This alternative would also not be consistent with the adopted goals of the 2012 RTP, as described above. The No Build Alternative would conflict with goals for increasing connectivity, maximizing the efficiency of the transportation system, ensuring safety, and reducing regional air quality impacts.

The No Build Alternative would result in local land use changes and regional planning changes beyond adopted local and regional plans. Unplanned land use changes specific to the proposed project could cause impacts to the City's and County's roadway infrastructure as well as impacts to environmental resources that have not been assessed during preparation of the City's planning documents.

2.10.5.2 Build Alternative

The proposed project would be compatible with the existing land uses because it would widen an existing roadway that is already established as a transportation corridor. Surrounding land uses already utilize the existing road and are presumably accustomed to the general effects of such a facility. Property acquisitions along the project alignment needed to accommodate the realigned and widened roadway are discussed in Section 2.13, Acquisitions. The proposed property acquisitions would accommodate widening and realignment of an existing transportation corridor, and would not change land uses. A wider roadway would reduce levels of congestion on the current roadway and serve as a vital local connection between existing roads and highways in the vicinity. Therefore, the proposed project would have less than significant impacts to the local community.

Community Connectivity

The proposed project would involve widening an existing east-west aligned roadway across the southern side of Hesperia and within the City's SOI. The project would not require closing any streets to create cul-de-sacs. Because Ranchero Road already exists, the proposed project would not physically divide any community along the 5-mile corridor.

Consistency with Land Use and Habitat Conservation Plans

The proposed project would not conflict with any applicable land use plan, policy, or regulation. According to the City's 2010 General Plan Land Use Map (Figure 2.10-1), the proposed project would be constructed within the limits of Ranchero Road as illustrated in the City's Land Use and Circulation Plans. The proposed project facilitates the City's General Plan goals.

The proposed project would address the need to improve community facilities and overall circulation as described in the currently adopted 2010 Hesperia General Plan. According to this plan, the City's goal is to "Develop a safe, efficient, convenient, and attractive transportation system throughout the community, providing links within the City and with neighboring regions, and accommodating automobile, truck, pedestrian, recreational, equestrian, rail, air, and public transit needs which will meet current and future development requirements within the planning area." Improvement to City streets was identified by City survey as the highest priority for making Hesperia a better place to live (City of Hesperia, 2010a).

In addition, the proposed project would result in no impacts to approved habitat conservation plans or the proposed West Mojave Plan.

The proposed project would be consistent with all applicable City and County land use plans and policies; therefore, the project would have no impact on existing land use plans.

2.10.6 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.11 Mineral Resources

This section addresses potential impacts to mineral resources within the project area that could result from implementation of the proposed project.

2.11.1 Environmental Setting

The term "mineral resources" is defined by the City as naturally occurring deposits that are used in the production of materials (General Plan, 2010: OS-29). Often, regulations regarding mineral resources encompass the material and the land on which the deposit exists. This designation is applied to sites determined by the State Division of Mines and Geology as being, "a resource of regional significance, and is intended to help maintain the quarrying operations and protect them from encroachment of incompatible land uses" (San Bernardino County, General Plan: XI-22).

The City considers monitoring and management of mineral resource production as vitally important to ensuring that open space areas like washes are not adversely impacted by mineral extraction activities. Similarly, the availability of mineral resources has the potential to be impacted by development as the City continues to grow and expand into undeveloped land. Through the City's Open Space Goals OS- 2 through OS-4, the City has made a concerted effort to regulate and minimize mineral extraction activities to help preserve the Mojave River and the various washes as open space.

The City's General Plan Conservation Element (City of Hesperia, 2010b) indicates that the Department of Conservation Division of Mines and Geology identified that Hesperia potentially contains concrete aggregate resources; however, these resources are not considered significant due to the vast availability of similar deposits in the region, including those found in the Barstow and Victorville areas. The major wash areas located well to the south and east of the proposed project site are identified as aggregate resource areas; however, no known mineral resources were identified within or adjacent to the proposed project site.

2.11.2 Regulatory Setting

The following State and local policies are intended to ensure the conservation of mineral resources in the study region:

2.11.2.1 Surface Mining and Reclamation Act of 1975 (SMARA)

The intent of SMARA is to promote production and conservation of mineral resources, minimize environmental effects of mining, and ensure that mined lands will be reclaimed to conditions suitable for alternative uses. In accordance with SMARA, permits are required for all mining industries commencing operation on or after January 1, 1976.

Classification of land within the State of California takes place according to a priority list that was established by the State Mining and Geology Board (SMGB) in 1982, or when the SMGB is petitioned to classify a specific area. The SMGB established Mineral Resources Zones (MRZs) to designate lands that contain mineral deposits. The classifications used by the State to define MRZs are as follows:

- **MRZ-1:** Areas where the available geologic information indicates no significant likelihood of significant mineral deposits.
- **MRZ-2a:** Areas where the available geologic information indicates that there are significant mineral deposits.
- **MRZ-2b:** Areas where the available geologic information indicates that there is a likelihood of significant mineral deposits.
- **MRZ-3a:** Areas where the available geologic information indicates that mineral deposits exist; however, the significance of the deposit is undetermined.
- **MRZ-3b:** Areas where the available geologic information indicates that mineral deposits are likely to exist; however, the significance of the deposit is undetermined.
- **MRZ-4:** Areas where there is not enough information available to determine the presence or absence of mineral deposits.

2.11.2.2 San Bernardino County

Policies related to mineral resources within San Bernardino County include:

- **Goal CO-7:** The County will protect the current and future extraction of mineral resources that are important to the County's economy while minimizing impacts of this use on the public and the environment.
- **CO-7.1:** In areas containing valuable mineral resources, establish and implement conditions, criteria, and standards that are designed to protect the access to, and economic use of, these resources, provided that the mineral extraction does not result in significant adverse environmental effects and that open space uses have been considered for the area once mining operations cease.
- **CO-7.2:** Implement the State MRZ designations to establish a system that identifies mineral potential and economically viable reserves.

2.11.2.3 City of Hesperia

The City of Hesperia's General Plan was assessed for goals and policies that relate to mineral resources within the City's SOI; however, there are no specific goals or policies that directly relate. As stated in the General Plan (2010), open space policies

contained within the General Plan are meant to help the City "monitor and manage mineral resource production to ensure that open space areas like washes are not significantly impacted by mineral extraction activities" (OS-29).

2.11.3 Criteria for Determining Significance

The following evaluation criteria for impacts to mineral resources are drawn from the San Bernardino County General Plan and Appendix G of the CEQA Guidelines. The proposed project would result in a significant impact to mineral resources if it:

a) Results in the loss of availability of a known mineral resource that would be of value to the region and residents of the state.
b) Results in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

2.11.4 Construction Impacts

2.11.4.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road. There are no known mineral resources within the project area. Therefore, no construction impacts to mineral resources would occur.

2.11.4.2 Build Alternative

There are no known mineral resources within the project area. Therefore, no impacts to mineral resources are anticipated with the project during construction.

2.11.5 Permanent Impacts

2.11.5.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road. There are no known mineral resources within the project area. Therefore, no permanent impacts to mineral resources would occur.

2.11.5.2 Build Alternative

There are no designated or known mineral resources or recovery sites within the project area; therefore, the proposed project would not result in the loss or availability of locally important mineral resources or recovery sites.

2.11.6 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.12 Noise

This section addresses potential noise impacts on nearby noise-sensitive areas along the project corridor resulting from the proposed project.

This section summarizes information documented in the technical report for this project, *Ranchero Road Improvement Project Noise Technical Study* (Parsons 2011). The purpose of this technical study is to evaluate noise impacts and possible abatement measures under the requirements of CEQA.

CEQA requires a strictly baseline versus build analysis to assess whether a project will have a noise impact. If a project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the projects unless such measures are not feasible.

2.12.1 Overview and Key Terms

2.12.1.1 Fundamentals of Noise

Sound is technically described in terms of loudness (i.e., amplitude) and frequency (i.e., pitch) of the sound. Noise is typically described as unwanted or objectionable sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Because the human hearing system is not equally sensitive to sound at all frequencies, the A-weighted decibel scale (dBA), which gives greater weight to the frequencies of sound to which the human ear is most sensitive, was devised to relate noise to human sensitivity.

The decibel scale is logarithmic. The logarithmic scale compresses the wide range in sound-pressure levels to a more usable range similar to how the Richter scale measures earthquake magnitudes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud; 20 dBA higher, four times as loud; and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Figure 2.12-1 shows typical sound levels from indoors and outdoors. Table 2.12-1 defines the technical terminology.

In most situations, a 3-dBA change in sound-pressure level is considered a “just detectable” difference. A 5-dBA change (either louder or quieter) is readily noticeable, and a 10-dBA change is a doubling (if louder) or a halving (if quieter) of the subjective loudness. Sound from a small localized source drops off at a rate of 6 dBA for each doubling of the distance (6 dBA/DD); however, highway traffic makes the source of the sound appear to emanate from a line (line source). The change in sound level is 3 dBA per doubling of distance.

Figure 2.12-1 Typical Sound Levels from Indoor and Outdoor Noise Sources

Table 2.12-1 Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound-level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after the addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Source: Caltrans, 2009 and Parsons, 2007.

Human Response to Changes in Noise Levels

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 to 8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Furthermore, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound, would generally be perceived as barely detectable.

2.12.2 Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random.

Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis:

Equivalent Sound Level (L_{eq})

Equivalent sound level (L_{eq}) is the sound level containing the same total energy over a given sampling time period. The L_{eq} is the steady sound level that, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period. L_{eq} is typically computed over sampling periods of 1, 8, and 24 hours.

Percentile-Exceeded Sound Level (L_n)

L_n represents the sound level exceeded for a given percentage of a specified period (e.g., L10 is the sound level exceeded10 percent of the time, and L90 is the sound level exceeded 90 percent of the time).

Maximum Sound Level (L_{max})

L_{max} is the highest instantaneous sound level measured during a specified period.

Day-Night Level (L_{dn})

L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.

Community Noise Equivalent Level (CNEL)

CNEL represents the average of 24 hourly readings of equivalent levels (L_{eq}) based on a dBA and adjusted upward to account for increased noise sensitivity in the evening and at night. These adjustments are +5 dBA for the evening (7:00 p.m. to 10:00 p.m.) and +10 dBA for the night (10:00 p.m. to 7:00 a.m.). CNEL is used by many municipal jurisdictions, including the County, as the noise metric for purposes of general planning.

2.12.3 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path; hence, they can be treated as a line source, which

approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

The propagation path of noise from a roadway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft.

For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall dropoff rate of 4.5 dB per doubling of distance.

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

2.12.4 Exterior-Source Noise within Building Interiors: Outdoor-Indoor Level Reduction

Disturbance from traffic noise can also occur within the interiors of buildings, such as residences. The building's exterior envelope influences the amount of exterior-source noise that penetrates into the building's interior. In most cases, the roadway-facing façade of a building is the primary path for transmission of traffic noise to interior spaces behind that façade. One measure of the noise reduction that occurs across such facades is outdoor-indoor level reduction (OILR). OILR is generally measured or

otherwise specified in a series of specific frequency bands. In this report, OILR is specified as broadband values that represent minimum façade noise reduction requirements for traffic noise.

2.12.5 Vibration

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Displacement, in the case of a vibrating floor, is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the floor movement, and acceleration is the rate of change of the speed. The response of humans, buildings, and equipment to vibration is normally described using velocity or acceleration. In this report, velocity will be used in describing ground-borne vibration.

Vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal in inches per second. The RMS of a signal is the average of the squared amplitude of the signal.

2.12.6 Regulatory Setting

The State of California recognizes the relationship between noise and noise-sensitive land uses, and it has developed standards and regulations to coordinate compatibility. State and local guidelines and noise limits are applicable to the evaluation of traffic noise impacts from the proposed project. The proposed project corridor is partially outside of City limits but within the City's Sphere of Influence (SOI). That portion within the SOI is currently under the County of San Bernardino's jurisdiction. Noise impact criteria, guidelines, and policies from both jurisdictions have been utilized to assess the potential noise impacts of the proposed project. The following noise guidelines have been adopted by the agencies with oversight over the proposed project.

2.12.6.1 City of Hesperia Standards, Code Provisions and Policies

City of Hesperia Noise Standards

The City's 2010 General Plan Noise Element specifies interior and exterior noise standards. The exterior noise standard for residential and park uses is set at a CNEL of 65 dBA. The interior standard for single-family residences, school classrooms, and churches is set at CNEL of 45 dBA. These noise guidelines are provided in Table 2.12-2.

Table 2.12-2 City of Hesperia Interior and Exterior Noise Standards

Land Use Categories		Community Noise Equivalent Level (CNEL)	
Categories	**Land Uses**	**Interior[1]**	**Exterior[2]**
Residential	Single Family, Duplex, Multiple Family	45[3]	65
	Mobile Homes	n/a	65[4]
Commercial Industrial Institutional	Hotel, Motel, Transient Lodging	45	65[5]
	Commercial Retail, Bank, Restaurant	55	n/a
	Office Building, Research and Development, Professional Offices, City Office Building	50	n/a
	Amphitheatre, Concert Hall, Meeting Hall	45	n/a
	Gymnasium (Multipurpose)	50	n/a
	Sports Club	55	n/a
	Manufacturing, Warehouse, Wholesale, Utilities	65	n/a
	Movie Theatres	45	n/a
Institutional	Hospitals, School Classrooms	45	65
	Church, Library	45	n/a
Open Space	Parks	n/a	65

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to: Private yard of single family, multi-family private patio or balcony that is served by a means of exit from inside: mobile home park, hospital, patio park picnic area, school playground, hotel and motel recreation area.
3. Noise level requirement closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided per Building code.
4. Exterior noise level should be such that interior noise level will not exceed 45 dBA CNEL.
5. Except those areas by aircraft noise.

Source: City of Hesperia General Plan, 2010.

City of Hesperia Code Provisions

Section 16.20.125 of the Hesperia Municipal Code (HMC) (City of Hesperia, 2010) includes noise standards that are reproduced in modified form in Table 2.12-3. This code section exempts: "Temporary construction, repair or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays."

HMC Section 16.20.130 states that: "No vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line; nor will any vibration be permitted which produces a particle velocity greater than or equal to 0.2 inches per second measured at or beyond the lot line." The same construction activity exemption applied to noise impacts is also applied to vibration impacts. In this study, the 0.2 inch per second particle velocity threshold will be applied as a PPV value to prevent possible cosmetic damage to buildings close to the proposed project. Accordingly, as a CEQA threshold, it will be applied any time, not just outside periods when construction is exempt under the Municipal Code.

Table 2.12-3 City of Hesperia Noise Performance Standards

Affected Land Use (Receiving Noise)	Time Period	Maximum Noise Level (dBA) Allowable during any Given Hour, by Duration of Exposure and Associated Percentile Value				
		>30 minutes L_{50}	>15 minutes L_{25}	>5 minutes L_8	>1 minute L_2	Any Duration L_{max}
A-1, A-2, R-1, R-3, and RR Zone Districts	10:00 p.m. to 7:00 a.m.	55	60	65	70	75
	7:00 a.m. to 10:00 p.m.	60	65	70	75	80
C-1, C-2, C-3, C-4, C-R, AP, and P-I Zone Districts	Any time	65	70	75	80	85

City of Hesperia Goals and Policies

The City's Noise Element (2010) is a comprehensive program for including noise control in the planning process. Policies from the City of Hesperia's General Plan relevant to the proposed project include:

- **Goal-NS-1:** To achieve and maintain an environment which is free from excessive or harmful noise through identification, control, and abatement.
- **NS-1.1:** Incorporate noise-reduction features during site planning and into land use planning decisions to mitigate anticipated noise impacts on affected noise-sensitive land uses.
- **NS-1.2:** Control and abate undesirable sounds through the use of the land use compatibility criteria shown in Exhibit NS-1, Table N-3, and HMC Section 16.20.125(B).
- **NS-1.7:** Ensure that areas with frequent outdoor use (see Table N-3 footnote 2.) at noise-sensitive land uses are not subjected to inappropriate noise levels resulting from transportation systems.
- **NS-1.10:** Limit the hours of construction activity in, and around, residential areas in order to reduce the intrusion of noise in the early morning and late evening hours and on weekends and holidays.
- **NS-1.13:** Ensure adequate noise control measures at construction sites by requiring that construction equipment be fitted with manufacturer-recommended mufflers and ensuring physical separation of machinery maintenance and staging areas from adjacent residential uses.

- **Goal – NS-2:** To achieve and maintain an environment which is free from excessive vibration.
- **NS-2.1:** Control exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels as set forth in Table NS-1 and HMC Section 16.20.130.

2.12.6.2 County of San Bernardino Standards, Code Provisions and Policies

County of San Bernardino Noise Standards

The County's 2007 General Plan Noise Element refers to noise standards in Chapter 83.01 of the Development Code. The applicable Development Code standards are discussed below.

County of San Bernardino Code Provisions

Table 83-3 of the County Development Code (San Bernardino County, 2010) provides standards for exposure to adjacent mobile noise sources that are similar to the aforementioned City Noise Element standards. Table 83-3 specifies an exterior noise standard of 60 dBA in terms of L_{dn} or CNEL, but… "An exterior noise level of up to 65 dBA…shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dBA…with windows and doors closed." Table 2.12-4 summarizes the County's noise standards for adjacent mobile noise sources.

Table 83-2 of the development code includes standards for stationary noise sources that – for the purposes of this study – are effectively identical to standards in Section 16.20.125 of the Municipal Code. Section 83.01.080 of the County Code includes the same construction activity exemption that the City provides. Section 83.01.090 specifies a vibration standard and construction activity exemption identical to the corresponding City provisions. County Code Section 87.0905 contains provisions that are reasonably analogous to the corresponding City Code provisions for this analysis. Relevant portions of the County Code provisions are provided in Table 2.12-5.

Table 2.12-4 County of San Bernardino Noise Standards for Adjacent Mobile Noise Sources

Categories	Land Uses	L_{dn} (or CNEL) dB(A)	
		Interior[1]	Exterior[2]
Residential	Single and multi-family, duplex, mobile homes	45	60[3]
Commercial	Hotel, Motel, Transient housing	45	60[3]
	Commercial Retail, Bank, Restaurant	50	n/a
	Office Building, Research and Development, Professional Offices, City Office Building	45	65
	Amphitheatre, Concert Hall, Auditorium, Movie Theater	45	n/a
Institutional/ Public	Hospital, Nursing home, School Classroom, Religious institution, Library	45	65
Open Space	Park	n/a	65

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.
2. Outdoor environment limited to: Hospital/office building patios, Hotel and motel recreation areas, Mobile home parks, Multi-family private patios or balconies, Park picnic areas, Private yard of single family dwellings, School playgrounds
3. An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.

CNEL: (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound level in the evening from 7 p.m. to 10 a.m. and 10 decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Source: County of San Bernardino Development Code, 2010

Table 2.12-5 County of San Bernardino Code Noise Limits Applicable to Exposure at Receiving Noise-Sensitive Land Uses

Cumulative Duration of Exposure for a Given Hour to Which the Indicated Limits Apply	Noise Level Limits (dBA) for Source of Concern		
	7:00 a.m. to 7:00 p.m., excluding Sundays and Federal Holidays	7:00 a.m. to 1:00 p.m., Sundays and Federal Holidays; 7:00 p.m. to 10:00 p.m. on All Other Days[1]	10:00 p.m. to 7:00 a.m. Daily[1]
30 minutes	(Exempt)	50	45
15 minutes	(Exempt)	55	50
5 minutes	(Exempt)	60	55
1 minute	(Exempt)	65	60
Instantaneous	(Exempt)	70	65

[1] If the measured ambient level exceeds any of the first four noise limit categories above, then the allowable noise exposure shall be increased to reflect said ambient noise level. If the ambient noise level exceeds the fifth noise limit category (shown in the bottom row of the table), then the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

County of San Bernardino Goals and Policies

The County's Noise Element (2007) assesses noise levels of highways and freeways, local arterials, and stationary sources of noise pollution. It adopts goals, policies, and implementation programs to reduce the community's exposure to noise.

Relevant policies from San Bernardino County's Noise Element include:

- **Goal N-1:** The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.
- **N-1.6:** Enforce the hourly noise-level performance standards for stationary and other locally regulated sources, such as industrial, recreational, and construction activities, as well as mechanical and electrical equipment.
- **N-1.7:** Prevent incompatible land uses, by reason of excessive noise levels, from occurring in the future.
- **N-1.7.3:** Provide sufficient noise exposure information so that existing and potential noise impacts will be identified and addressed in the project review processes.
- **Goal N-2:** The County will strive to preserve and maintain the quiet environment of mountain, desert, and other rural areas.
- **N-2.1:** The County will require appropriate and feasible onsite noise attenuating measures that may include noise walls, enclosure noise-generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.

2.12.7 Existing Noise Environment

As part of the technical study, noise measurements were conducted at selected locations to evaluate the existing noise environment. In addition, a field investigation was conducted to identify land uses and frequent human use areas that could be subject to traffic noise impacts from the project. Single-family residences comprise most of the noise-sensitive land uses along the project corridor. Other uses include a church and associated daycare facility, a stand-alone daycare facility, and playfields associated with a high school.

In general, the dominant source of noise in the City and County is vehicular traffic. This includes automobiles, trucks, buses, and motorcycles. Other sources of noise within the study area include Burlington Northern Santa Fe (BNSF) and UPRR railroads, Hesperia Airport, industrial and commercial activity, and short-term construction.

Noise-sensitive receptors are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise, such

as residential dwellings, hotels, motels, dormitories, hospitals, educational facilities, and libraries. A field investigation was conducted on March 1, 2010, to identify land uses and frequent human use areas that could be subject to traffic noise impacts from the proposed project. Single-family residences comprise most of the noise-sensitive land uses along the project corridor. Other uses include a church and associated daycare facility, a standalone daycare facility, and playfields associated with a high school.

Noise measurements were taken at 12 locations within the project limits on March 15 through March 17, 2010. The primary objective of the measurements was to collect data for calibration of the traffic noise model and establish noise profiles. Noise monitoring was conducted at various measurement sites that are representative of these frequent outdoor use areas. Short-term measurements were conducted at 8 sites for a duration of 20 minutes each, and long-term measurements were conducted at 4 locations for at least 24 hours. The results for existing short-term and long-term measurements are presented in Tables 2.12-6 and 2.12-7. Noise monitoring locations are provided in Appendix I.

Table 2.12-6 Existing Short-Term Noise Measurement Results

Site No.[1]	APN of Nearest Parcel	Represented Land Use[2]	Meter Location	Distance from Ranchero Road Centerline (ft)	Measured L_{eq}, dBA[3]
ST1	3039-541-09	SFR	Vacant parcel	113	55.4
ST2	0357-371-01	SFR	Edge of cross-street	100	63.3
ST3	0357-511-30	CHR	Edge of cross-street	100	62.3
ST4	0405-571-01	SFR	Edge of Fuente Avenue	100	62.1
ST5	0405-471-35	SFR	Water tank site	75	65.8
ST6	0409-214-15	SFR	Edge of cross-street	100	60.8
ST7	0412-182-36	SFR	Next to California Aqueduct	100	57.3
ST8	0397-211-01	SFR	Property outside residential pad	118	51.9

Notes:
1. ST – Short-Term Measurements.
2. Adjacent land uses represented by measurement site. CHR – Church; SFR – Single-Family Residence.
3. Short-term measured noise levels were measured for a period of 20 minutes.

Source: Parsons, 2011.

Table 2.12-7 Existing Long-Term Noise Measurement Results

Site No.[1]	APN of Nearest Parcel	Land Use[2]	Meter Location	Measured CNEL, dBA
LT1	3039-481-17	SFR	Behind house	64.7[3]
LT2	0405-383-20	SFR	Front yard	67.0
LT3	0405-831-13	SFR	Back yard	56.2[4]
LT4	0412-182-23	SFR	Front yard	62.3

Notes:
1. LT – Long-Term Measurements.
2. Land Use: SFR – Single-Family Residence.
3. These results were influenced by noise effects during early morning hours that cannot be substantially explained by traffic noise under typical traffic flow conditions.
4. These results exclude anomalous noise data.

Source: Parsons, 2011.

2.12.8 Criteria for Determining Significance

In addition to the respective City and County noise standards and code provisions, the proposed project is also subject to CEQA noise impact categories. The following thresholds for determining the significance of noise impacts were derived from City and County noise standards and Appendix G of the CEQA Guidelines. For this analysis, noise impacts resulting from implementation of the proposed project would be considered significant if the project results in:

CEQA Impact Categories

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Exposure of persons to or generation of excessive groundborne noise levels.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project exposes people residing or working in the project area to excessive noise levels.

f) For a project within the vicinity of a private airstrip, the project exposes people residing or working in the project area to excessive noise levels.

Specific Significance Criteria

A significant project operational noise impact will be deemed to occur if predicted outdoor noise levels at noise-sensitive receivers under Future Build conditions either:

1) Are higher than predicted noise levels under Future No Build conditions and equal or exceed a CNEL of 65 dBA; or

2) Are at least 5 decibels higher than predicted noise levels under Future No Build conditions and equal or exceed a CNEL of 60 dBA.

2.12.9 Construction Impacts

2.12.9.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no construction noise impacts would occur in the project area.

2.12.9.2 Build Alternative

Noise impacts from construction activities for the project are a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. For temporary (i.e., construction) impacts, noise standards from the Municipal Code and County Code are applied as appropriate. A significant construction-related noise impact will be deemed to occur if sensitive land uses would be exposed to construction-generated noise exceeding Municipal Code standards outside of exempted hours. A significant construction-related vibration impact will be deemed to occur if sensitive land uses would be exposed to detectable vibration levels posing a risk of building damage standards at any time. These vibration thresholds are based on Municipal and County code provisions.

Construction Noise

Table 2.12-8 summarizes reference maximum noise levels generated by individual pieces of selected construction equipment. If these maximum levels would be approached or equaled for periods totaling between 5 and 15 minutes in a given hour, a single piece of equipment could exceed the City's daytime noise limits at residential properties as far as approximately 125 to 300 ft away, depending on the type of equipment. If these levels would be approached or equaled for more than 30 minutes in a given hour, the corresponding distances would be 300 to 700 ft. Such standards would apply between 7:00 p.m. and 10:00 p.m. on all days and between 7:00 a.m. and 7:00 p.m. on Sundays and federal holidays.

Between 10:00 p.m. and 7:00 a.m., nighttime limits would apply. Under these circumstances, a single piece of equipment generating near-maximum levels between 5 and 15 minutes in a given hour could exceed applicable limits as far as approximately 200 to 450 ft away. If these levels were approached or equaled for more than 30 minutes in a given hour, the corresponding distances would be 500 to 1,150 ft.

Table 2.12-8 Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Concrete Pump	82

Source: FTA, 2006.

These results suggest a high probability that the City's limits would be exceeded at nearby residences if heavy construction activities occurred outside the exempted hours. It is expected that the overall noise levels during the construction period would be elevated temporarily and intermittently over that of the existing ambient noise levels. During the construction period, compliance with the San Bernardino County noise ordinance for construction hours (7:00 a.m. to 7:00 p.m.; Monday through Saturday) and minimization measures would be required; therefore, no significant construction noise impacts are expected.

Vibration

Table 2.12-9 summarizes reference vibration levels from operation of selected types of construction equipment.

Table 2.12-9 Construction Equipment Vibration

Equipment	Peak Particle Velocity, in/sec		
	25 ft	50 ft	100 ft
Grader	0.02	0.01	--
Crane	0.07	0.02	0.01
Dozer	0.16	0.06	0.02
Excavator	0.17	0.06	0.02
Loader	0.08	0.03	0.01
Vibratory Roller	0.22	0.08	0.03

Source: Parsons, 2011.

The vibratory roller is the construction equipment item likely to generate the highest vibration levels. As shown in Table 2.12-9, a representative vibratory roller could slightly exceed the 0.2–inch per second PPV threshold at a distance of 25 ft. Few, if any, built structures are located within 25 ft of the likely paths for vibratory rollers. The nearest residential structures of the Estates at Bella Rosa Ranch approach within approximately 30 ft of the roadway; however, paving along this segment of Ranchero Road is already sufficiently broad to accommodate the widened roadway, so no additional substantive construction activity will be required in these segments. Along other segments of Ranchero Road, existing paving is not broad enough to accommodate the widened roadway. A few residential structures along these other segments are nearly as close to the future paved area as the homes of the Estates at Bella Rosa Ranch (e.g., the residence at Receiver R8). In these cases, use of a vibratory roller with particularly high compaction forces could pose some risk of superficial building damage. Residents could also be disturbed by the resulting vibration levels. However, with the implementation of minimization measures, vibration-related impacts are not expected.

2.12.10 Permanent Impacts

2.12.10.1 No Build Alternative

The No Build Alternative would not construct additional lanes or implement other improvements along Ranchero Road; therefore, no permanent noise impacts would occur in the project area.

2.12.10.2 Build Alternative

Noise Exposure

The Noise Technical Study (Parsons, 2011) conducted for the proposed project utilized the City of Hesperia's General Plan Noise Element exterior CNEL standard of 65 dBA. Where applicable, the noise study also applied the corresponding interior CNEL standard of 45 dBA. A significant project operational noise impact would occur if predicted outdoor noise levels at noise-sensitive receivers under future build conditions are higher than predicted noise levels under future no-build conditions and equal or exceed a CNEL of 65 dBA. Under both future scenarios, area-wide traffic demand is predicted to be substantially higher than existing levels. The proposed project would increase the capacity of Ranchero Road by widening the roadway from two to four lanes. According to the Noise Technical Study, the proposed project is anticipated to raise traffic noise levels along the project corridor relative to the future no-build condition.

Noise impact analyses were predicted for several different scenarios. The posted speed is 50 mph; therefore, the base impact calculations have used 50 mph for predicting traffic noise impacts for the No Build and Build Alternative. To minimize noise impacts of the proposed project, effects of reducing the speed limit to 40 and 45 mph were also analyzed. TNM has options of using different types of roadway surfaces for predicting traffic noise impacts. First, the "National Average" roadway surface was used for predicting traffic noise impacts. Then calculations were repeated for the three sets of speeds using the open-graded asphaltic concrete (OGAC) pavement.

The tables in Appendix J provide a detailed listing of predicted noise levels without and with noise abatement and specify impact determinations for each modeled receiver. These tables also indicate how many noise-sensitive land use units are represented by each modeled receiver. Tables D-1 and D-2 focus on results assuming a cruise speed of 50 mph for traffic along Ranchero Road. Table D-1 assumes national-average pavement conditions; Table D-2 assumes OGAC pavement. Tables D-3 and D-4 consider how results would vary for the three different assumed cruise speeds; one table assumes national-average pavement conditions and the other assumes OGAC pavement.

Table 2.12-10 summarizes the numbers of represented noise-sensitive units predicted to experience project-generated exterior noise impacts for two different types of the roadway surfaces and three different speeds.

Table 2.12-10 Construction Equipment Vibration

Roadway Surface	Speed (mph)	Single Family Houses	School	Church
National Average	50	110	1	1
	45	71	1	1
	40	15	--	--
OGAC	50	58	--	1
	45	10	--	--
	40	--	--	--

Noise Abatement Measures

Noise abatement measures have been considered where traffic noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise

level. The abatement analysis was conducted with soundwall heights ranging from 6 to 12 ft. Soundwall heights greater than 12 ft were not deemed appropriate for consideration as part of a local project to modify a local arterial roadway. Where an existing property wall is present, the lowest prospective future soundwall height considered was at least 2 ft taller than the existing wall. Tables D-1 and D-2 in Appendix J consider two different soundwall designs – Design A and Design B. For operational noise impacts, two soundwall design alternatives were considered: Design A and Design B. Design A was only considered where one or more receivers were predicted to experience a CNEL of 65 dBA or higher under Future Build conditions. It represents the minimum height required to reduce outdoor traffic noise exposure at such receivers to a CNEL below 65 dBA. Design B represents the minimum height required to provide 5 or more decibels of reduction in traffic noise exposure.

Where project traffic noise impacts have been identified but effective soundwalls would not be feasible, interior noise levels have been considered. Specifically, the minimum building façade noise reduction has been calculated that would ensure traffic noise levels below a CNEL of 45 dBA (44 dBA when rounded to the nearest decibel) within noise-sensitive interiors. This information is provided in the rightmost columns of Tables D-1 and D-2 in Appendix J. Numerical values have only been provided where impacts have been identified, abatement from soundwalls is deemed infeasible, and noise reductions of greater than 25 to 30 dB would be required to meet interior noise targets. The 25-dB threshold is applied to houses that were constructed before 1980, and the 30-dB threshold is applied to newer houses. The higher noise reduction is assumed to be a byproduct of more energy-efficient design, such as new weather-proofed double-glazed windows. In all cases, homes along the project corridor identified as potentially vulnerable to interior noise impacts have been assumed to have air conditioning units that will allow occupants to keep operable windows closed and still receive adequate air circulation. The façade noise reductions used in this study assume closed windows.

Soundwalls

This subsection addresses the feasible soundwalls within the project area. Unless otherwise specified, they are proposed to be located at or near the roadway ROW. In some cases, the walls transition from the Ranchero Road ROW to the cross street ROW before terminating, thereby providing more complete coverage. Tables 2.12-11 and 2.12-12 show the land uses, as well as soundwall heights and lengths, for soundwall Designs A and B separately. Tables 2.12-13 and 2.12-14 provide a summary of the soundwall analyses.